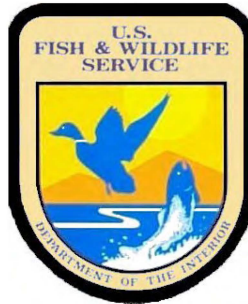


The Road Inventory of Saratoga National Fish Hatchery Saratoga, WY



Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
August 2008



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INTRODUCTION

The Transportation Equity Act for the 21st Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

- (a) Maintenance and improvements of refuge roads.
- (b) Maintenance and improvements of:
 - (1) Adjacent vehicle parking areas
 - (2) Provision for pedestrians and bicycles and
 - (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
- (c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

- (a) The comprehensive conservation plan for each refuge;
- (b) The need for access as identified through land use planning; and
- (c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads in addition to public access roads. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22nd Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

Summaries

Route Miles and Percentages by Functional Class and Condition

F. C.	Condition Rating (Based on RSL)*										TOTAL MILES
	Excellent		Good		Fair		Poor		Failed		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
I			0.04	100%							0.04
II											
III											
IV			0.13	33.3%	0.26	66.7%					0.39
V											
Totals			.17	40%	0.26	60.5%					0.43

*For a description of condition ratings for the various surface types see the Appendix.

Route Miles and Percentages by Surface Type and Condition

S. T.	Paved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (19-20)		Good (13-18)		Fair (7-12)		Poor (1-6)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
AS			0.04	13.3%	0.26	86.7%					0.3
CO											
Totals			0.04	13.3%	0.26	86.7%					0.3

S. T.	Unpaved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (8-10)		Good (5-7)		Fair (3-4)		Poor (1-2)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
GR			0.13	100%							0.13
NA											
PR											
Totals			0.13	100.0%							0.13

Square Footage (Parking Areas)

S. T.	Condition Rating										Total Square Feet
	Excellent		Good		Fair		Poor		Failed		
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	
AS			10462	48.4%			11139	51.6%			21601
CO											
GR			2370	100%							2370
NA											
PR											
Totals			12832	53.5%			11139	46.5%			23971

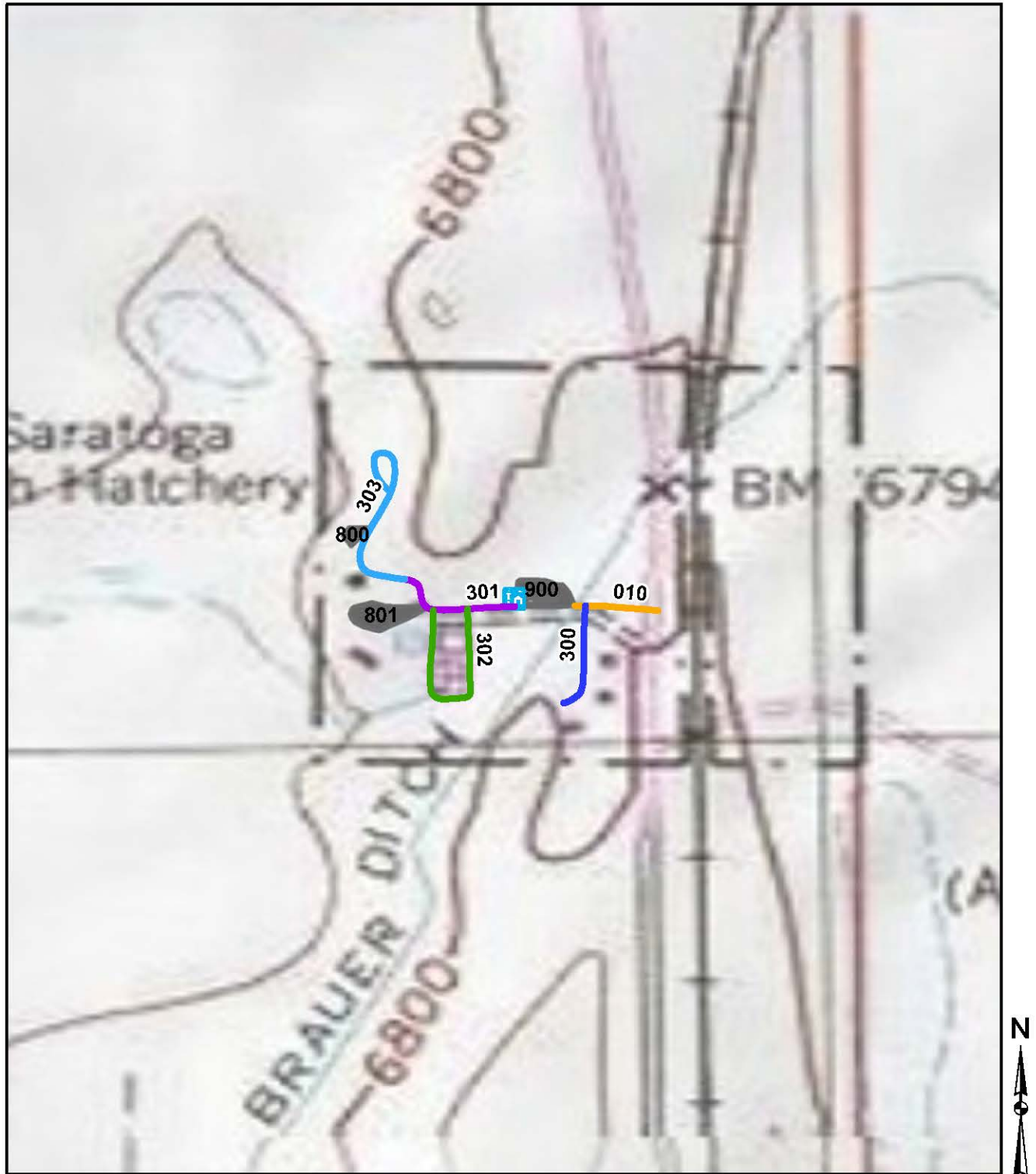
Summaries

Route Miles and Percentages by Use Type and Condition

USE TYPE	Road Condition Rating: Public/Administrative Use										TOTAL MILES	PERCENT TOTAL MILES
	Excellent		Good		Fair		Poor		Failed			
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%		
Public (FC I-III)			0.04	100%							.04	9%
Admin (FC IV-V)			0.13	33.3%	0.26	66.7%					.39	91%
Totals			.17	40%	0.26	60.5%					0.43	

USE TYPE	Parking Condition Rating										Total Square Feet	PERCENT TOTAL SF
	Excellent		Good		Fair		Poor		Failed			
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%		
Public			10462	100.0%							10462	44%
Admin			2370	18%			11139	82.5%			13509	56%
Totals			12832	53.5%			11139	46.5%			23971	

SARATOGA NATIONAL FISH HATCHERY ROUTE LOCATION MAP



ROUTE IDENTIFICATION LIST (NUMERIC)

Shading Color Key:

White = Paved Routes
Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
010	10024818	Visitor Center Road	0.04	From County Road 207 to Visitor Center Parking (Rte 900)	0.04	-	2	1
300	10024826	Quarters Road	0.07	From Visitor Center Road (Rte 010) to end of route	0.07	-	2	4
301	10024826	Facilities Access Road	0.06	From Visitor Center Parking (Rte 900) to Wetlands Overlook Road (Rte 302)	0.06	-	2	4
302	10024826	Raceway Road	0.13	From Facilities Access Road (Rte 300) to end of loop (Rte 300)	0.13	-	2	4
303	10024828	Wetlands Overlook Road	0.13	From Facilities Access Road (Rte 301) to end of route at boneyard	-	0.13	1	4

ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:

Green = Unpaved Parking Lots

Blue = Paved Parking Lots

s	ASSET NUMBER	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UN- PAVED SQFT
800	10024827	Overlook Shop Parking	2370		-	2370
801	10024827	Shop Parking	11139		11139	-
900	10024817	Visitor Center Parking	10462		10462	-

CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT

Routes added to previous inventory: One route added to previous inventory.

	Rte #	Rte Name	
1.	010	Visitor Center Road	<div>Rte Desc: From County Road 207 to Visitor Center Parking (Rte 900)</div> <div>Reason for Addition: Other</div>
2.			<div>Rte Desc:</div> <div>Reason for Addition:</div>
3.			<div>Rte Desc:</div> <div>Reason for Addition:</div>

Routes removed from previous inventory: No routes removed from previous inventory.

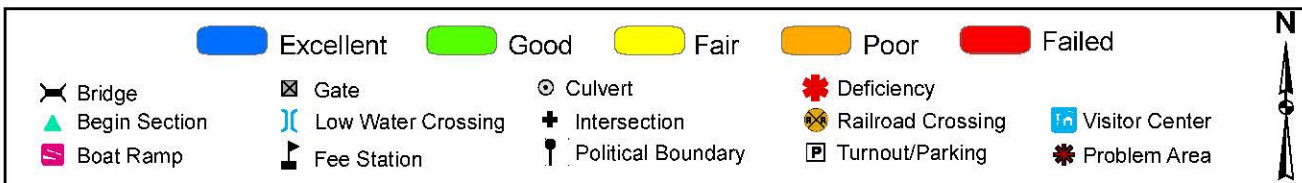
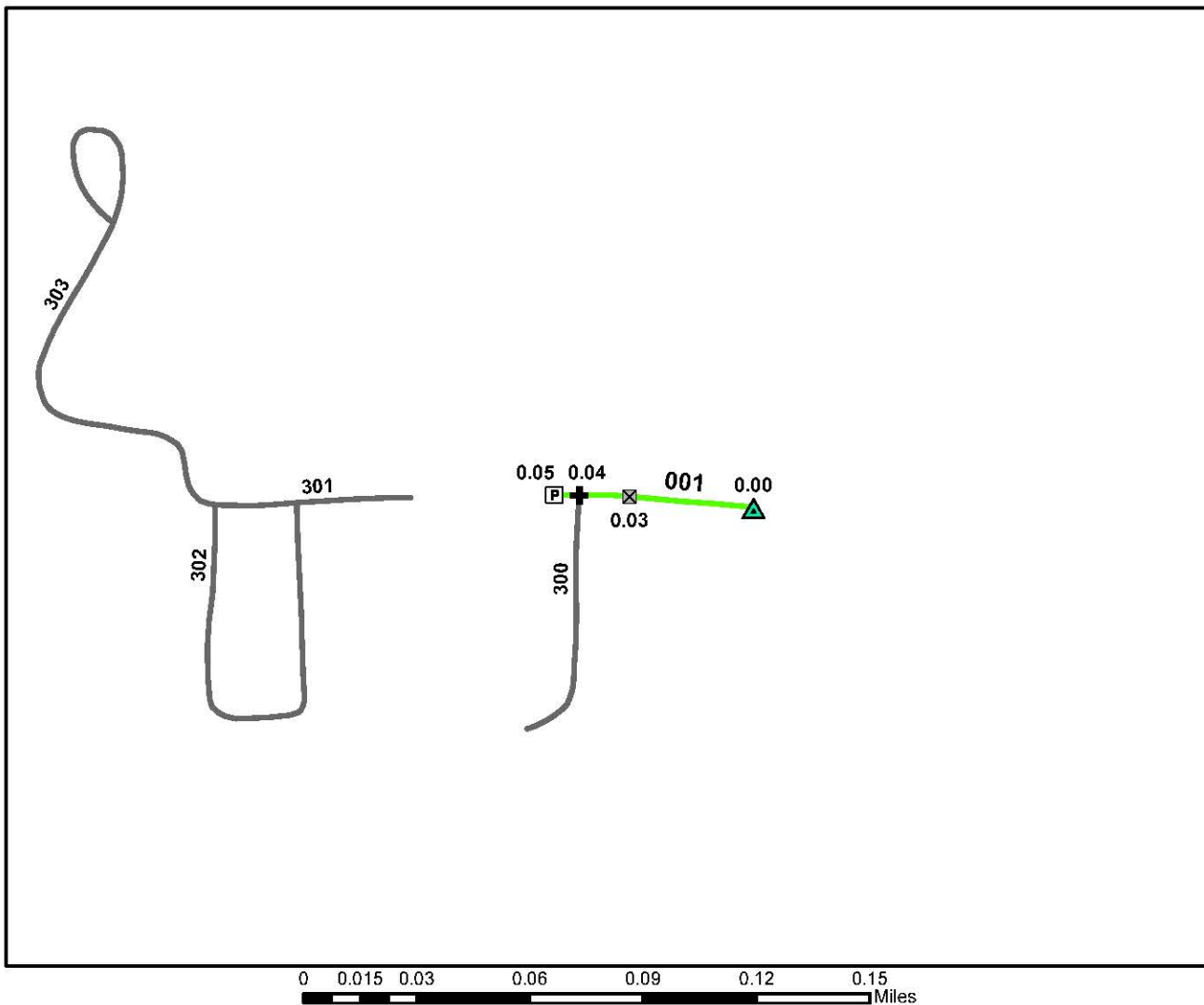
	Rte #	Rte Name	
1.			<div>Rte Desc:</div> <div>Reason for Removal:</div>
2.			<div>Rte Desc:</div> <div>Reason for Removal:</div>
3.			<div>Rte Desc:</div> <div>Reason for Removal:</div>

Routes modified from previous inventory: No routes modified from previous inventory.

	Rte #	Rte Name	
1.			<div>Rte Desc:</div> <div>Modification:</div>
2.			<div>Rte Desc:</div> <div>Modification:</div>
3.			<div>Rte Desc:</div> <div>Modification:</div>

Comments:

In the previous cycle Visitor Center Parking (Rte 900) also included road geometry which has now been separated from the parking lot, creating Visitor Center Road (Rte 010).

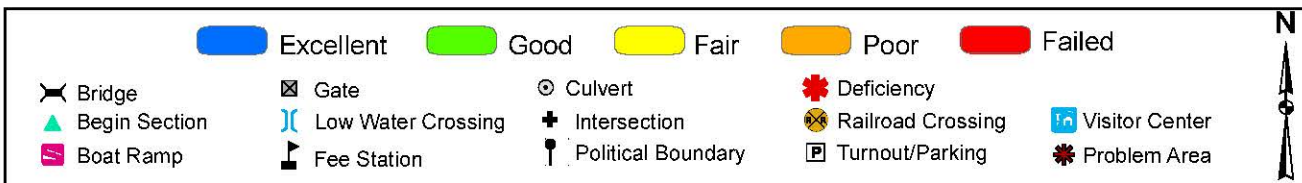
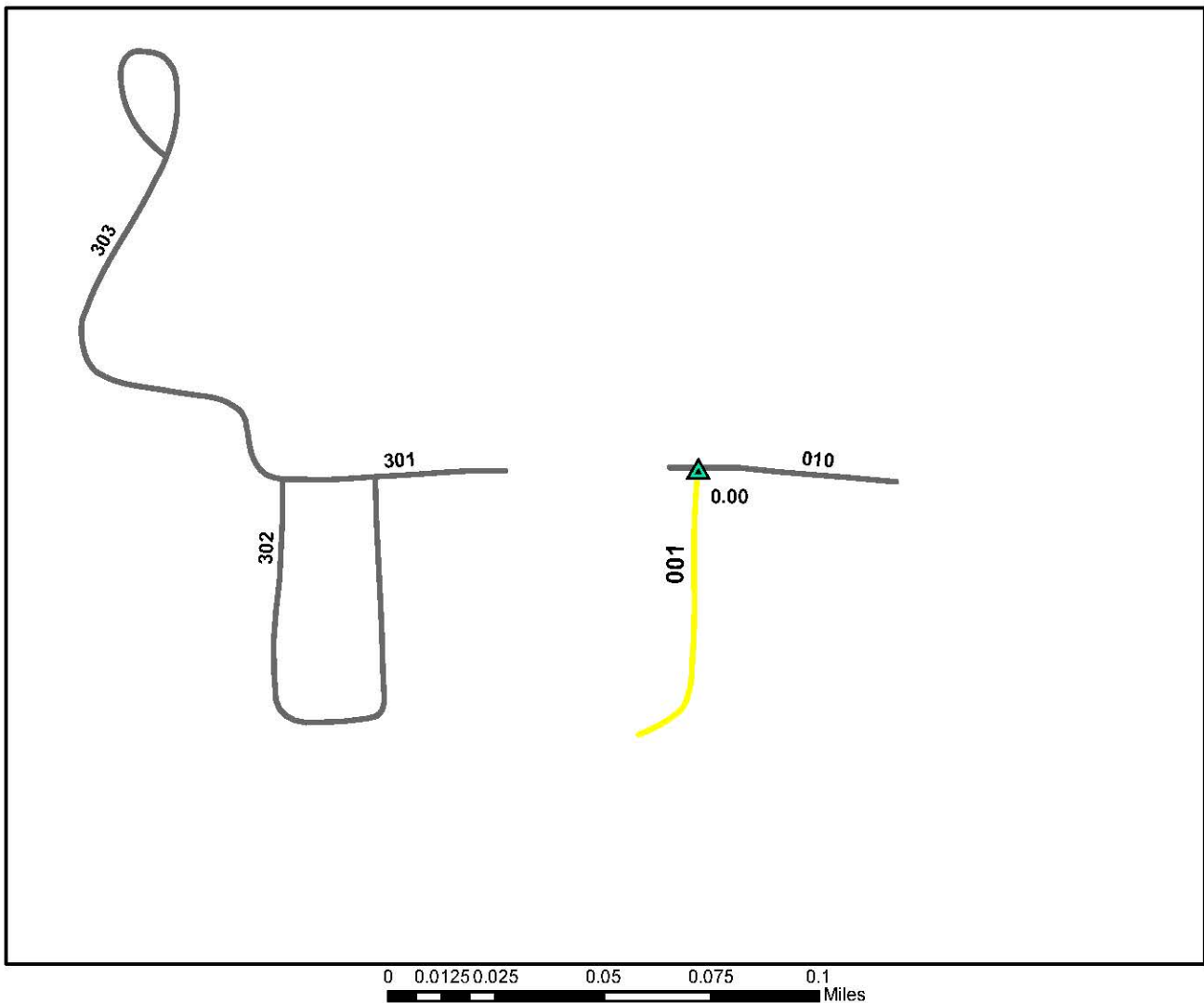


ROUTE: 010 Visitor Center Road TOTAL LENGTH: 0.04 Miles

ASSET: 10024818

RTE DESCRIPTION: From County Road 207 to Visitor Center Parking (Rte 900)

Section Number	001				
Section Length (miles)	0.04				
Inspection Date	8/18/2008				
Section Information					
Surface Type	Asphalt				
Number of Lanes	2				
Roadway Width (feet)	22				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	14				
Cost Estimate	\$700				
CRV	\$44500				

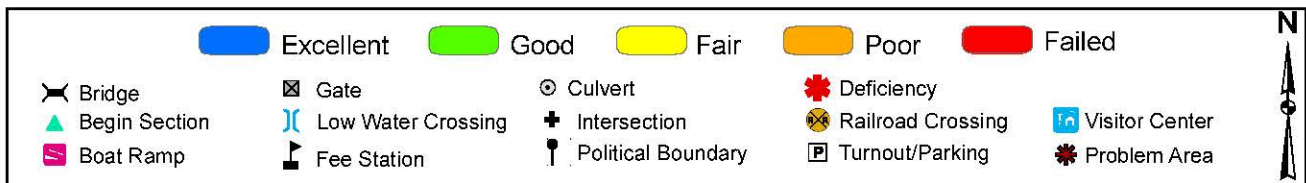
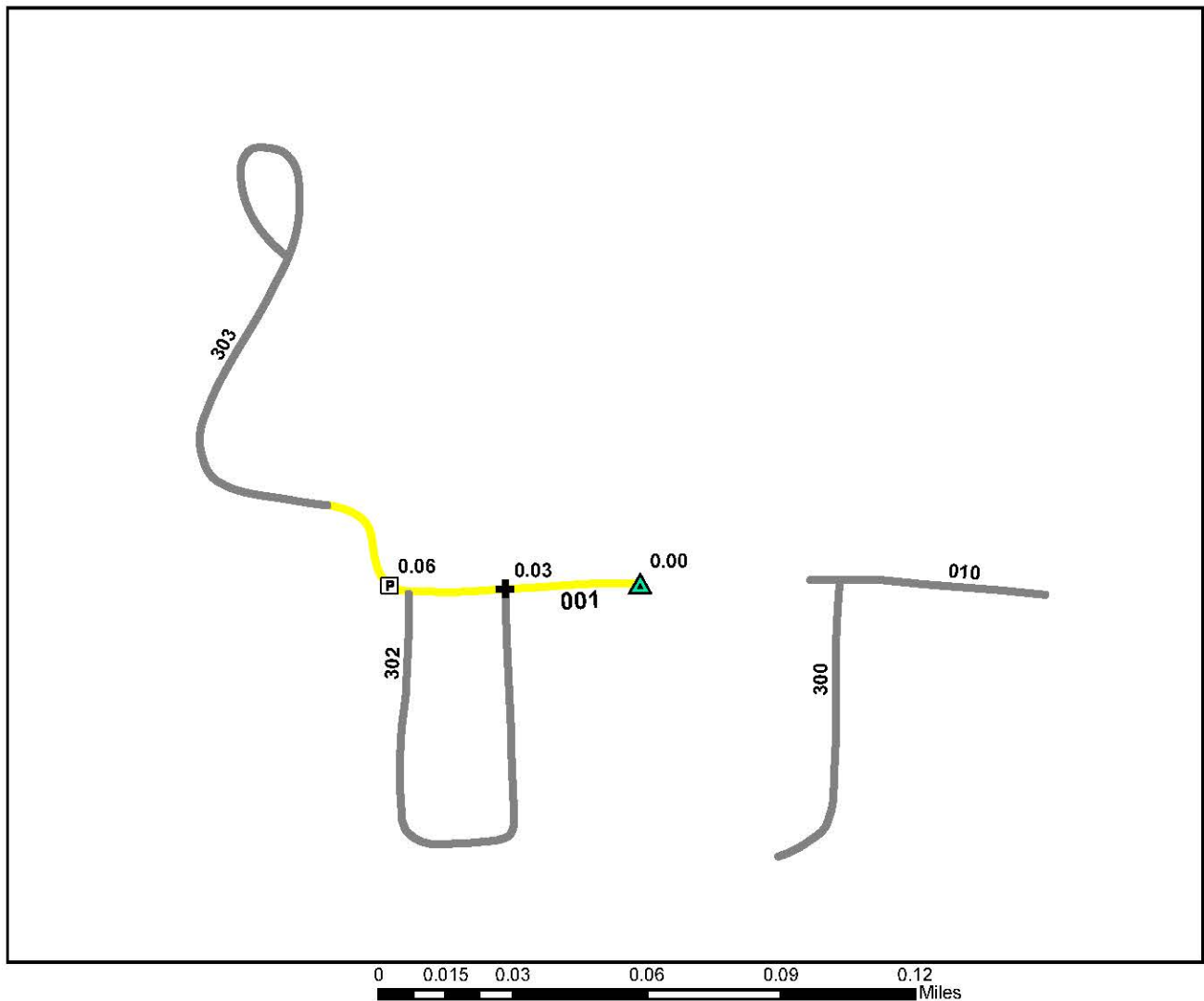


ROUTE: 300 Quarters Road TOTAL LENGTH: 0.07 Miles

ASSET: 10024826

RTE DESCRIPTION: From Visitor Center Road (Rte 010) to end of route

Section Number	001				
Section Length (miles)	0.07				
Inspection Date	8/18/2008				
Section Information					
Surface Type	Asphalt				
Number of Lanes	2				
Roadway Width (feet)	20				
Roadway Condition Information					
Condition	Fair				
Remaining Service Life (years)	10				
Cost Estimate	\$7000				
CRV	\$77800				

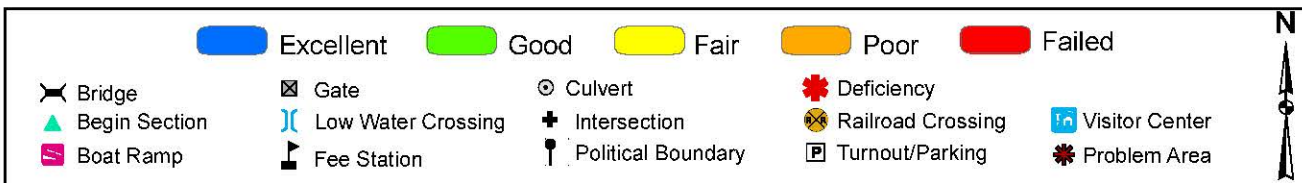
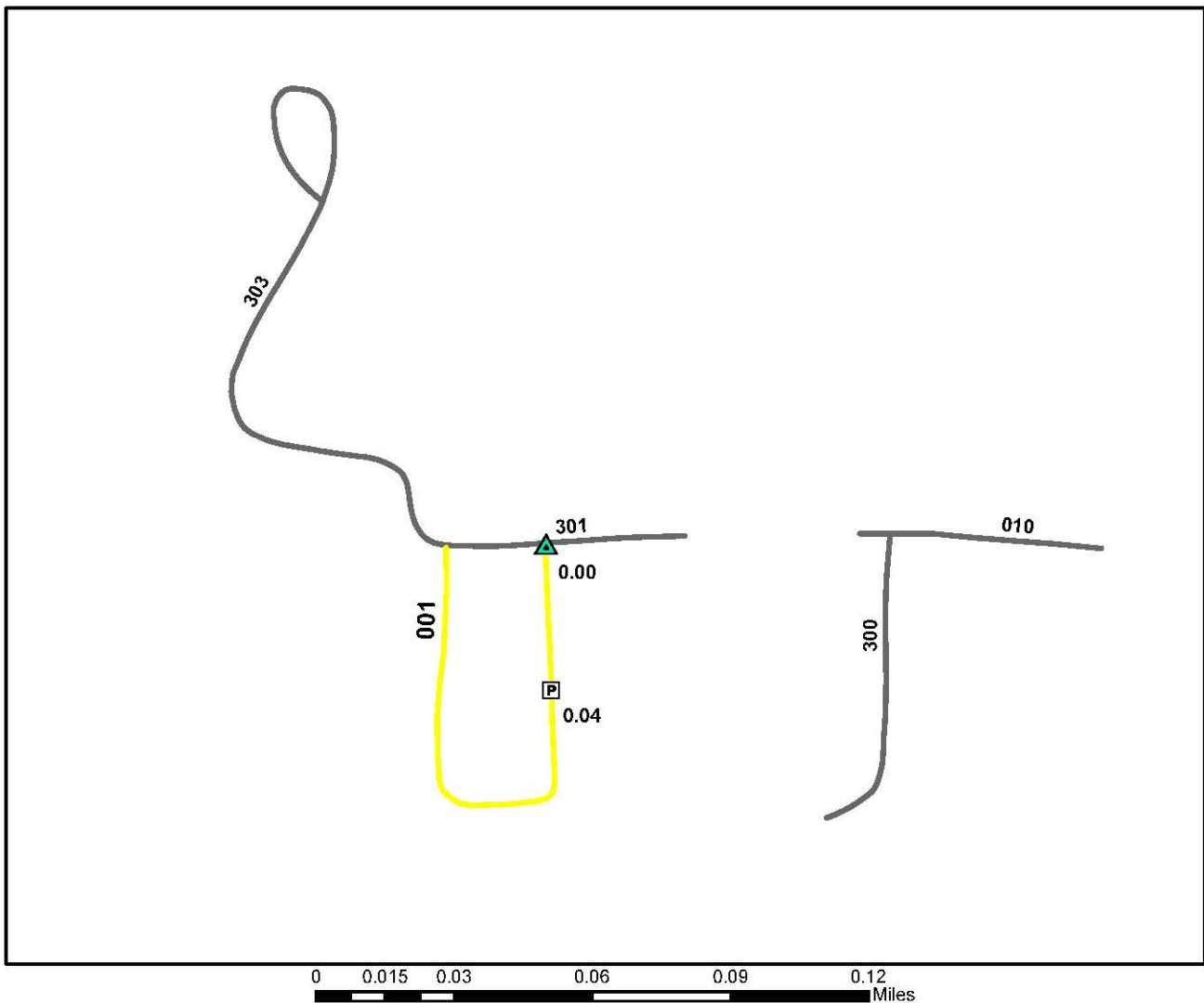


ROUTE: 301 Facilities Access Road TOTAL LENGTH: 0.06 Miles

ASSET: 10024826

RTE DESCRIPTION: From Visitor Center Parking (Rte 900) to Wetlands Overlook Road (Rte 302)

Section Number	001				
Section Length (miles)	0.06				
Inspection Date	8/18/2008				
Section Information					
Surface Type	Asphalt				
Number of Lanes	2				
Roadway Width (feet)	24				
Roadway Condition Information					
Condition	Fair				
Remaining Service Life (years)	10				
Cost Estimate	\$6000				
CRV	\$66700				

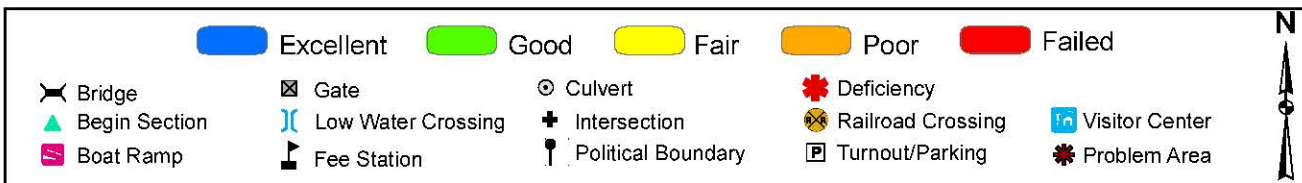
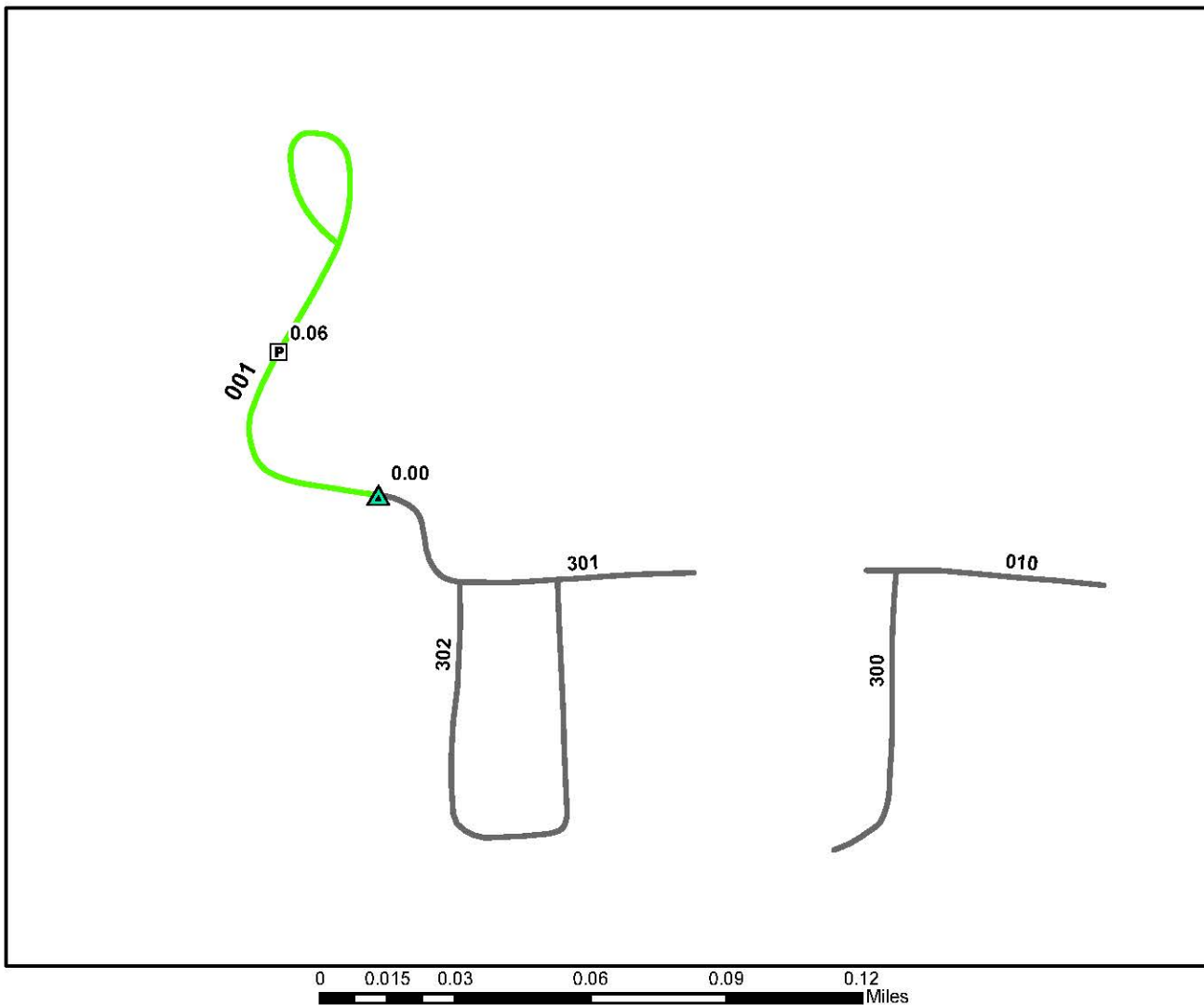


ROUTE: 302 Raceway Road TOTAL LENGTH: 0.13 Miles

ASSET: 10024826

RTE DESCRIPTION: From Facilities Access Road (Rte 300) to end of loop (Rte 300)

Section Number	001				
Section Length (miles)	0.13				
Inspection Date	8/18/2008				
Section Information					
Surface Type	Asphalt				
Number of Lanes	2				
Roadway Width (feet)	16				
Roadway Condition Information					
Condition	Fair				
Remaining Service Life (years)	10				
Cost Estimate	\$13100				
CRV	\$144500				



ROUTE: 303 Wetlands Overlook Road TOTAL LENGTH: 0.13 Miles

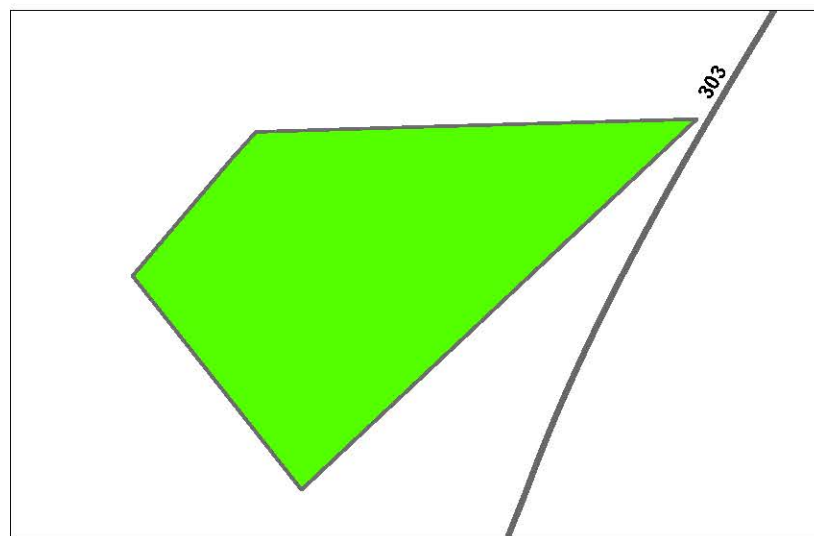
ASSET: 10024828

RTE DESCRIPTION: From Facilities Access Road (Rte 301) to end of route at boneyard

Section Number	001				
Section Length (miles)	0.13				
Inspection Date	8/18/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$200				
CRV	\$83300				

Route 800: Overlook Shop Parking

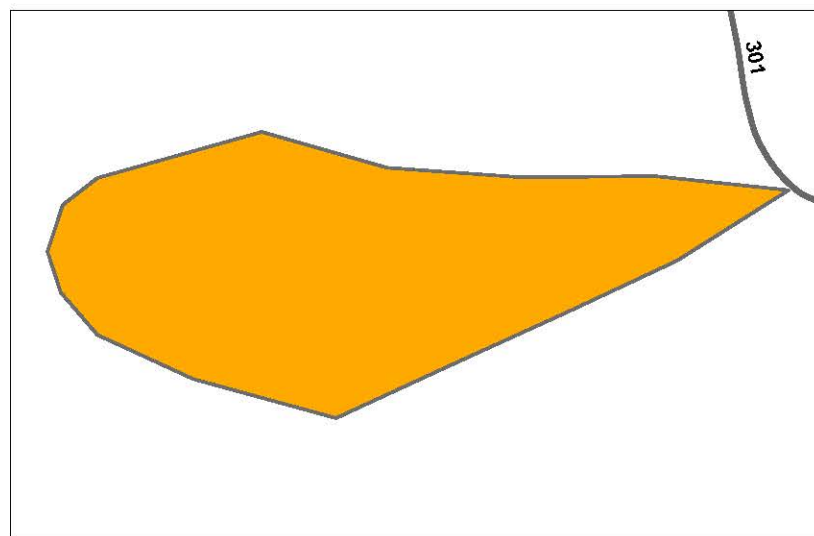
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10024827	8/18/2008	Gravel	2370	Good	\$300



105 0 10 20 Feet

Route 801: Shop Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10024827	8/18/2008	Asphalt	11139	Poor	\$49600

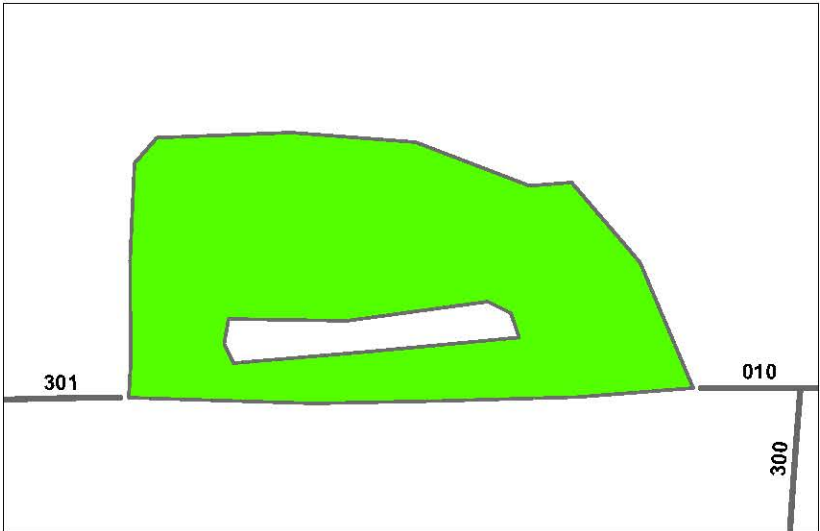
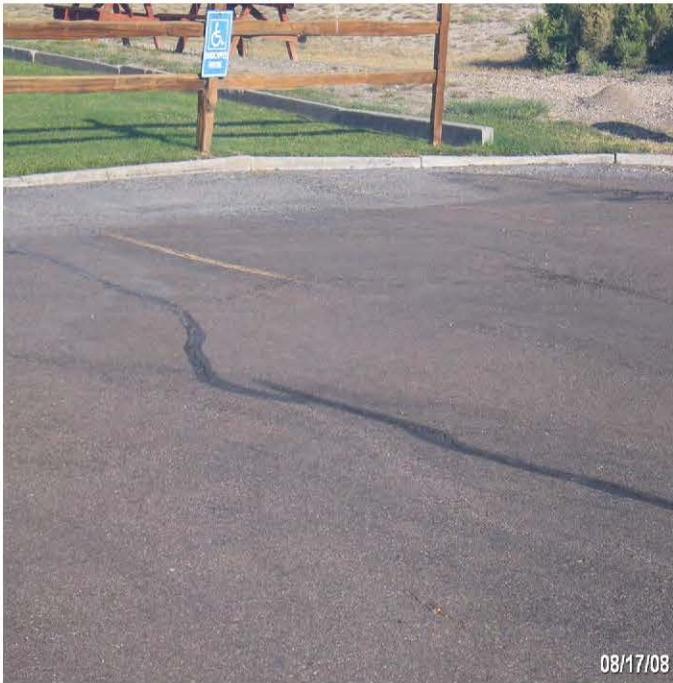


30 15 0 30 60 Feet



Route 900: Visitor Center Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10024817	8/18/2008	Asphalt	10462	Good	\$1800



Saratoga NFH Bridge Inventory					
Rte #	Milepost	NBIS #	Sufficiency Rating	Functionally Obsolete	Structurally Deficient
		No bridges to report			

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Visitor Center Road



Photo # 5019 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 300 ROUTE NAME: Quarters Road



Photo # 5021 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 301 ROUTE NAME: Facilities Access Road



Photo # 5022 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 302 ROUTE NAME: Raceway Road



Photo # 5028 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 303 ROUTE NAME: Wetlands Overlook Road



Photo # 5023 - MP 0.00 - Begin Route at Begin Section

Accident Summary

Number of Accidents Reported	Timespan of Accidents	Injuries	Fatalities
0	No Accidents Reported	0	0

APPENDIX

FWS ROAD FUNCTIONAL CLASSIFICATION	
Class I	Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99.
Class II	Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199.
Class III	Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299.
Class IV	Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399.
Class V	Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499.

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route.

DESCRIPTION OF RATING SYSTEM

Rating Data is collected on four different surface types: Asphalt, Concrete, Gravel, and Native. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking** - Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking** - Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking** - Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking** - Interconnected cracks forming large blocks.
- **Edge Cracking** - Cracks running along the edge of the pavement surface.
- **Patches** - Original surface repaired with new asphalt patch material.
- **Potholes** - Holes or depressions in the pavement.
- **Rutting** - surface depressions in the wheel paths.
- **Roughness** - Evenness of pavement for serviceability.
- **Drainage** - Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has given Remaining Service Life (RSL) values (in years) based on the rating for that particular distress. The distress with the rating resulting in the lowest RSL value is considered to be the governing distress. That value is then assigned as the RSL of the road segment.

Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** - Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** - Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** - A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** - Faulting and/or cracking localized to individual slabs.
- **Faulting** - Difference in elevation across a crack or joint.
- **Longitudinal Cracking** - Cracks in the pavement running parallel to road.

- **Transverse Cracking** - Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Gravel and Native Rating System

Data is collected on the following distresses and conditions:

- **Cross Section (Crown)** - Roadway built so that the center is higher than the shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage** - Roadside ditches and culverts to handle water flow and prevent pooling on the roadside.
- **Corrugations (Washboarding)** - Small trenches or holes developing perpendicular to the roadway.
- **Potholes** - Holes or depressions in the roadway.
- **Rutting** - Depressions running parallel with the roadway, in the wheelpaths.
- **Dust** - Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only)** - Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

Asphalt

Excellent – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

Good – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

Fair - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

Failed - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

Concrete

Excellent - New pavement. No maintenance required. RSL = 19-20 years

Good - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

Fair – Pavement has joint or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

Failed - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements)								
	FAILED	POOR		FAIR		GOOD		EXCELLENT
RSL Years	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20

Gravel and Native

Note - Native surfaces do not have a gravel layer.

Excellent - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

Good - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

Fair - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

Poor - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

Failed - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent, good, fair, poor, and failed condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces)					
	FAILED	POOR	FAIR	GOOD	EXCELLENT
RSL Years	0	1-2	3-4	5-7	8-10