GRAVEL ROADS MANAGEMENT PROGRAM

Josh Jones, E.I.T.
Traffic Engineer
WY T²/LTAP Center

Gravel Roads Management

FINAL REPORT

FHWA-WY-10/03F

State of Wyoming
Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

VOLUME 1

GRAVEL ROADS MANAGEMENT

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What is a Gravel Roads Management Program?

- Database of
  - Road Condition
  - Maintenance Cost
  - Maintenance Schedule
  - Performance of Materials

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Benefits of a Gravel Roads Management Program?

- Performance of Materials
- Cost Tracking
- Maintenance Efficiency
- Succession

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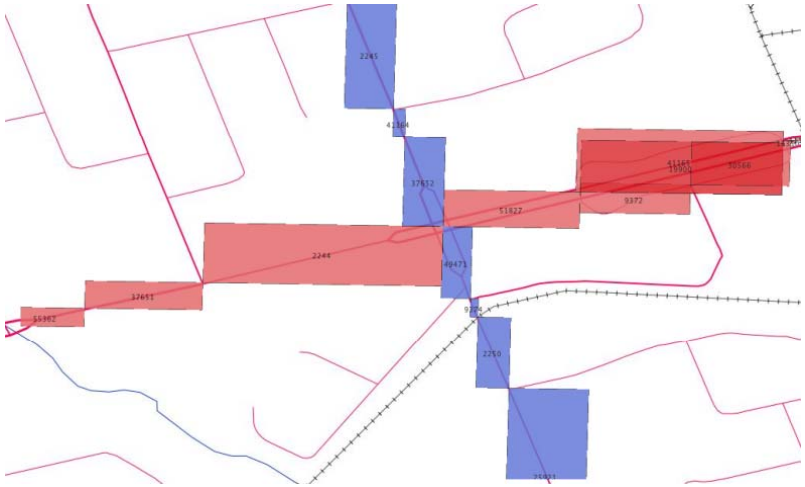
4 Fundamental Pieces of Information

- Unique Section identification
- Location
- Surface Type
- Length



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Other Useful Pieces of Information

- Road Name and Number
- Top Width
- Maintenance Intervention Level
- Functional Class
- Traffic Volumes
- Traffic Speeds
- Road Use
- Land Use
- Terrain

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Maintenance and Cost Tracking

- Blading
- Reshaping
- Drainage Maintenance
- Regraveling
- Dust Control
- Stabilization
- Isolated Repairs
- Major Work

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Wyoming LTAP Website

- http://wwweng.uwyo.edu/wyt2/

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LTAP Mission

The mission of the National Local Technical Assistance Program is to foster a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology.

Special Projects

The Wyoming T2/LTAP Center performs special projects occasionally. Information and/or reports on these projects will be available here.

Legal Establishment

Legal Establishment of County Roads - Vol. 1 (217 KB)
Legal Establishment of County Roads - Vol. 2 (111 MB)
Outline for Creating a County Road (43 KB)
Wyoming State Statutes (335 KB)

****CORRECTION TO LEGAL ESTABLISHMENT OF COUNTY ROADS****

The report entitled "Legal Establishment of County Roads in Wyoming" contains an error. Page 52, paragraph 5. A. (1) should read, "Failure to adequately maintain a county road does not vacate the road." The word "not" was inadvertently left out of this sentence in the final report. The same error occurred on page 4, paragraph 5. A. (1) of the laminated outline. We regret any confusion this error may have caused.

Gravel Roads Management

Meeting Notes and Minutes
Drafts
Email Comments
Gravel Roads Management FINAL REPORT
Gravel Roads Management PROGRAMMING GUIDE
Gravel Roads Management IMPLEMENTATION GUIDE
Ride Quality Rating Guide

Asset Management

Reports (as Word Documents)
Training Materials (as Powerpoint Presentations)

Reports and Presentations

WRRSP Paper
WRRSP Poster

ASSESSING THE IMPACTS OF OIL AND GAS DRILLING OPERATIONS ON LOCAL INFRASTRUCTURES

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Background

- The Wyoming Legislatures allocated funding for the purpose of evaluating impacts and formulating mitigation strategies associated with mineral exploration and production in southeastern Wyoming.

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Objectives

- Assess the heavy truck traffic impacts on local roads serving oil and gas drilling operations.
- This study will concentrate on paved and unpaved local roads in Goshen, Laramie, and Platte Counties.
- Cattle guards will be evaluated as part of the study.

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Background

Dead Horse Road, Johnson County, Wyoming.

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Background

- Texas DOT, a single well takes about:
  - 60 Days to complete
  - 1,365 trucks larger than a standard pick up.
  - During production lasting 3 years, 150 large trucks per month serve each well.

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Background

- In North Dakota,
  - 21,250 wells in the next 10 to 20 years.
  - Impacted Roads: Average ADT 145, 61 trucks, 26 out of the trucks are multi-units.
  - Rural collector: ADT 277, 31 trucks, 17 are multi-unit trucks.

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Background

- **Low-volume rural roads in oil-producing areas were not initially constructed to endure the impact of intense oil field truck traffic.**

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Background

- Platte, Goshen, and Laramie County roads were not designed to carry traffic volumes of the state roads.

- These 3 Counties with small populations and tax bases will be struggling to maintain their county roads.
- The grid system will result in more impact in these counties.

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Background

- Once production begins the Counties will start to see significant revenues from the oil and gas extraction.

- But while wells are being drilled there are substantial impacts to the counties roads without funding.

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Project Steps

- Implement the developed methodology in 3 Counties (Goshen, Platte, Laramie).
- Identify roads with predominantly drilling traffic.
- Collect condition data.
- Roads with inadequate surface conditions for their functional class will be recommended for improvements.

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Project Steps

- Based on the distresses on impacted roads, appropriate M&R activities will be recommended.
- Cattle guards improvements will be recommended.
- Proposed improvements will be summarized by county **(This study will not compare projects from different counties)**
- Required M&R activities will be compared on impacted versus un-impacted roads.

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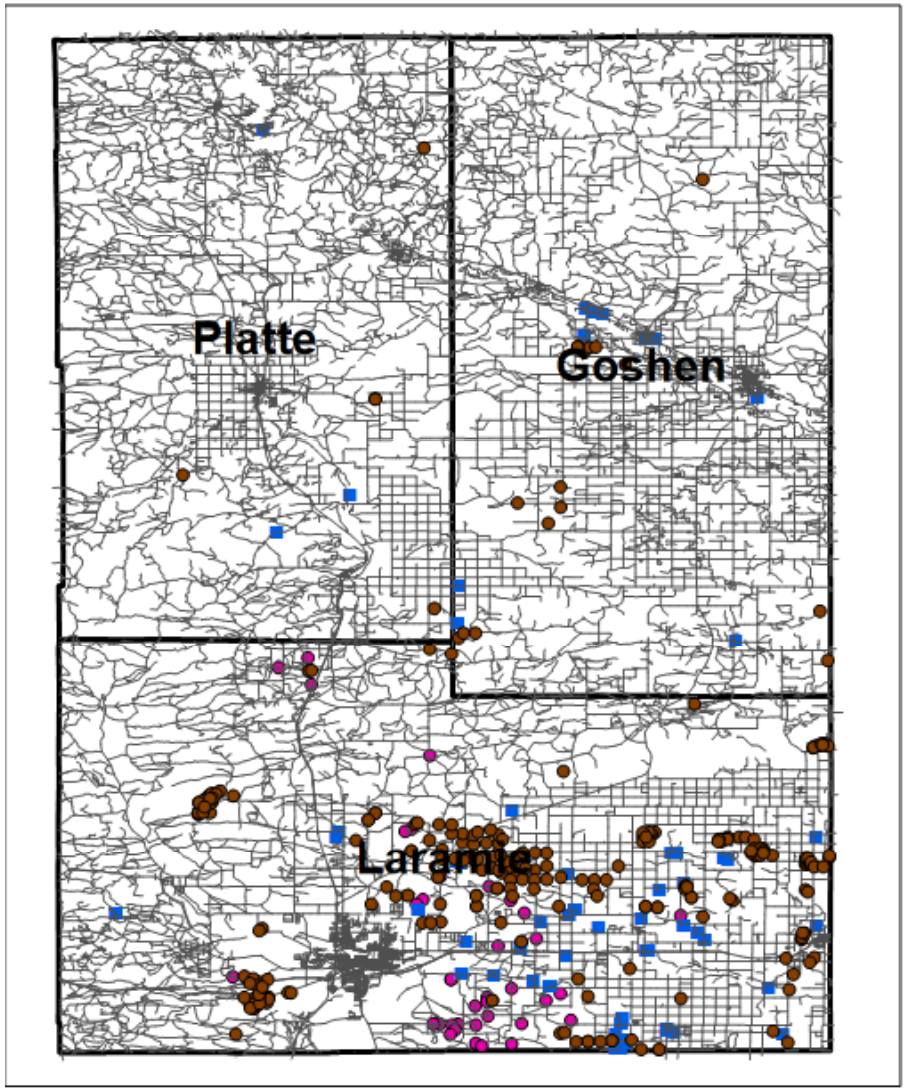
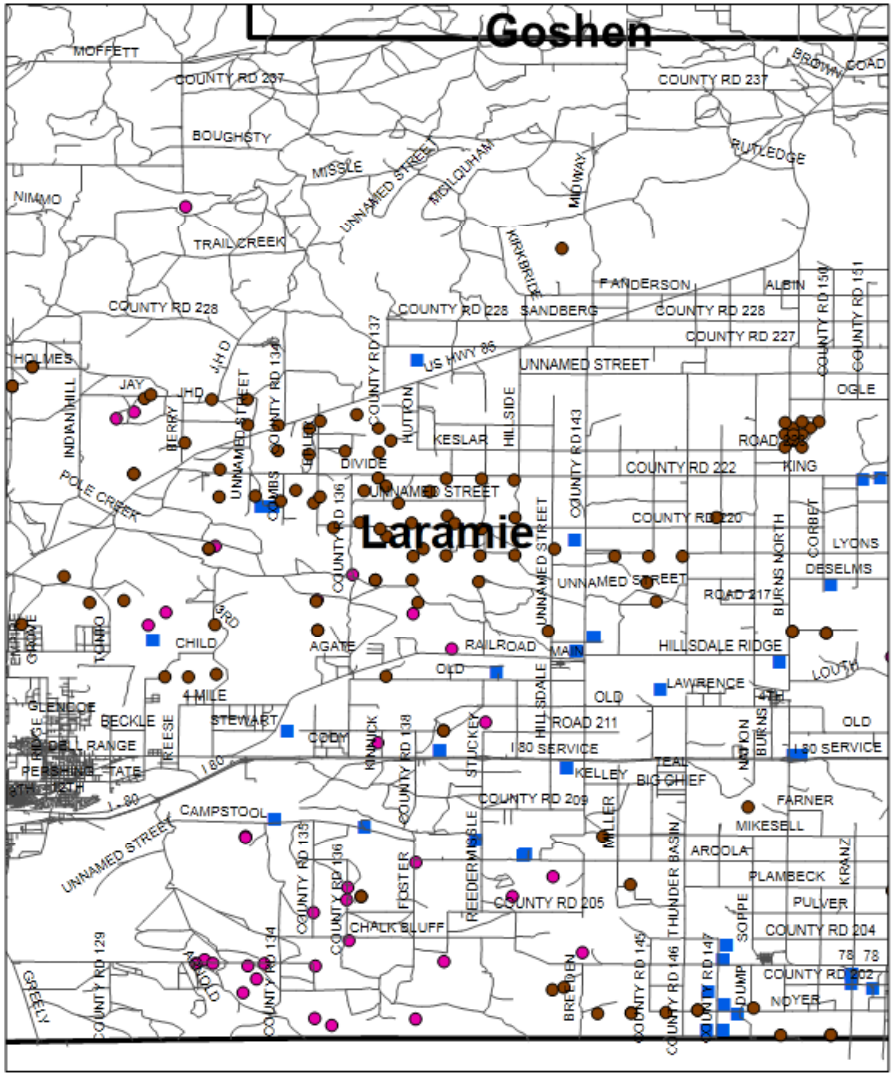
GIS Map of Existing and Proposed Well Sites



Legend

- Existing Well Sites
- Temporary Water Hual for Oil & Gas
- Plan Approved Well Sites

Central Laramie County



South Central Laramie County

- Existing Well Sites
- Temporary Water Hual for Oil & Gas
- Plan Approved Well Sites

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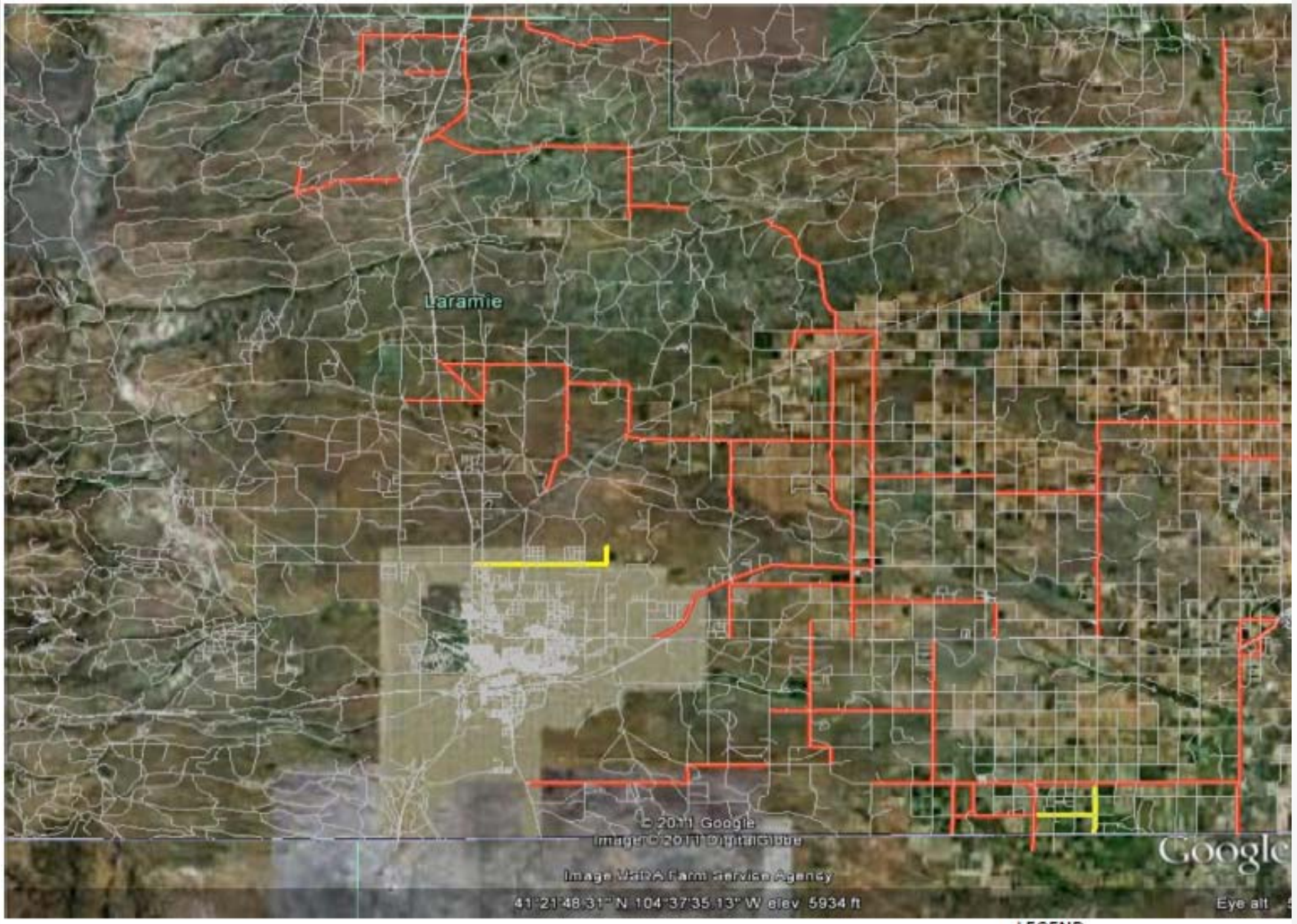


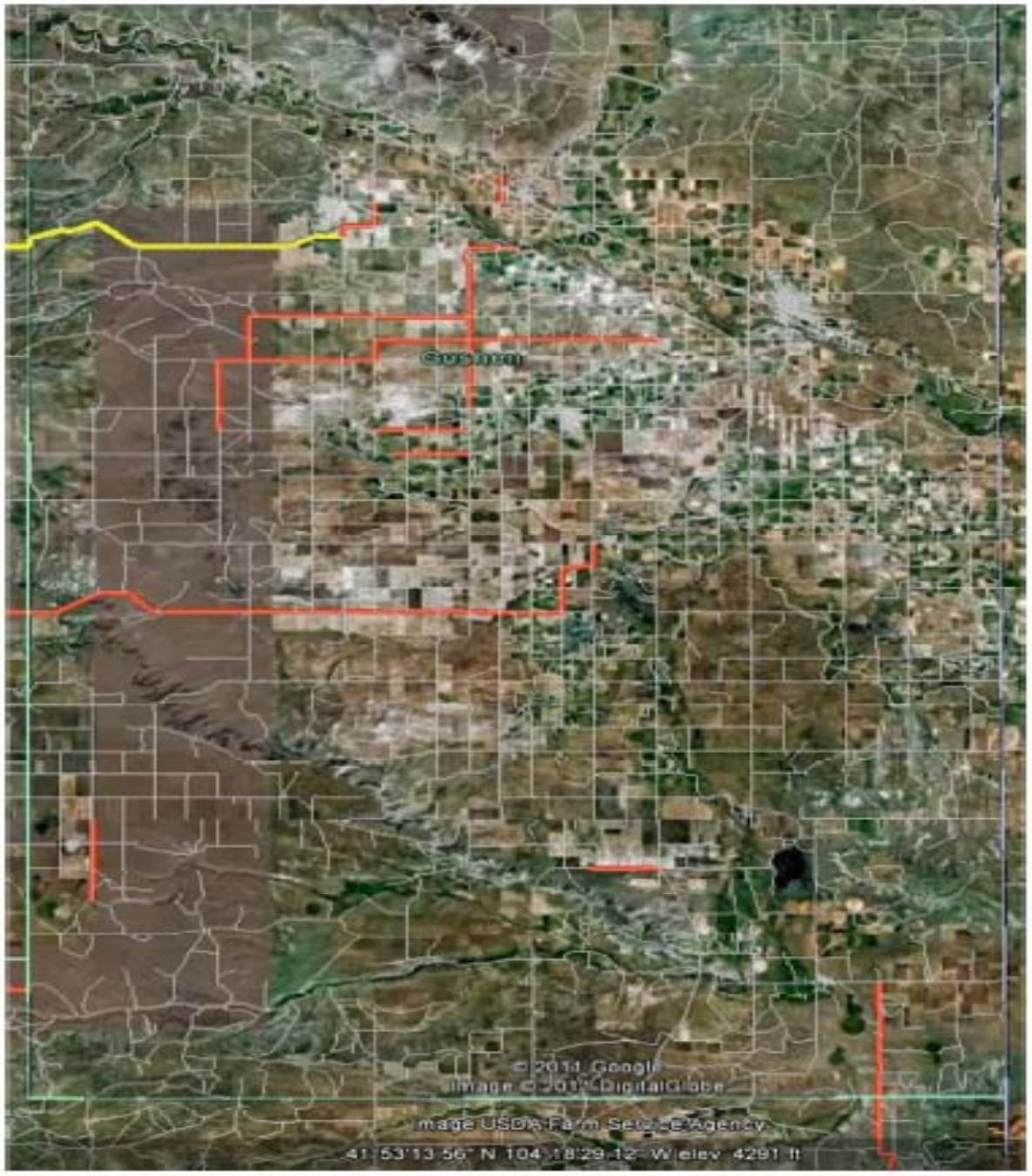
LEGEND

High impact

Low impact

Other road

Laramie County Impact Map



Goshen County Impact Map

Developing a Database

- Conduct Traffic Counts on Impacted Roads
- Evaluate Distresses on the all the roads.
- Recommend mitigation depending on the distresses of the road.
- Record Maintenance Schedules
- Evaluate Total Cost to the Counties

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TAMS

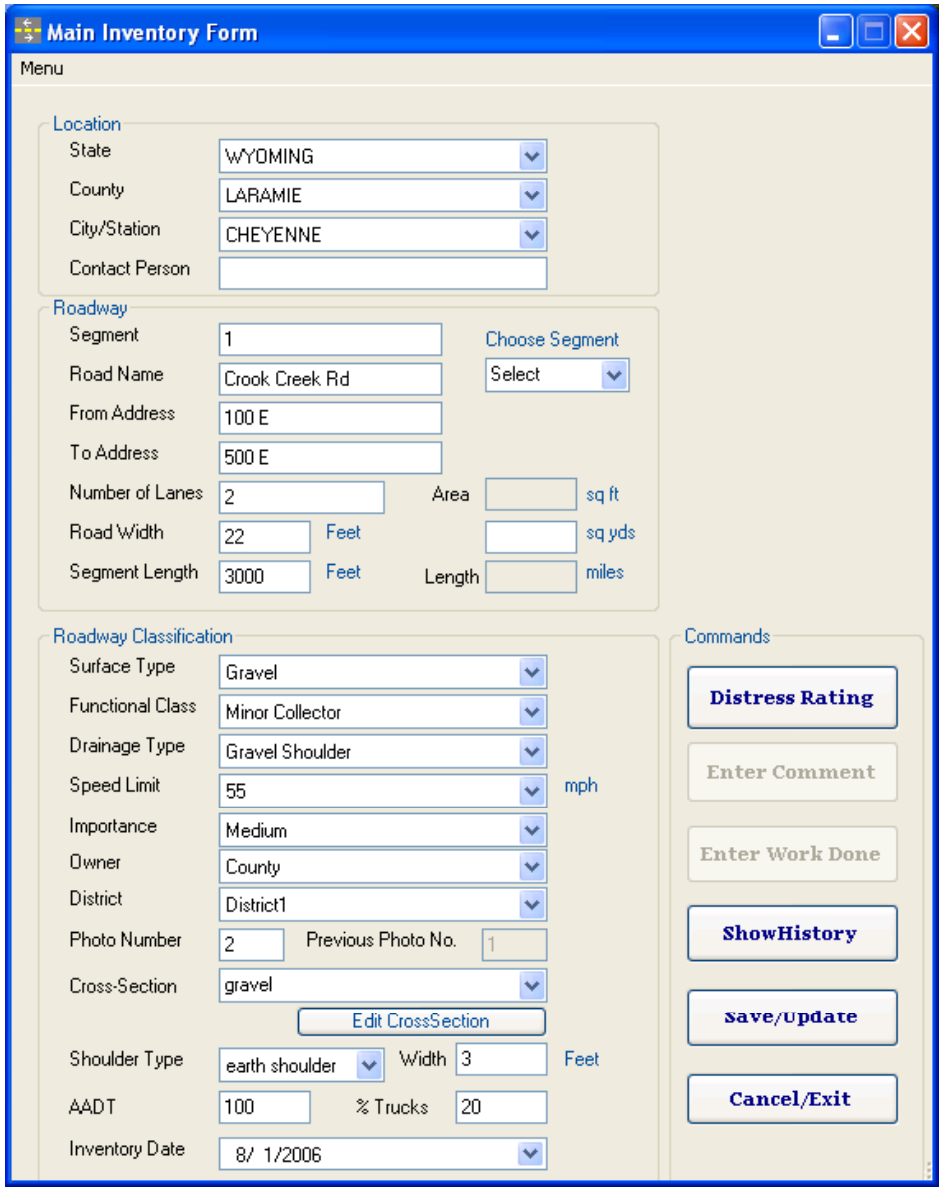
TAMS

Pavements 3.0

Transportation Asset Management System

With a point-and-click inventory system, customizable exportable maps and queries, a virtual maintenance tool to optimize use of maintenance dollars, and easy to use Work Order Tool, TAMS is designed to simplify and streamline your asset management .

TAMS



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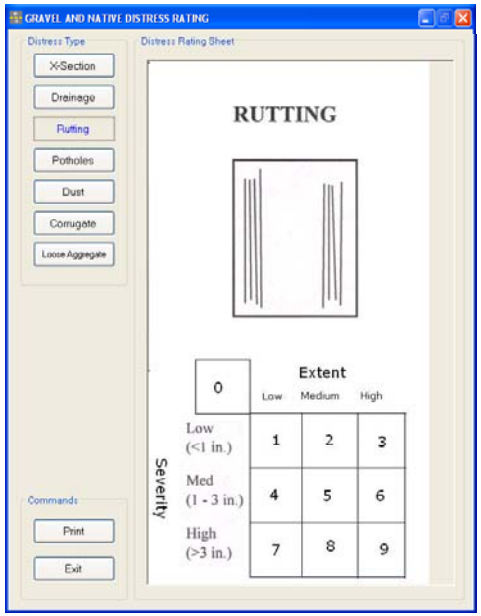
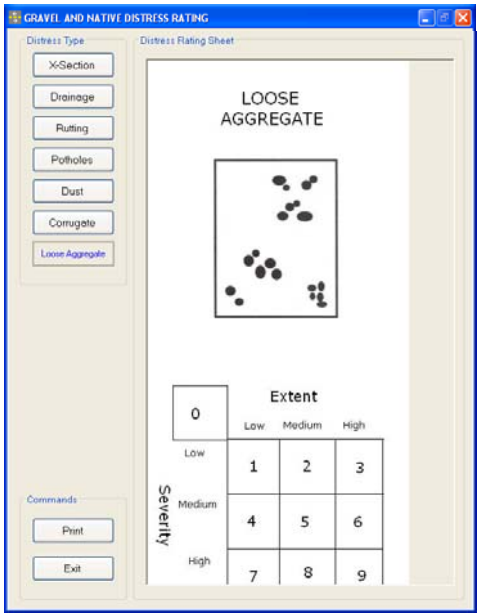
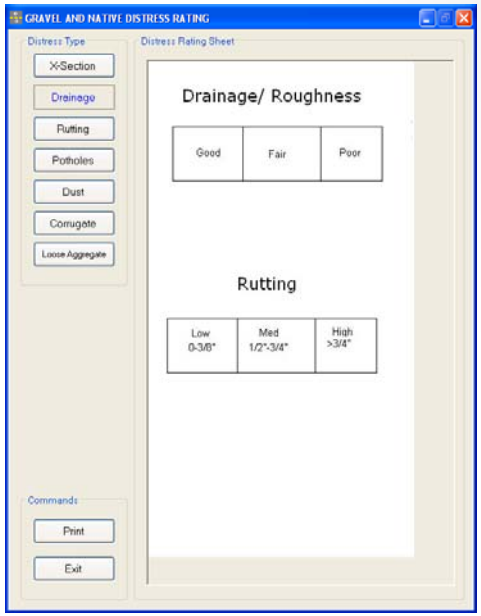
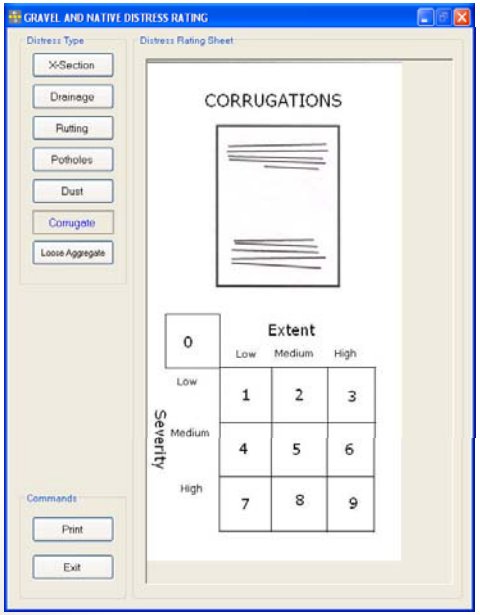
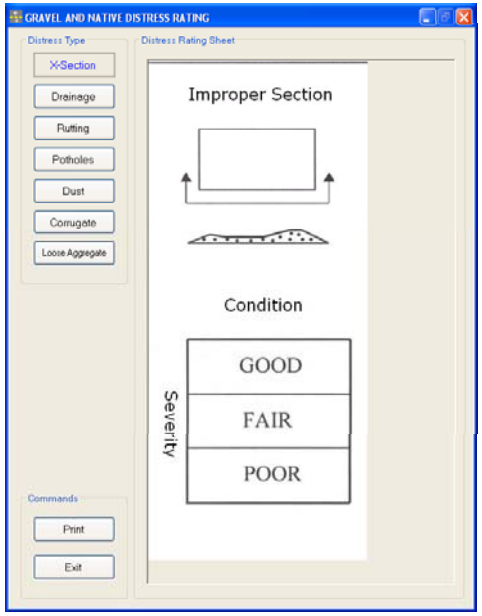
TAMS

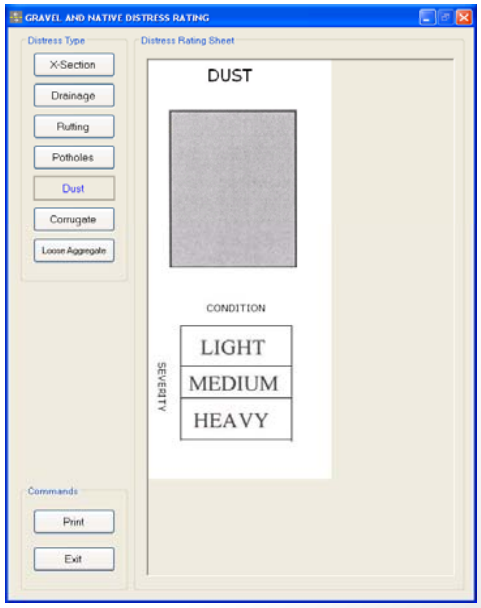

GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
RUTTING
Extent
Low
Medium
High
0
Low (<1 in.)
Med (1 - 3 in.)
High (>3 in.)
Severity
1
2
3
4
5
6
7
8
9


GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
LOOSE AGGREGATE
Extent
Low
Medium
High
0
Severity
1
2
3
4
5
6
7
8
9


GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
Drainage/ Roughness
Good
Fair
Poor
Rutting
Low 0-3/8"
Med 1/2"-3/4"
High >3/4"


GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
CORRUGATIONS
Extent
Low
Medium
High
0
Severity
1
2
3
4
5
6
7
8
9


GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
Improper Section
Condition
GOOD
FAIR
POOR
Severity


GRAVEL AND NATIVE DISTRESS RATING
Distress Type
X-Section
Drainage
Rutting
Potholes
Dust
Corrugate
Loose Aggregate
Commands
Print
Exit
Distress Rating Sheet
DUST
CONDITION
LIGHT
MEDIUM
HEAVY
SEVERITY

Ride Quality Guide

- **Ranks the road on a 1 to 10 scale.**

  1) Failed
  2) Very Poor
  3) Poor (closer to Very Poor)
  4) Poor (closer to Fair)
  5) Fair (closer to Poor)
  6) Fair (closer to Good)
  7) Good (closer to Fair)
  8) Good (closer to Very Good)
  9) Very Good
  10) Excellent

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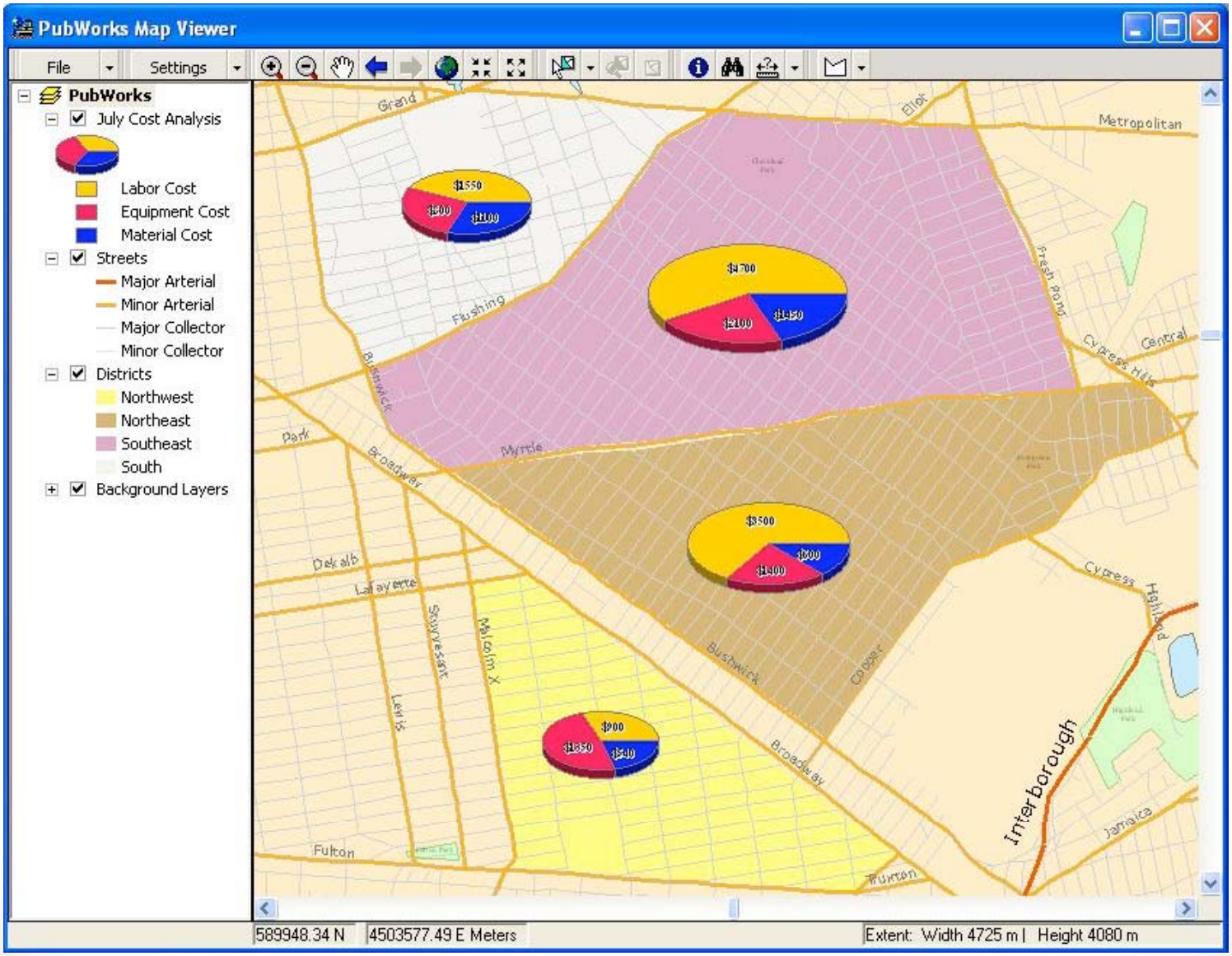
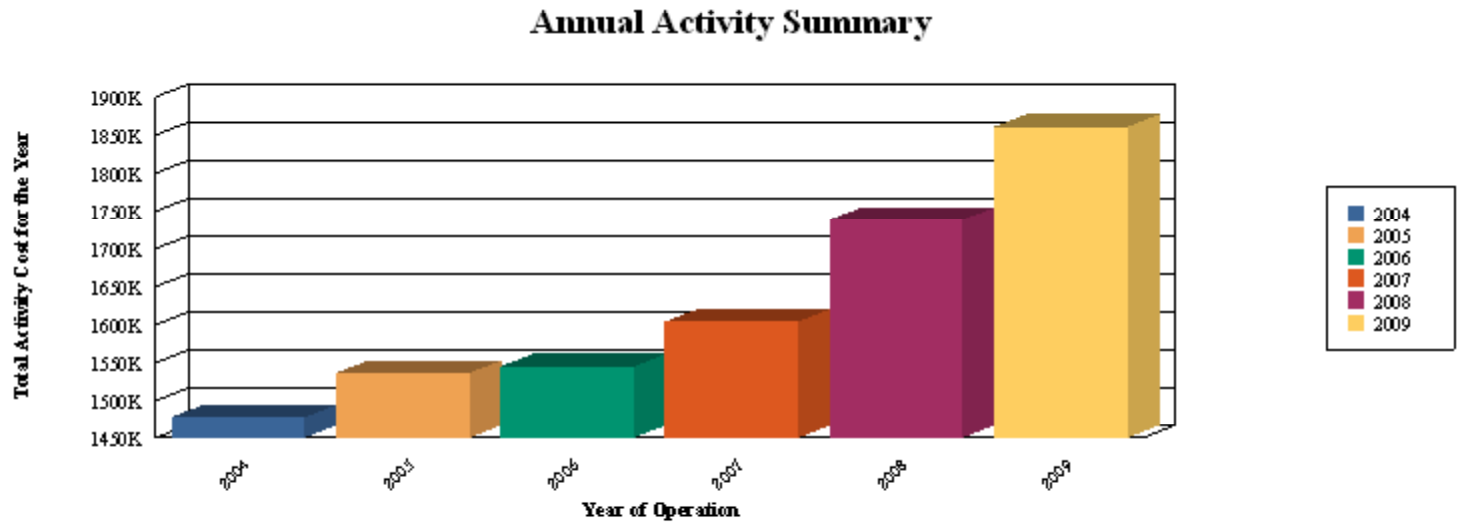
Pub Works – Asset Management



Pub Works – Asset Management

Annual Activity Summary

Year	Labor Hours	Labor Cost	Eqp Cost	Mat Cost	Con Cost	Overhead	Total Cost
2004	27,272.0	$521,022.95	$471,230.58	$397,263.36	$40,258.00	$48,379.57	$1,478,154.47
2005	27,040.0	$535,871.96	$484,236.84	$407,041.39	$55,125.00	$54,032.68	$1,536,307.87
2006	27,080.0	$555,658.05	$501,662.79	$418,343.70	$0.00	$69,232.45	$1,544,896.99
2007	27,144.0	$575,930.41	$520,337.72	$432,973.04	$0.00	$74,669.66	$1,603,910.82
2008	27,570.0	$605,670.28	$542,555.91	$464,594.64	$45,891.00	$79,793.50	$1,738,505.34
2009	27,461.0	$620,377.21	$559,338.75	$465,855.75	$125,466.00	$89,463.61	$1,860,501.32
Total	**163,567.0**	**$3,414,530.85**	**$3,079,362.60**	**$2,586,071.87**	**$266,740.00**	**$415,571.47**	**$9,762,276.80**

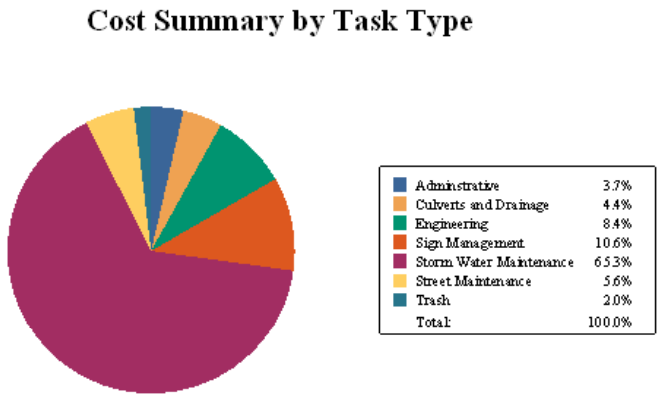


Annual Cost Summary Report

Pub Works – Asset Management

Cost Summary by Task Type

Task Type		Labor Hours	Labor Cost	Eqp Cost	Mat Cost	Con Cost	Overhead	Total Cost	%
900	Adminstrative	6,460.0	$134,290.95	$123,264.63	$92,014.99	$0.00	$15,883.01	$365,453.58	3.7%
300	Culverts and Drainage	7,725.0	$161,267.03	$145,068.42	$105,519.05	$0.00	$18,796.46	$430,650.96	4.4%
200	Engineering	9,312.0	$194,588.66	$180,277.69	$152,566.35	$266,740.00	$23,823.35	$817,996.05	8.4%
100	Sign Management	17,896.0	$374,664.22	$338,085.90	$277,089.58	$0.00	$45,587.42	$1,035,427.12	10.6%
500	Storm Water Maintenance	109,781.0	$2,288,575.01	$2,058,495.97	$1,743,848.67	$0.00	$280,816.43	$6,371,736.09	65.3%
800	Street Maintenance	9,211.0	$193,070.40	$173,065.04	$159,871.29	$0.00	$22,204.94	$548,211.68	5.6%
600	Trash	3,182.0	$68,074.59	$61,104.95	$55,161.93	$0.00	$8,459.86	$192,801.34	2.0%
Task Types:	7	**163,567.0**		**$3,079,362.60**		**$266,740.00**		**$9,762,276.80**	
			$3,414,530.85		**$2,586,071.87**		**$415,571.47**		



Task Type/Maintenance Program Cost Summary Report


THE
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