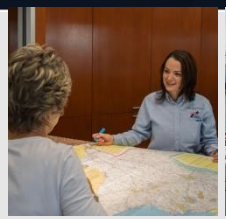
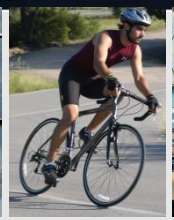
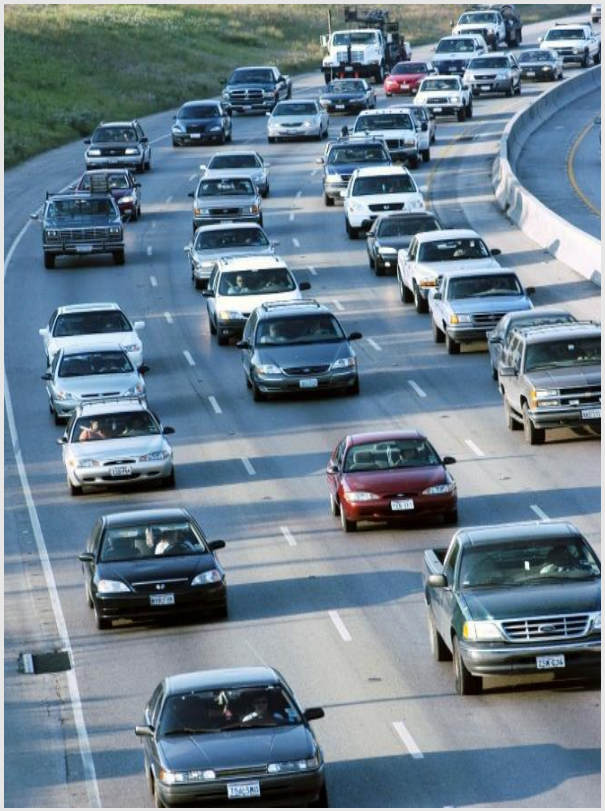
TEXAS DEPARTMENT OF TRANSPORTATION





TXDOT OVERALL PMS PROGRAM



Jenny Li, P.E.
Pavement Preservation Branch Manager
Maintenance Division

Oct. 25, 2018

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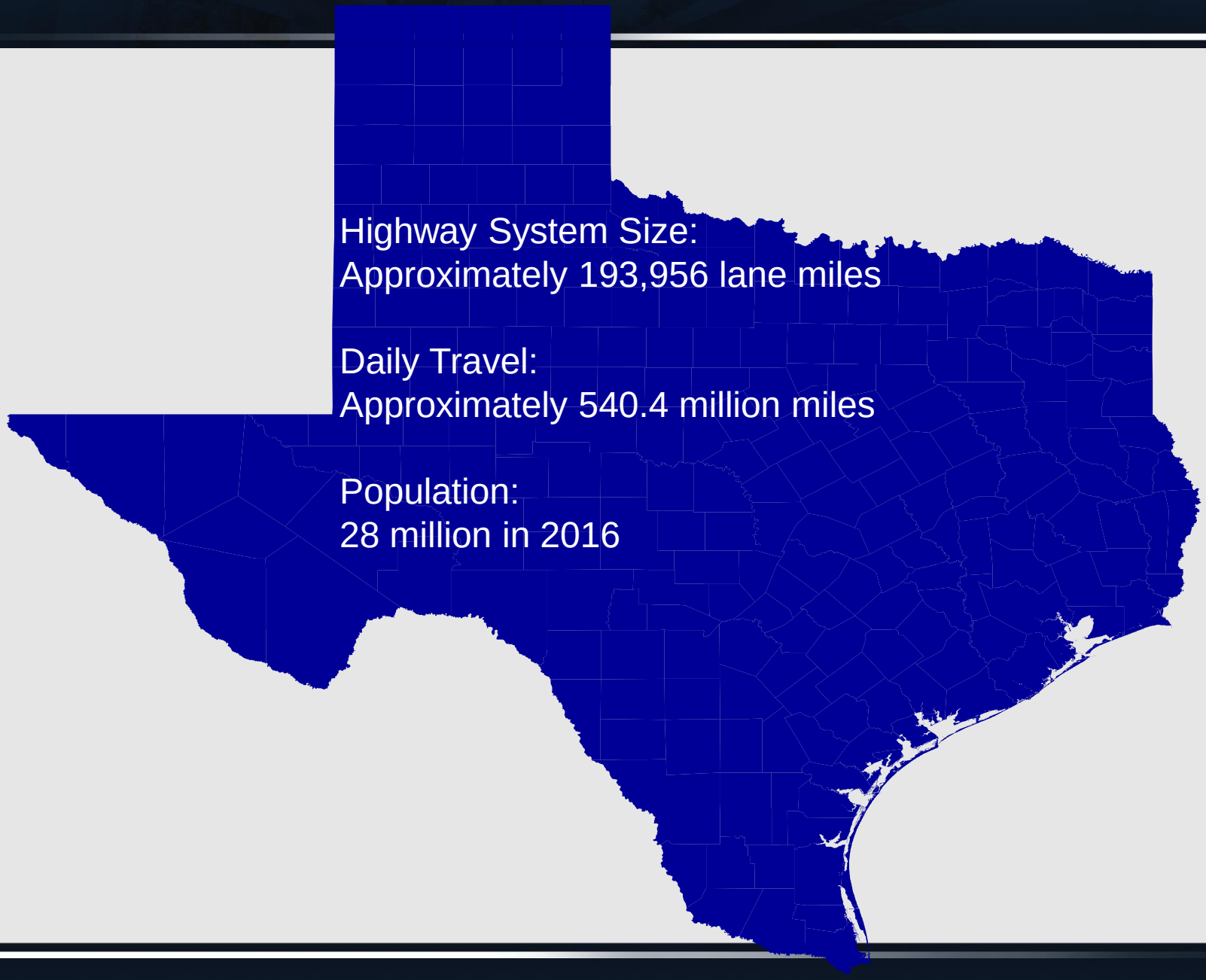
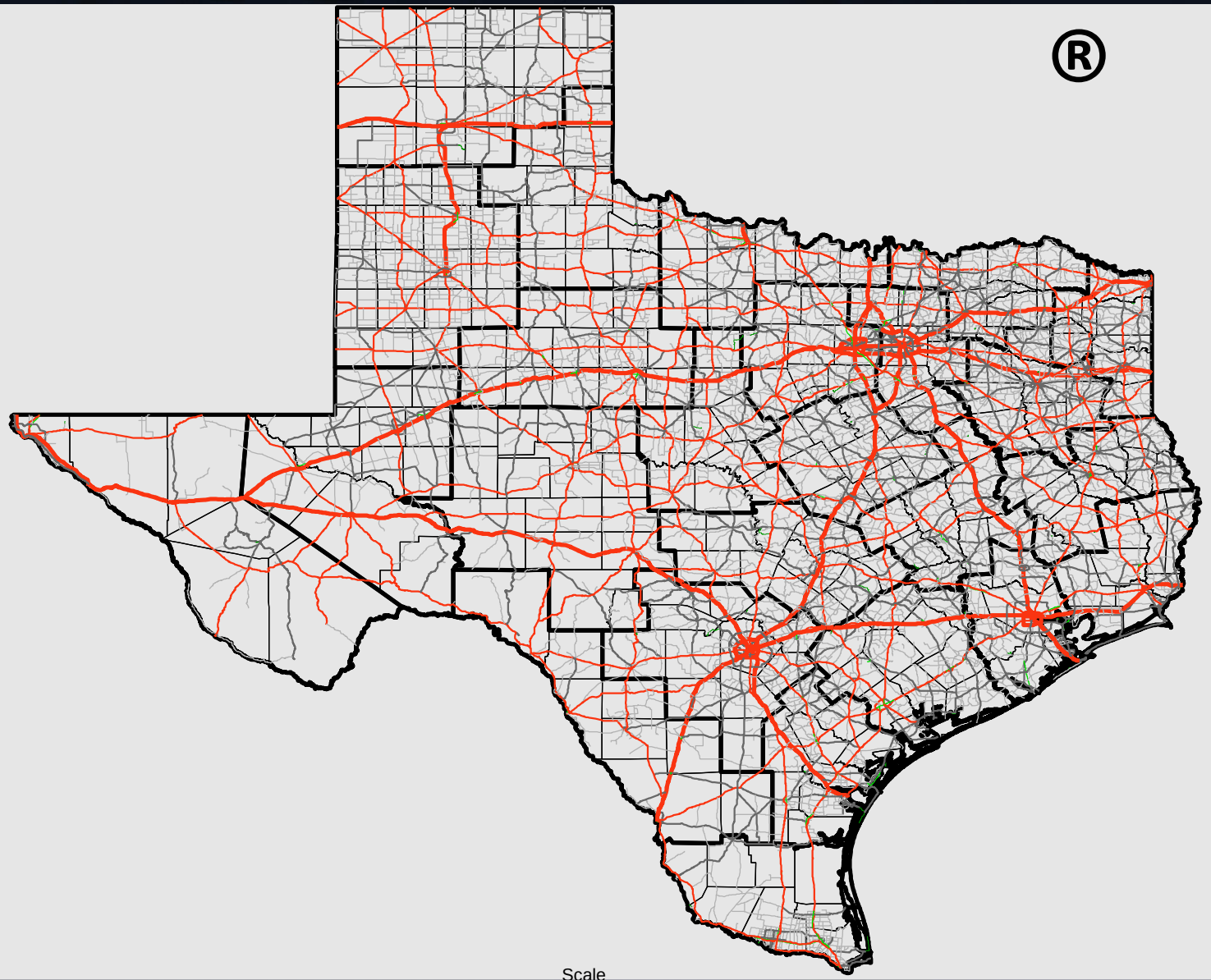
1	TxDOT Pavement Management Overview	3-10
2	Pavement Management System	11-20
3	4-year Pavement Management Plan	21-41
4	Questions	42


Highway System Size:
Approximately 193,956 lane miles
Daily Travel:
Approximately 540.4 million miles
Population:
28 million in 2016

Texas Highway System



Scale

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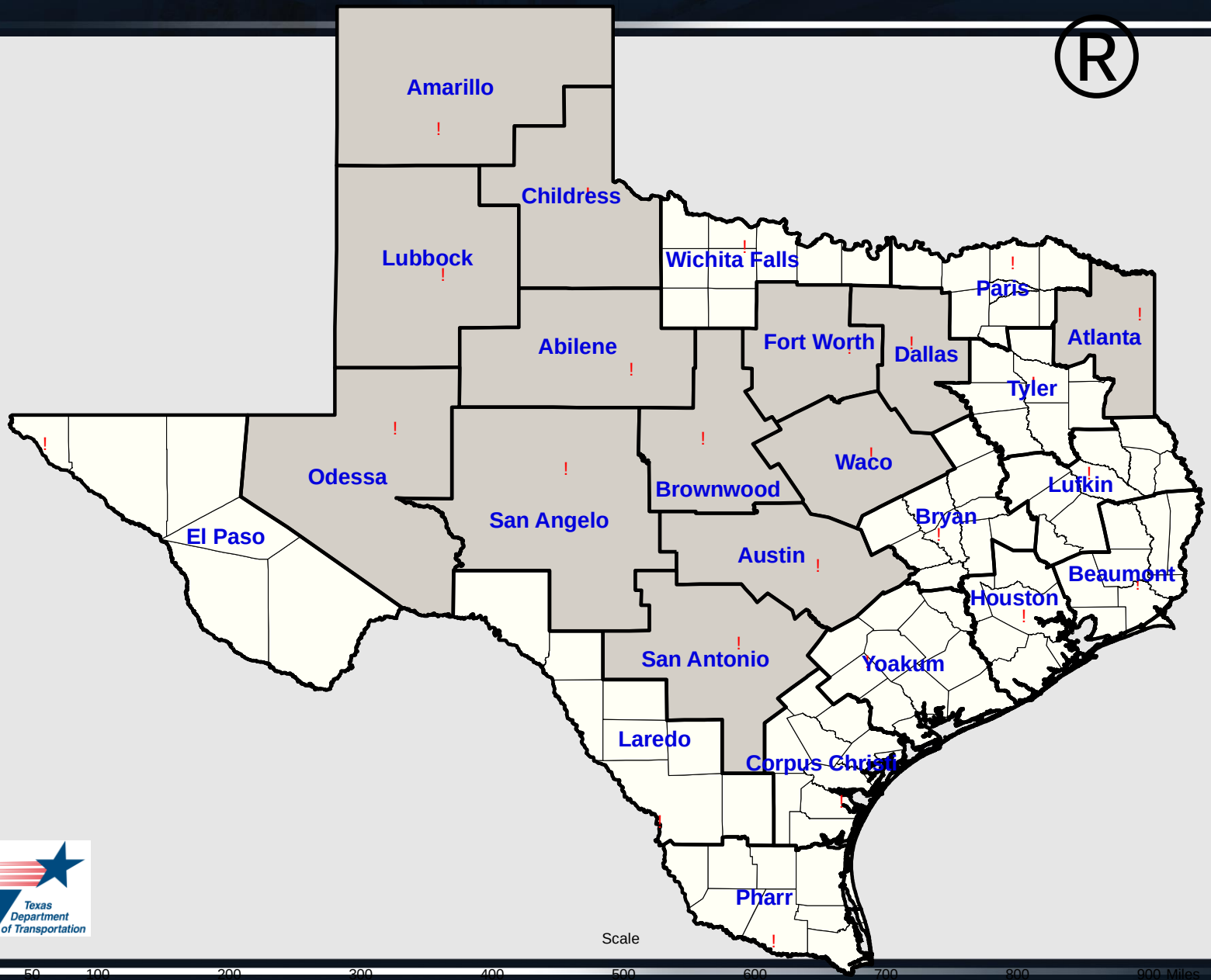

Amarillo
Childress
Lubbock
Wichita Falls
Paris
Atlanta
Abilene
Fort Worth
Dallas
Tyler
Waco
Odessa
Brownwood
Lufkin
San Angelo
Bryan
El Paso
Austin
Beaumont
Houston
San Antonio
Yoakum
Laredo
Corpus Christi
Pharr
Scale
0 50 100 200 300 400 500 600 700 800 900 Miles

Equipment Group

- 4 Inertial Profiler / Rut Systems
- 7 Skid Trucks
- 4 Ground Penetrating Radar Air Launched
- 7 Falling Weight Deflectometer (FWD)
- Certify equipment and operators
- Certify pavement distress raters
- Equipment repairs and maintenance
- Quality control and verifications of data collected
- Verification and referee testing for item 585
- OBSI (On-Board Sound Intensity) testing
- Texture and Seal Coat Tester developed in house

Equipment

Drink. Drive.
Go to Jail.
Texas Department of Transportation
29-02-E

MAINTENANCE DIVISION
Pavements Preservation
Building 7

Pavement Management Group

- Manage PMIS database
- Manage pavement data collection and audit contracts
- Annual pavement condition report
- Annual skid report
- Support 4-year Pavement Management Plans
- Support wet surface crash reduction program
- Support fund allocations for UTP CAT1 and Routine Maintenance
- TAMP development and support
- Provide PA training classes
- HPMS data
- Answers questions from Administration and Legislature
- District support

Data Collection Frequency

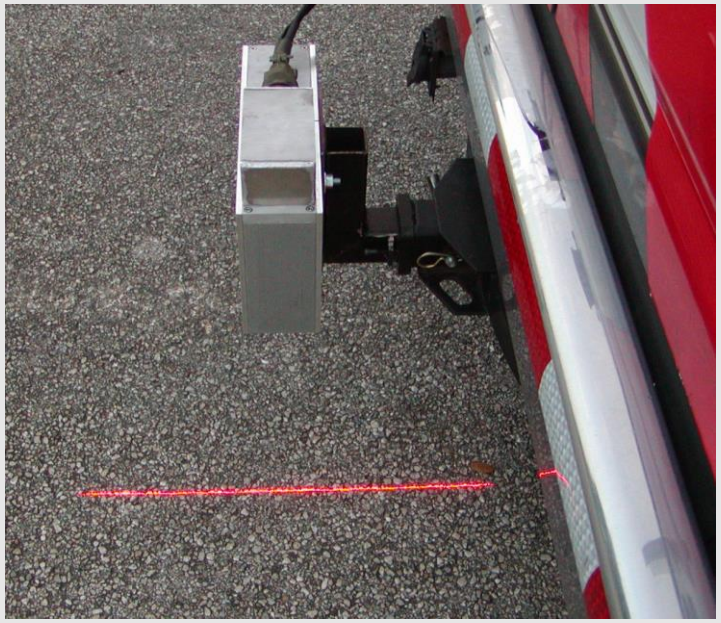
Pavement Distress:
- 100 percent per year
- July – December
- Statewide contract (Pathway)
- 6% distress audit (district & TTI)

Ride Quality / Rutting:
- 100 percent per year
- July – December
- Statewide contract (Pathway)
- 8% profile audit (district profiler operators)

Skid Measurements:
- 50 percent IH, 25 percent non-IH
- September– August
- District Skid equipment operators

FWD Measurements:
- As needed (for projects)
- September – August
- District FWD equipment operators

Vehicle Mount 3D Texture Unit



- Micro and Macro-texture measurement.
- Operation speed: 0~70 mph.
- Texture depth resolution: 10 μm.
- Total laser length: 20 inches (508 mm).
- Sampling every 0.248 mm or 102 samples/inch of travel.
- 100% longitudinal coverage.

Pavement Management System

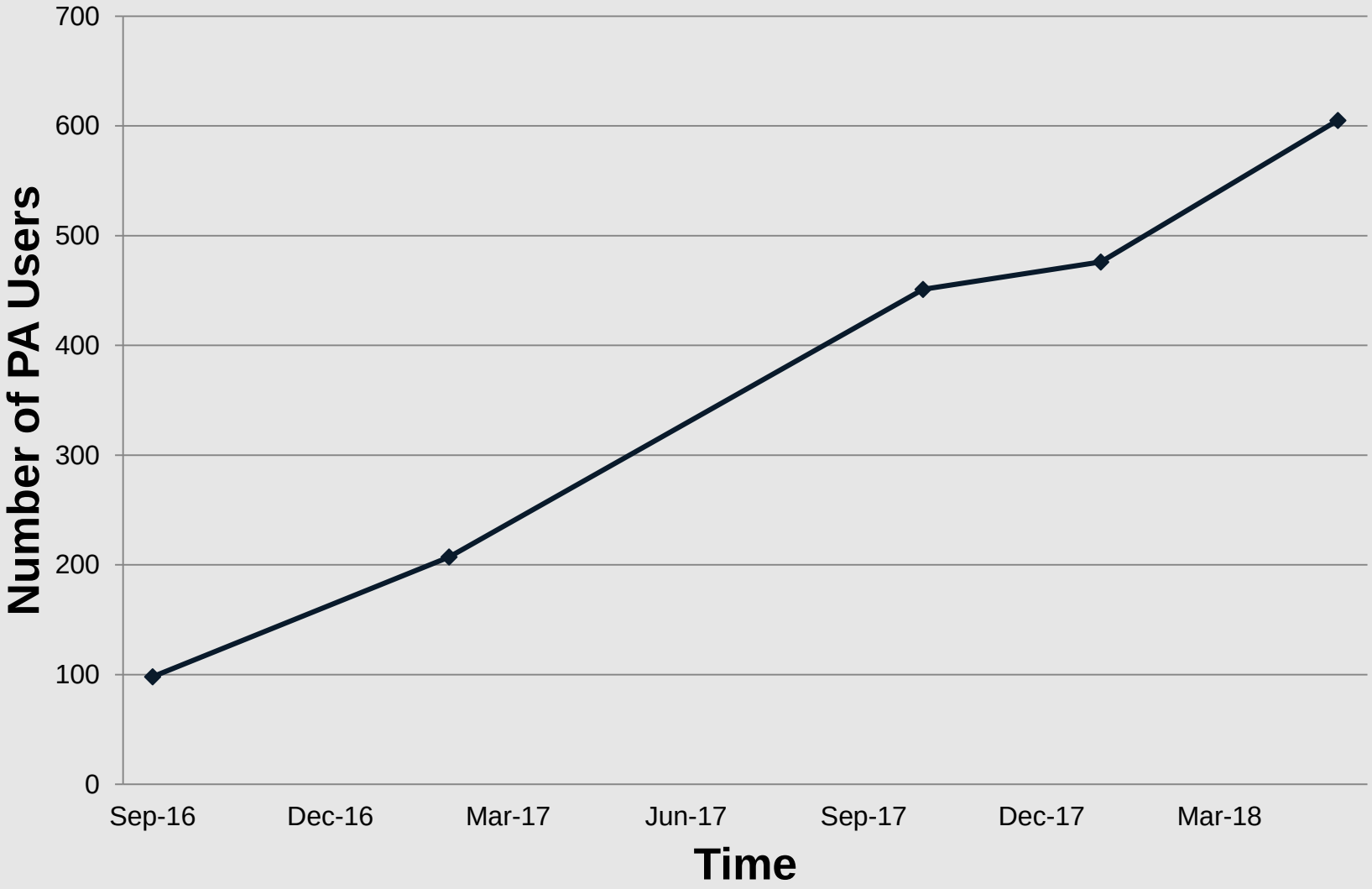
Pavement Analyst

The Agile Assets Pavement Analyst System

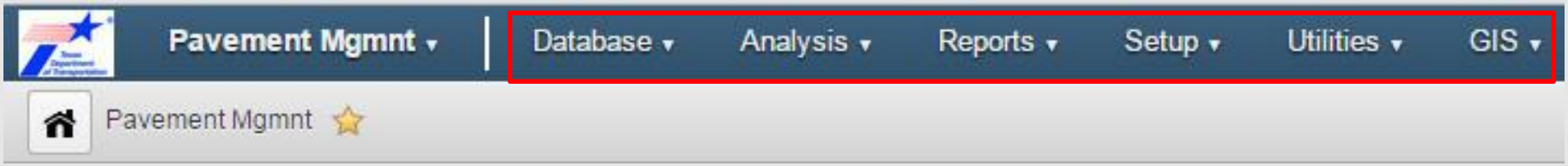
- The AgileAssets Pavement Analyst system replaced the mainframe PMIS and MapZapper. The Pavement Analyst went live statewide on September 1, 2016.

- This web-based system makes pavement-related and inventory data easily accessible, equips with powerful optimization tools to illustrate impacts of budget changes, and integrates with GIS to view pavement condition and pavement related projects on maps.

System Users

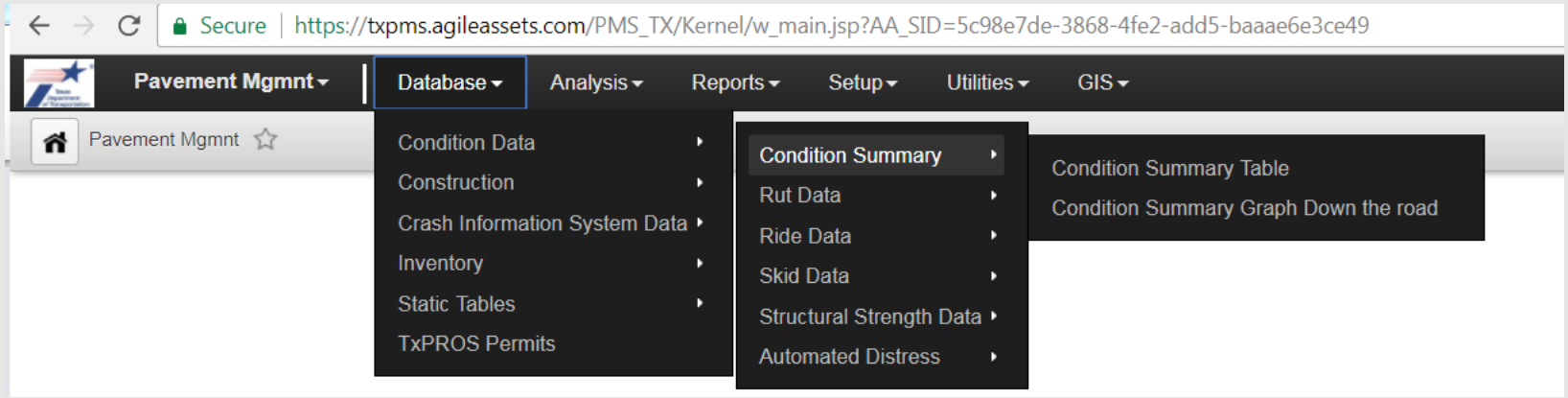


Six Modules



- Database: PMIS data and more
- Analysis: performance and network analysis
- Reports: annual report, detailed reports, etc.
- Setup: to support database and analysis etc.
- Utilities: dynamic segregation
- GIS: mapping functions

PA Data Tables



PA Data Tables

Pavement Mgmnt | Database | Analysis | Reports | Setup | Utilities | GIS

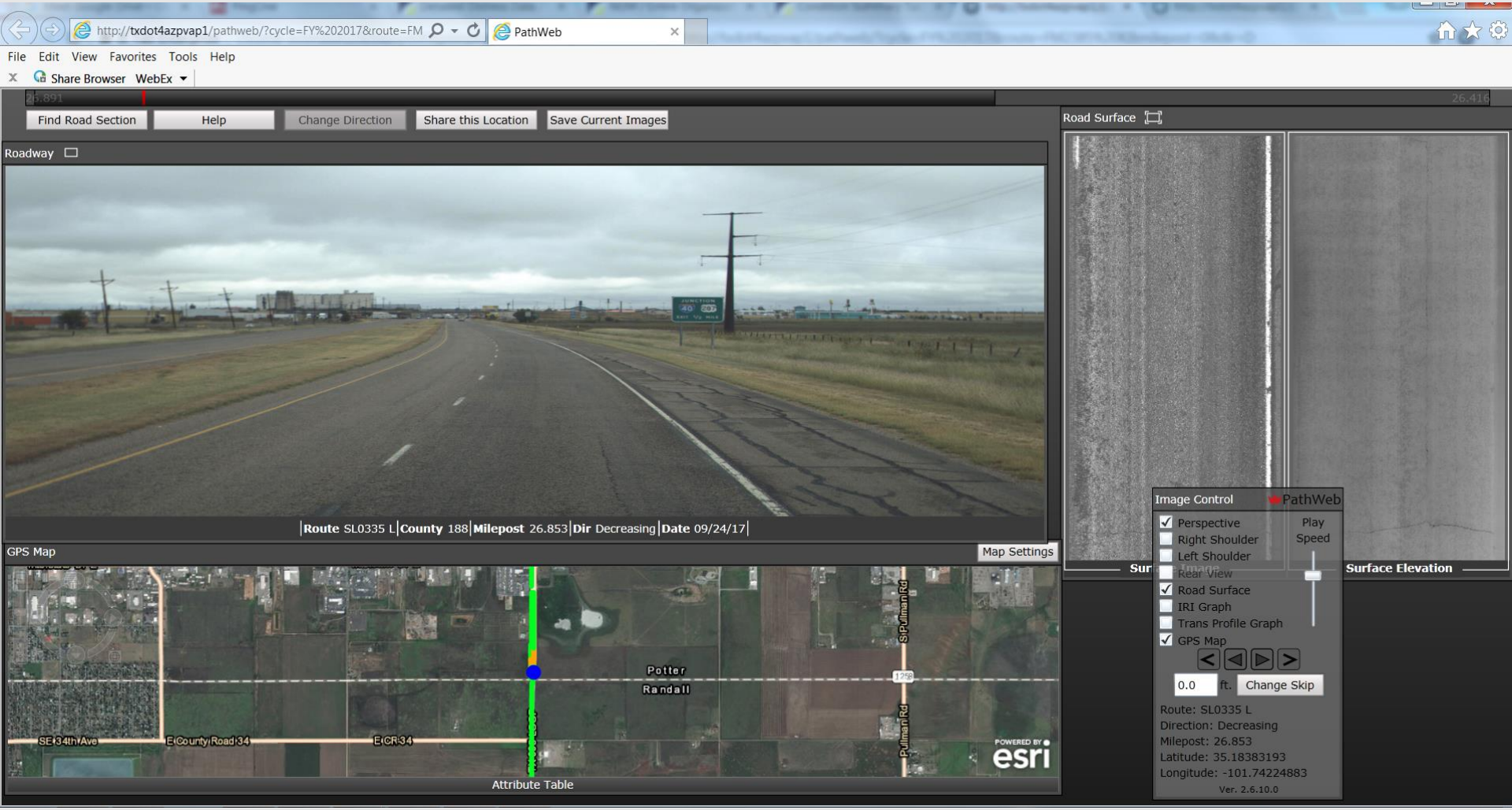
Pavement Mgmnt > Database > Condition Data > Condition Summary > Condition Summary Table

Menu

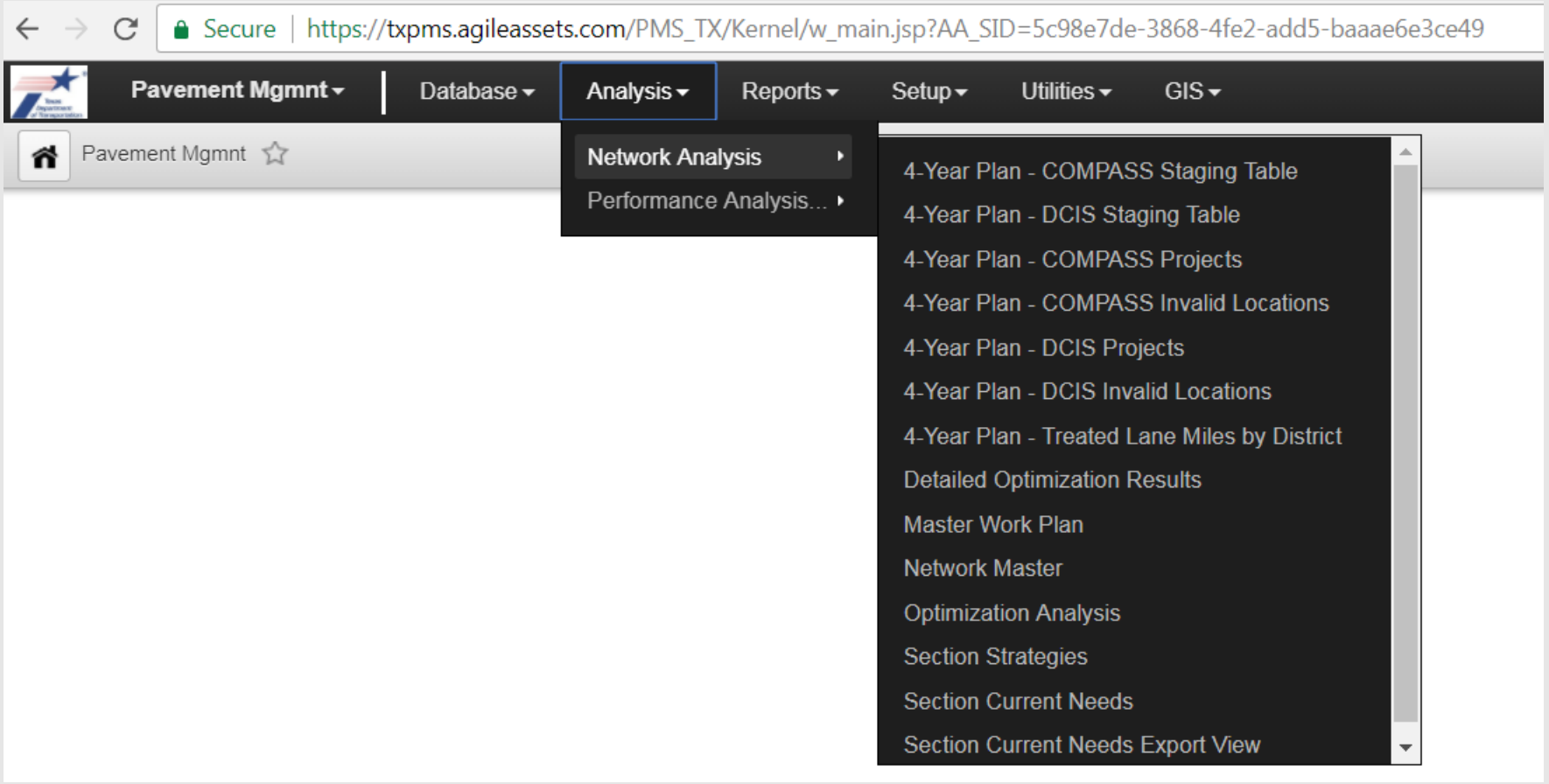
FISCAL YE...	RESPONSIBLE DI...	SIGNED HWY A...	DIRE...	LANE CODE	BEGINNING DFO	ENDING DFO	DISTRESS SCORE	* CONDITION SCORE	RIDE SCORE	SKID SC...	CONDITION SUM...	IM
1997	06 - ODESSA	SH0349 K	Both	0	193.470	193.995	100	100	2.5	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	193.995	194.495	100	90	2.0	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	194.495	194.995	100	100	2.4	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	194.995	195.495	100	100	2.3	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	195.495	196.056	100	100	2.6	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	196.056	196.556	100	100	2.7	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	196.556	197.056	100	100	2.5	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	197.056	197.556	100	99	2.2	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	197.556	198.059	99	99	2.4	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	198.059	198.559	86	86	2.9	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	198.559	199.059	88	88	2.7	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	199.059	199.559	86	86	2.7	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	199.559	200.067	86	86	2.3	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	200.067	200.567	86	86	2.7	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	200.567	201.067	86	86	2.4	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	201.067	201.567	86	86	2.9	0	Show Cond. Hist.	
1997	06 - ODESSA	SH0349 K	Both	0	201.567	202.162	96	96	2.5	0	Show Cond. Hist.	

<< < 1 of 10000 total rows > >>

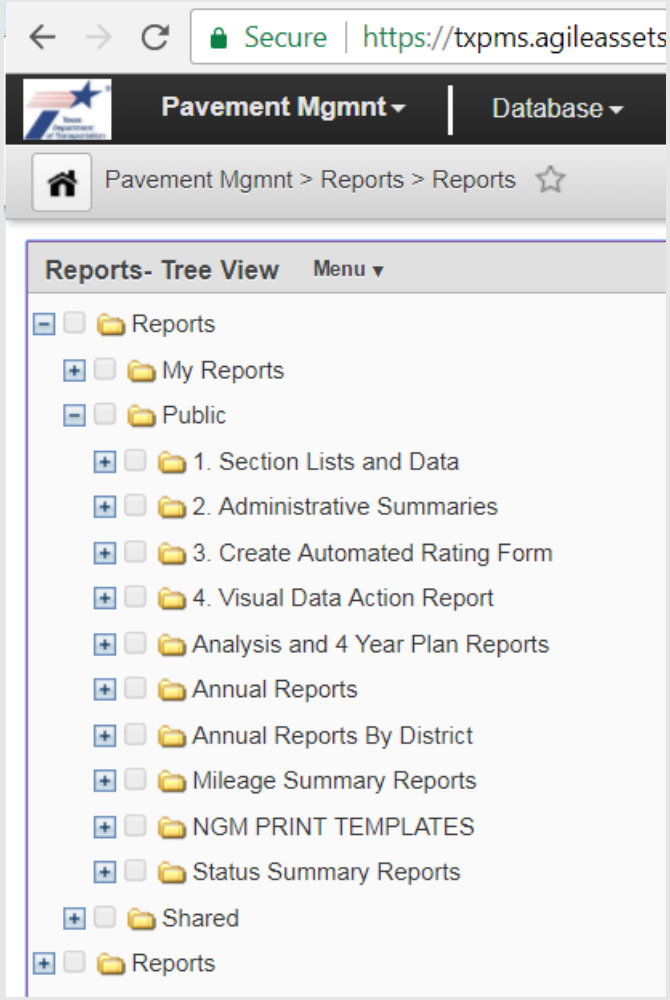
PathWeb


http://txdot4azpvap1/pathweb/?cycle=FY%202017&route=FM
PathWeb
File Edit View Favorites Tools Help
Share Browser WebEx
Find Road Section
Help
Change Direction
Share this Location
Save Current Images
Roadway
Route SL0335 L County 188 Milepost 26.853 Dir Decreasing Date 09/24/17
GPS Map
Map Settings
Potter
Randall
SE 34th Ave
E County Road 34
E CR 34
S Pullman Rd
Pullman Rd
POWERED BY esri
Attribute Table
Road Surface
Surface Elevation
Image Control
PathWeb
Perspective
Right Shoulder
Left Shoulder
Rear View
Road Surface
IRI Graph
Trans Profile Graph
GPS Map
Play Speed
0.0
ft.
Change Skip
Route: SL0335 L
Direction: Decreasing
Milepost: 26.853
Latitude: 35.18383193
Longitude: -101.74224883
Ver. 2.6.10.0

PA Analysis Tables



PA Reports



PERCENT OF LANE MILES IN GOOD OR BETTER CONDITION BY COUNTY

Fiscal Year: 2018
District: 01 - PARIS

May 21, 2018 12:49
Page 1 of 1

COUNTY	GOOD OR BETTER (70 - 100)		RATED LANE MILES	PERCENT RATED LANE MILES	TOTAL LANE MILES
	LANE MILES	PERCENT			
60 - DELTA	320.1	90.90 %	352.1	100.00 %	352.1
75 - FANNIN	833.8	84.89 %	982.1	99.48 %	987.3
81 - FRANKLIN	328.6	97.07 %	338.6	100.00 %	338.6
92 - GRAYSON	947.4	75.11 %	1,261.4	99.39 %	1,269.1
113 - HOPKINS	847.6	88.08 %	962.4	99.90 %	963.4
117 - HUNT	1,172.9	87.58 %	1,339.3	98.73 %	1,356.5
139 - LAMAR	891.6	89.31 %	998.3	99.50 %	1,003.3
190 - RAINS	249.7	93.15 %	268.1	99.63 %	269.1
194 - RED RIVER	709.2	94.53 %	750.3	99.84 %	751.5
01 - PARIS	**6,301.0**	**86.88 %**	**7,252.5**	**99.48 %**	**7,290.8**

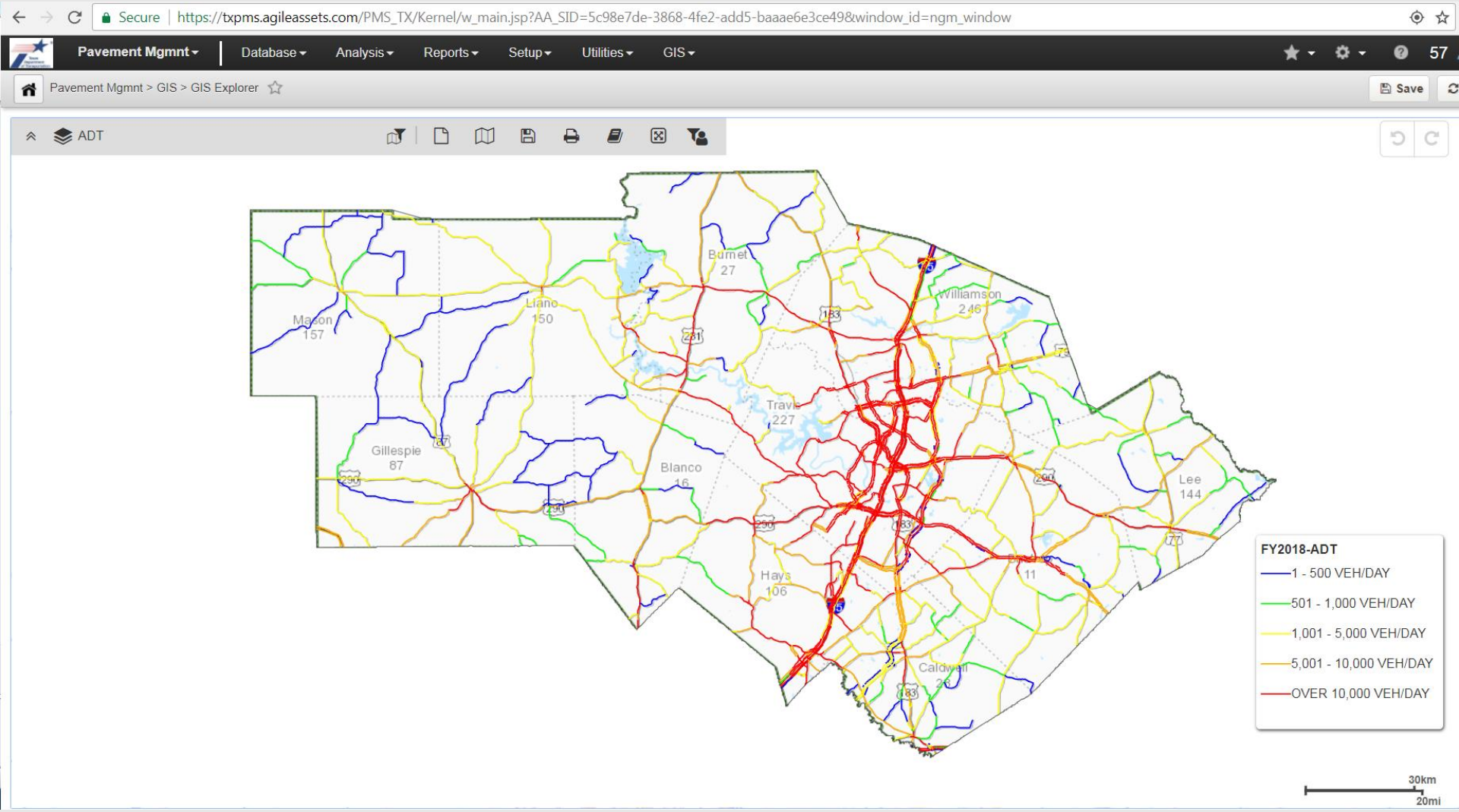
PMIS MILEAGE SUMMARY

Fiscal Year: 2018.0
District: 01 - PARIS

May 21, 2018 12:47
Page 1 of 1

COUNTY	CENTERLINE MILES	ROADBED MILES	LANE MILES	VMT
60 - DELTA	166.0	176.1	352.1	169,072.9
75 - FANNIN	480.8	486.3	987.3	791,913.1
81 - FRANKLIN	135.2	167.2	338.6	594,228.4
92 - GRAYSON	456.7	621.2	1,269.1	3,812,516.0
113 - HOPKINS	381.4	471.4	963.4	1,776,036.4
117 - HUNT	527.6	656.1	1,356.5	3,016,528.5
139 - LAMAR	442.2	480.1	1,003.3	1,225,603.8
190 - RAINS	133.8	134.6	269.1	349,000.7
194 - RED RIVER	374.7	374.7	751.5	387,692.0
01 - PARIS	3,098.3	3,567.5	7,290.8	12,122,591.9

PA Maps


Secure
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Pavement Mgmnt
Database
Analysis
Reports
Setup
Utilities
GIS
Pavement Mgmnt > GIS > GIS Explorer
Save
ADT
Burnet
27
Williamson
246
Mason
157
Llano
150
Travis
227
Gillespie
87
Blanco
16
Lee
144
Hays
106
Caldwell
FY2018-ADT
1 - 500 VEH/DAY
501 - 1,000 VEH/DAY
1,001 - 5,000 VEH/DAY
5,001 - 10,000 VEH/DAY
OVER 10,000 VEH/DAY
30km
20mi

4-Year Pavement Management Plan

Pavement Management Plan Objective

- Develop a comprehensive and uniform pavement management plan which is roadway specific to the greatest extent possible, and is fiscally constrained.

- Generate Pavement Condition Projections based on a financially constrained plan, which can be used to assess the impact of the appropriated funding.

Pavement Management Plan Timeline

- Preliminary plans due by **May 30th**
- Plan reviews done by **June 15th**
- Final plans due by **July 1st**
- Draft report by MNT on **August 1st**
- Final report by **August 31st**

Pavement Management Plan

Year of the project (2019, 2020, 2021, 2022)

- 2019 & 2020 Project Specific
- 2021 & 2022 Project Specific or place holders

Routine Maintenance

- Sealing Cracks
- Edge Maintenance
- Patching/Pothole Repair
- Level-up
- Strip/Spot seals
- Milling
- Joint Repair
- Isolated Base repair
- Concrete Repairs

Treatment Levels for Flexible Pavements

- Preventive Maintenance
  - Seal Coat / Chip Seals
  - Thin Overlay 2" Thick or Less
  - Mill and Inlay 2" or less
  - Hot In-Place Recycling
  - Micro-surfacing/Slurry Seal
  - Scrub Seal
- Light Rehabilitation
  - Overlay Greater Than 2" Thick But Less Than 4"
  - Mill and Inlay between 2" to 4"
- Medium Rehabilitation
  - Overlay Between 4" and 6“
  - Mill and Inlay Greater Than 4" But Less Than 6“
  - White-topping
- Heavy Rehabilitation
  - Overlays Greater than 6“
  - Mill and Inlays Greater than 6“
  - Full Reconstruction
  - Full Depth Reclamation (pulverization and stabilization) new HMA surface
  - Full Depth Reclamation (Pulverization and add new base) new seal coat surface

Treatment Levels for CRCP

- Preventive Maintenance
  - Half Depth Repair/ Full Depth Repair
  - Diamond Grinding and Grooving
  - Thin ACP Overlays 2" thick or less
- Light Rehabilitation
  - ACP Overlay Greater than 2" and Less than 4"
- Medium Rehabilitation
  - ACP Overlay Greater than 4" and Less than 6"
- Heavy Rehabilitation and Reconstruction
  - Rubblization & Overlay> than 6"
  - Bonded Concrete Overlay
  - Unbonded Concrete Overlay

Treatment Levels for JCP-CPCD

- Preventive Maintenance
  - Diamond Grinding and Grooving
  - Joint and/or Crack Sealing
  - Half Depth Repair
  - Slab Replacement
  - Thin ACP Overlays 2" thick or less
- Light Rehabilitation
  - ACP Overlay Greater than 2" But Less than 4"
  - Dowel Bar Retrofit & Grinding
- Medium Rehabilitation
  - ACP Overlay Greater than 4" But Less than 6“
- Heavy Rehabilitation
  - Full Reconstruction
  - Rubblizing and ACP Resurfacing Greater than 6"
  - Bonded Concrete Overlay
  - Unbonded Concrete Overlay

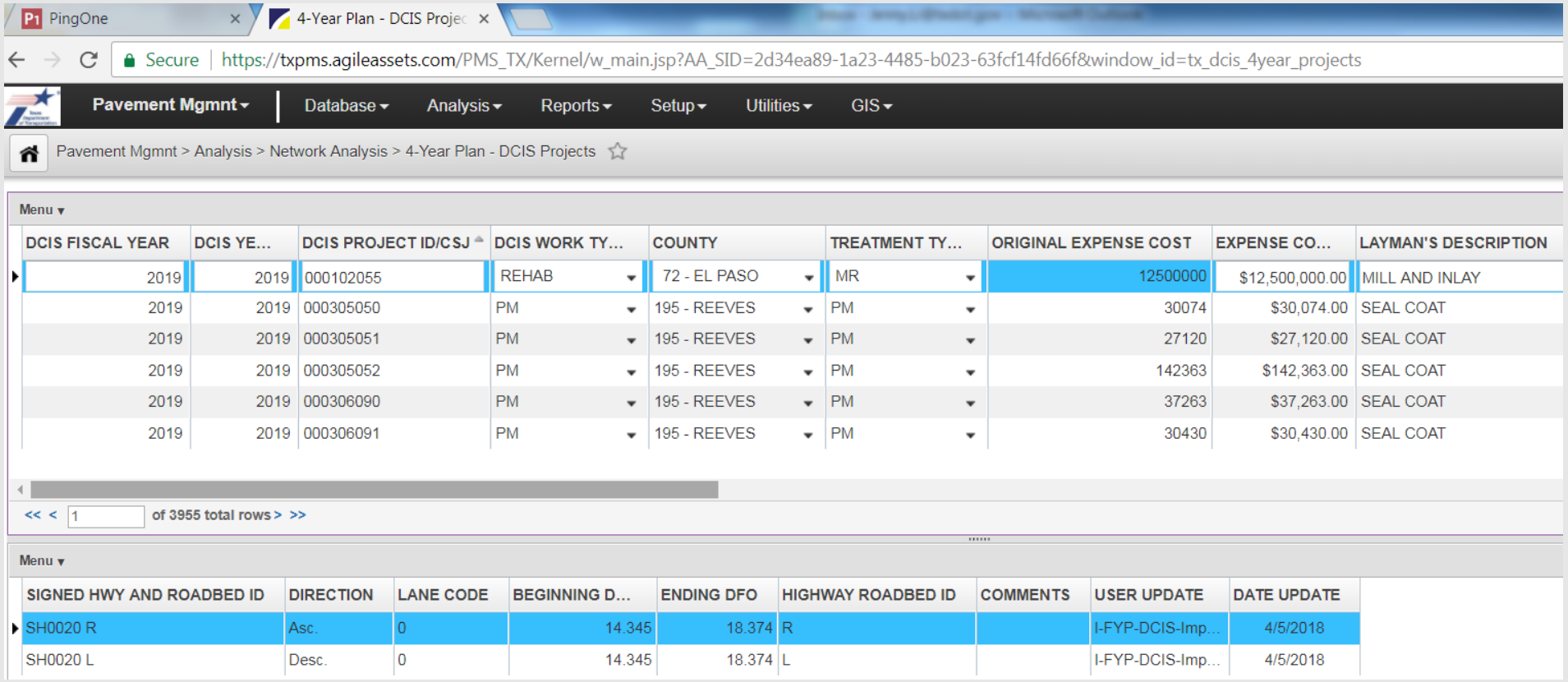
4-Year Plan Reviews

- Construction Projects
  - PM & Rehab projects 4 years
- Maintenance Projects
  - PM & Rehab projects 4 years
  - Routine MNT Years 0 & 1
- Surface Age Map
- Skid Data & Wet Surface Crash Reduction Report

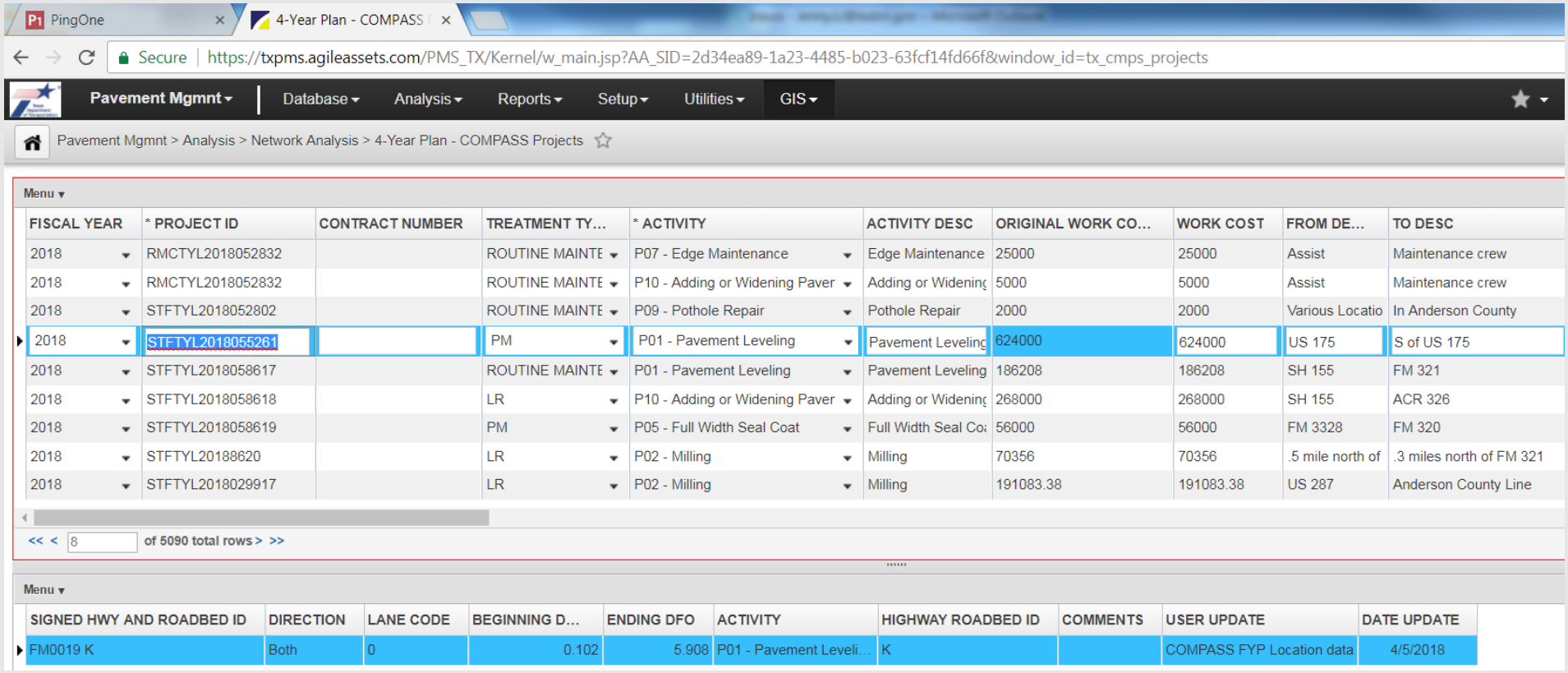
Integrate with Other Systems

- DCIS (Design and Construction Information System)
  - DCIS is the TxDOT's automated information system used for planning, programming, and developing projects. DCIS is an essential part of preparing construction projects for contract letting. Project information such as, work description, funding requirements, and dates for proposed activities can be found in DCIS.
- MMS (Maintenance Management System)
  - MMS captures and monitors maintenance plans and provides data for informed decision making.
- CRIS (Crash Records Information System)
  - Locations over presented with wet surface condition crashes.

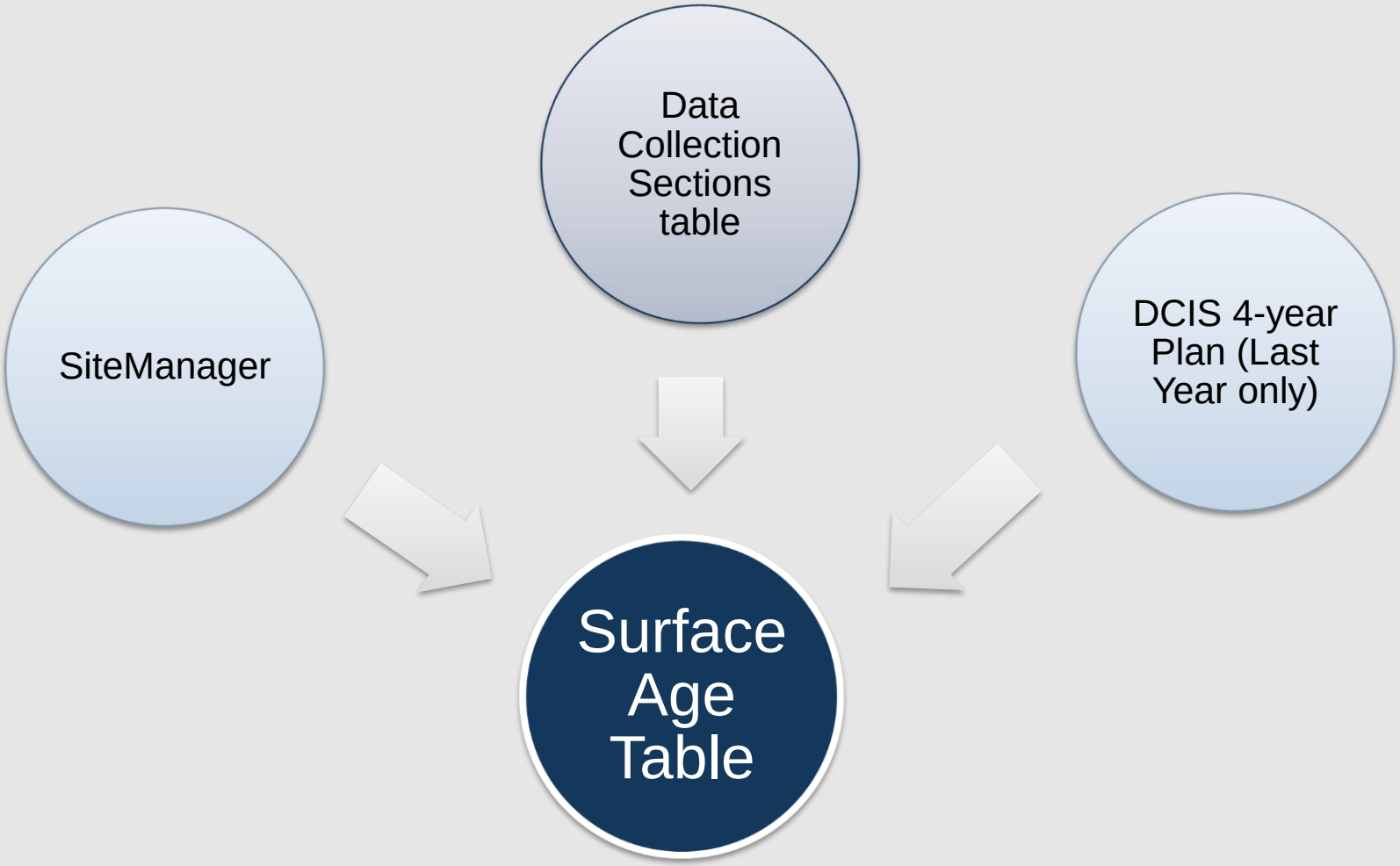
Construction Projects (DCIS)



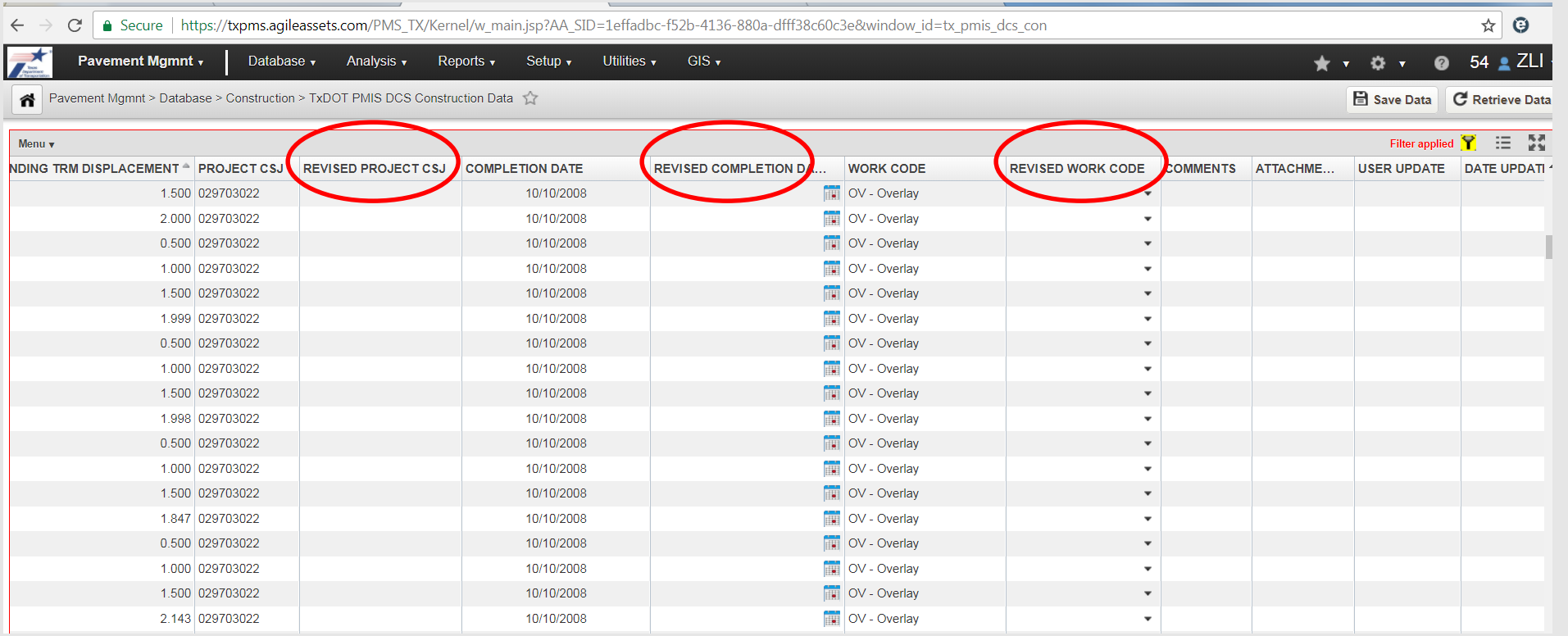
Maintenance Projects (MMS)



Surface Age


Data Collection Sections table
SiteManager
DCIS 4-year Plan (Last Year only)
Surface Age Table

Editable Fields



NDING TRM DISPLACEMENT	PROJECT CSJ	REVISED PROJECT CSJ	COMPLETION DATE	REVISED COMPLETION D...	WORK CODE	REVISED WORK CODE	COMMENTS	ATTACHME...	USER UPDATE	DATE UPDATI
1.500	029703022		10/10/2008		OV - Overlay					
2.000	029703022		10/10/2008		OV - Overlay					
0.500	029703022		10/10/2008		OV - Overlay					
1.000	029703022		10/10/2008		OV - Overlay					
1.500	029703022		10/10/2008		OV - Overlay					
1.999	029703022		10/10/2008		OV - Overlay					
0.500	029703022		10/10/2008		OV - Overlay					
1.000	029703022		10/10/2008		OV - Overlay					
1.500	029703022		10/10/2008		OV - Overlay					
1.998	029703022		10/10/2008		OV - Overlay					
0.500	029703022		10/10/2008		OV - Overlay					
1.000	029703022		10/10/2008		OV - Overlay					
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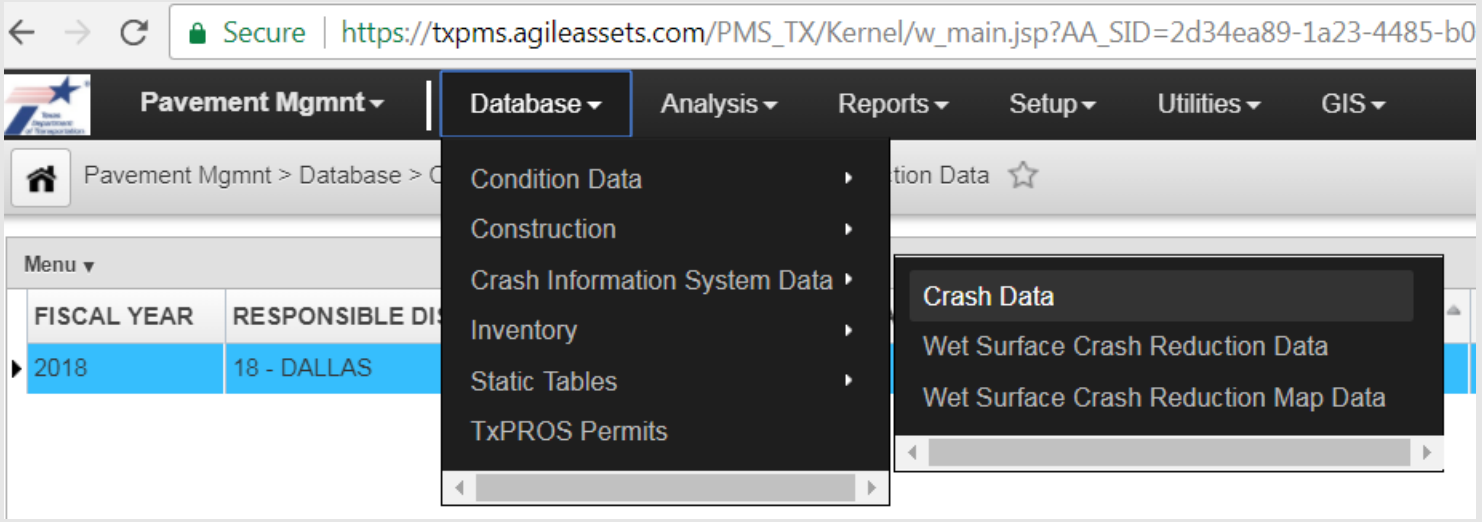
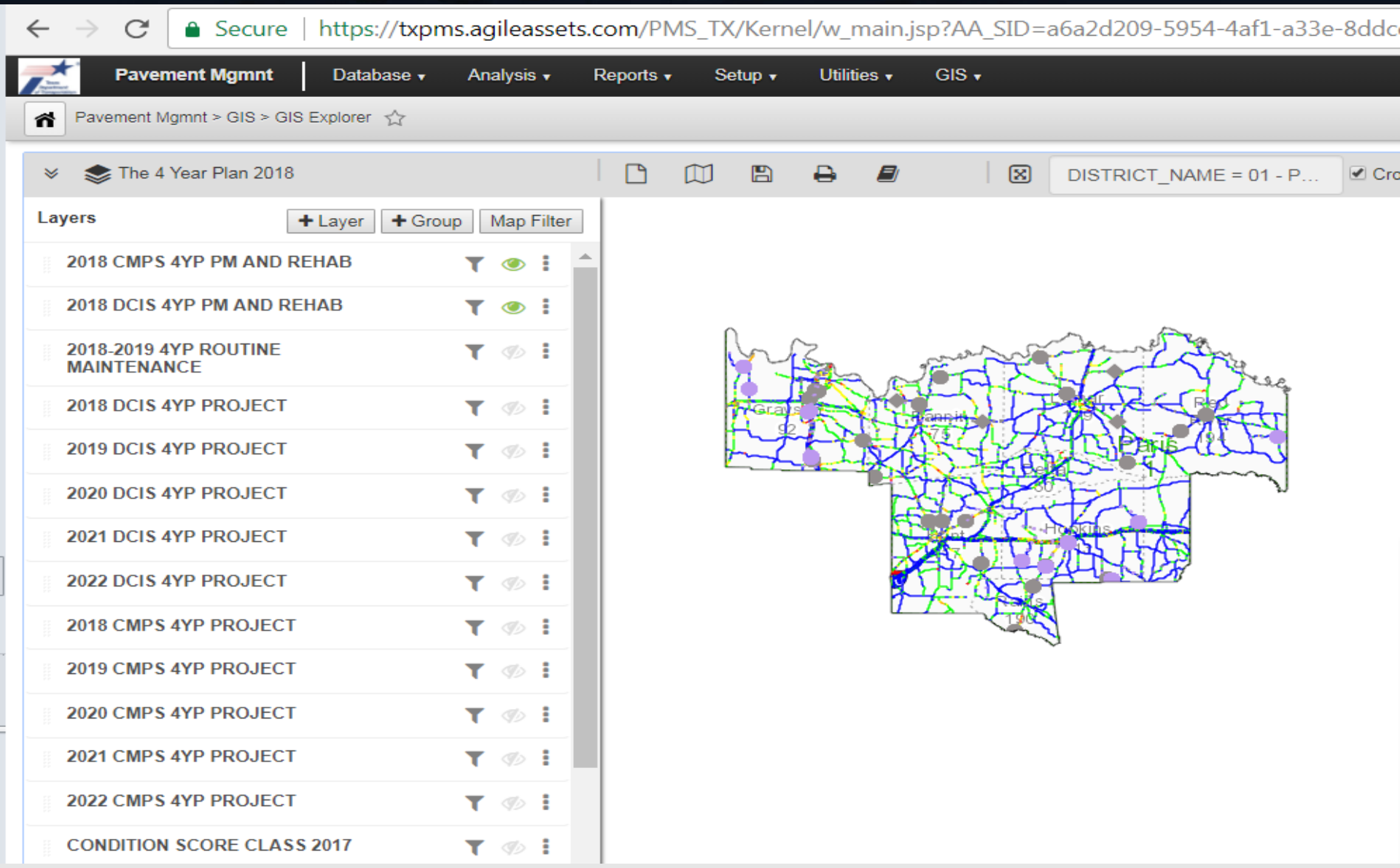
2.143	029703022		10/10/2008		OV - Overlay					

Crash Data & Wet Surface Crash Reduction Data

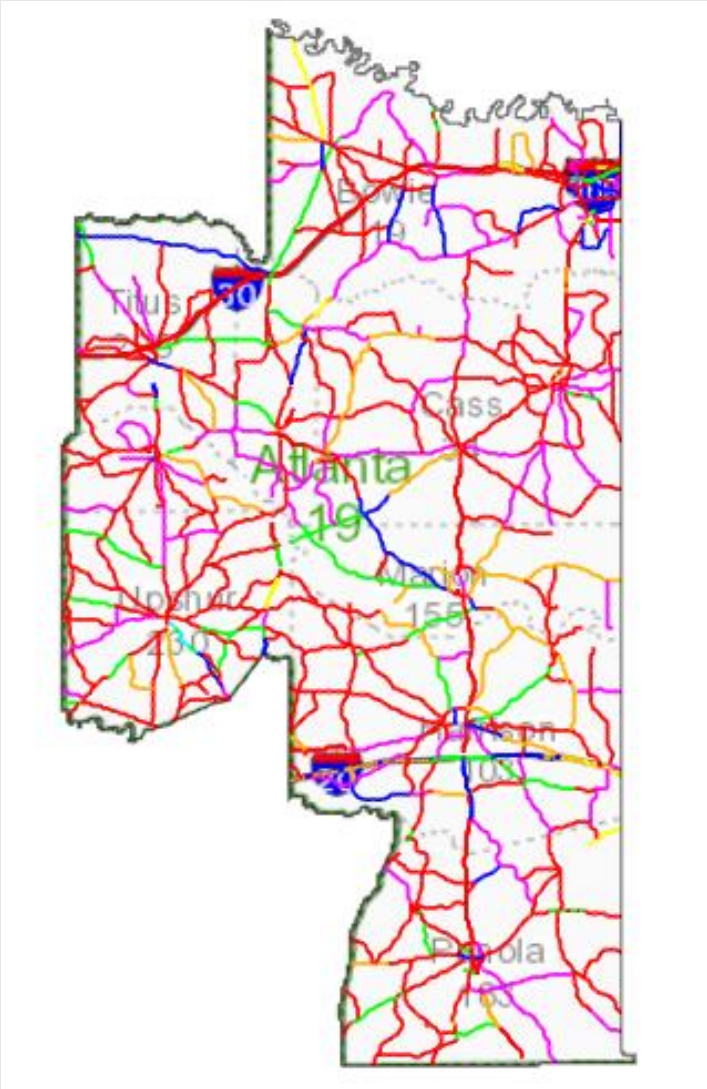


PA 4-Year Plan Maps / Pavement Management System

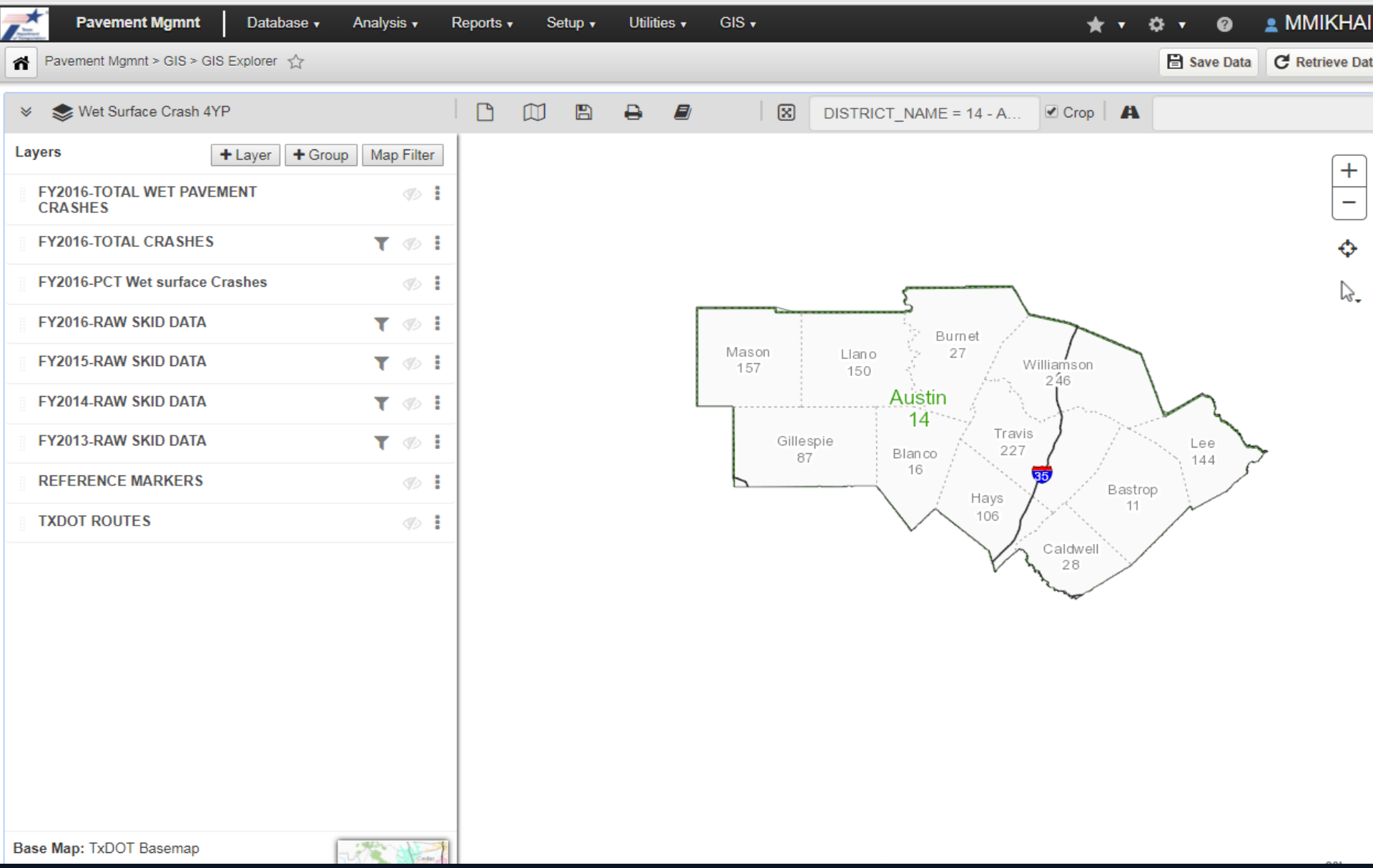


Surface Age Map

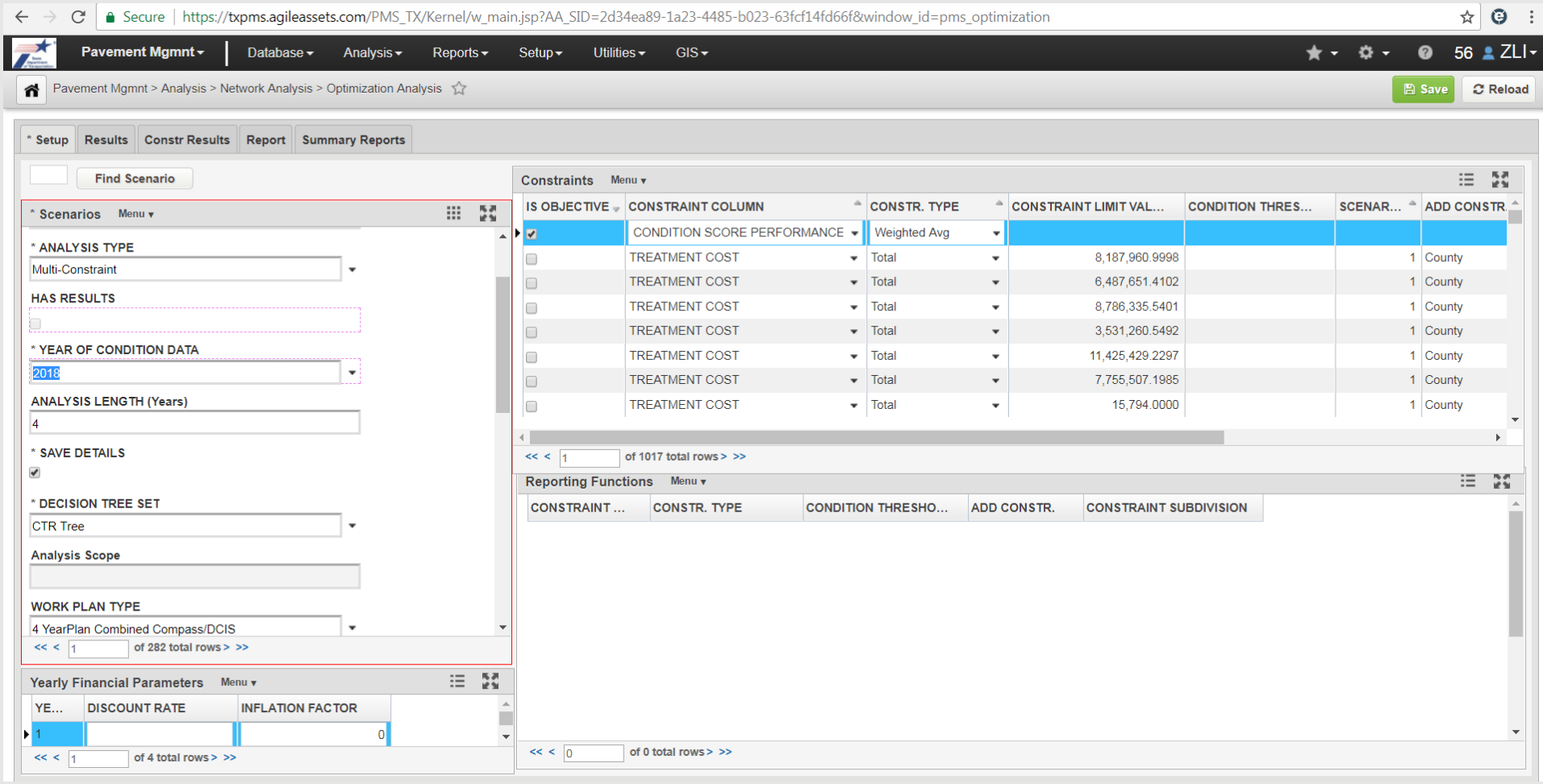
- Districts have a tool to create a surface age map.
- Surface Age map could help districts plan future projects.



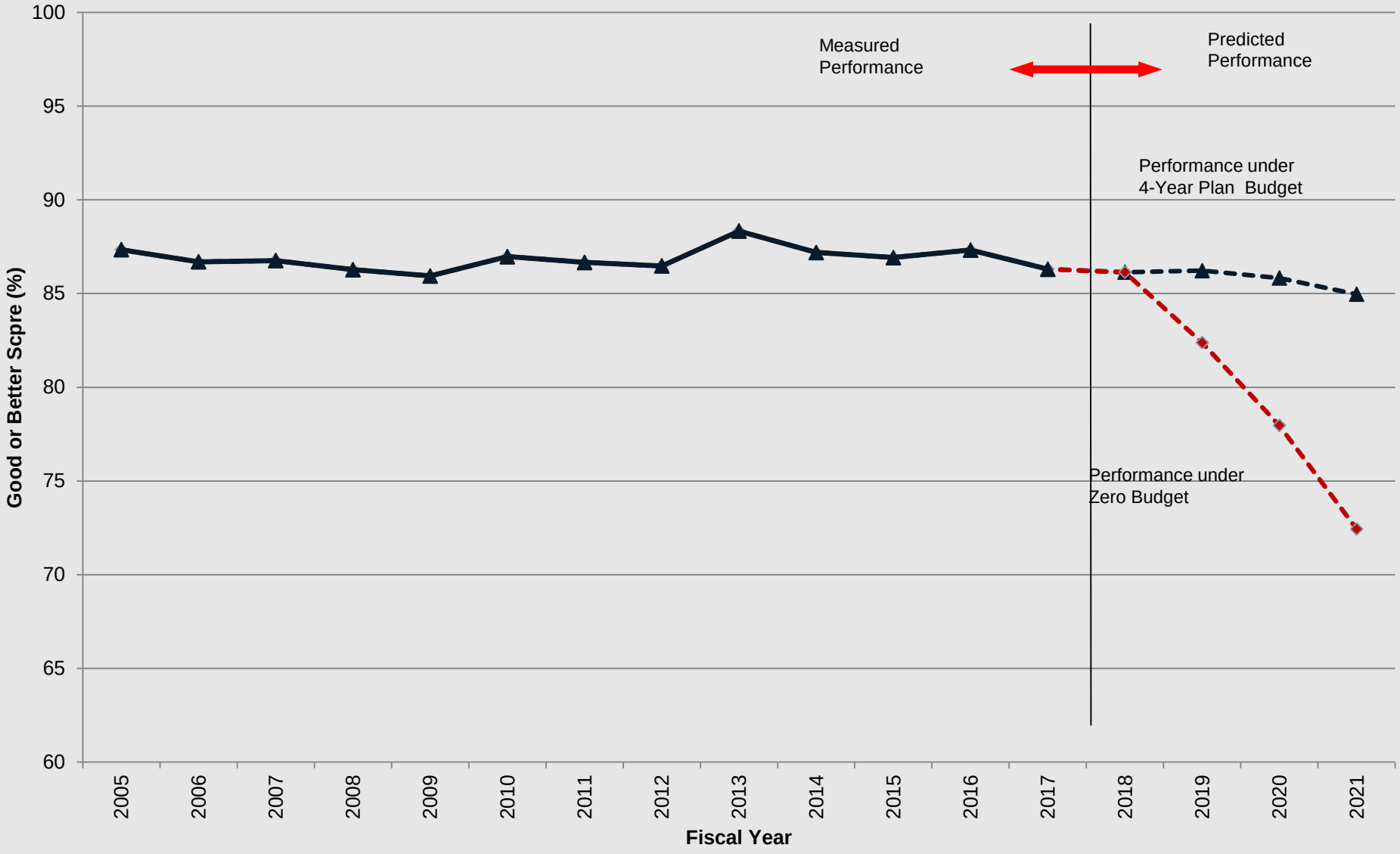
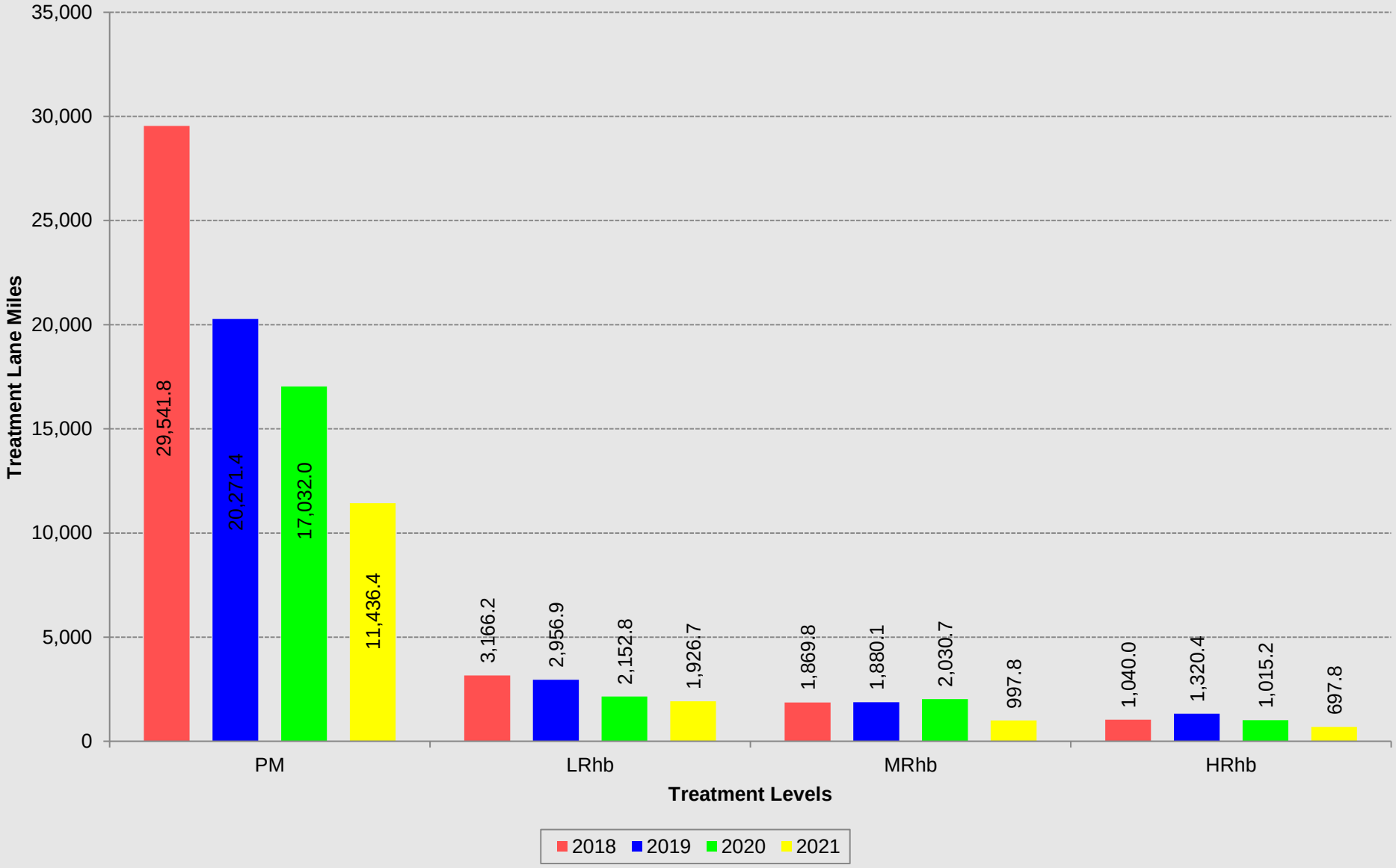
Skid Data & Wet Surface Crash Map



Optimization Analysis



Pavement Management Plan Results



Pavement Management Plan Results