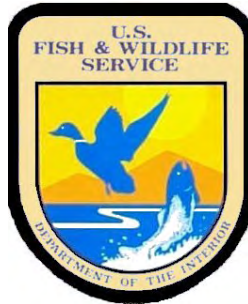


The Road Inventory of Long Lake National Wildlife Refuge Moffit, North Dakota



Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
June 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.

Long Lake NWR

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	2.00	55.2%	1.63	44.8%							3.63
II	1.03	31.6%	2.24	68.4%							3.27
III											
IV	0.28	26.1%	0.8	73.9%							1.09
V			3.82	67.5%	1.84	32.5%					5.66
Totals	3.32	24.3%	8.49	62%	1.84	13.5%					13.65

*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											
CO											
Totals											

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	3.28	43.2%	4.31	56.8%							7.59
NA	0.04	0.9%	3.24	75.2%	1.03	23.9%					4.31
PR			0.94	53.6%	0.81	46.4%					1.75
Totals	3.32	24.3%	8.49	62.2%	1.84	13.5%					13.65

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											
CO	6802	92.3%	568	7.7%							7370
GR	3287	11.9%	2677	9.7%	21653	78.4%					27617
NA			30077	33%			60852	66.9%			90929
PR											
Totals	10089	8.0%	33322	26.5%	21653	17.2%	60852	48.3%			125916

Long Lake NWR

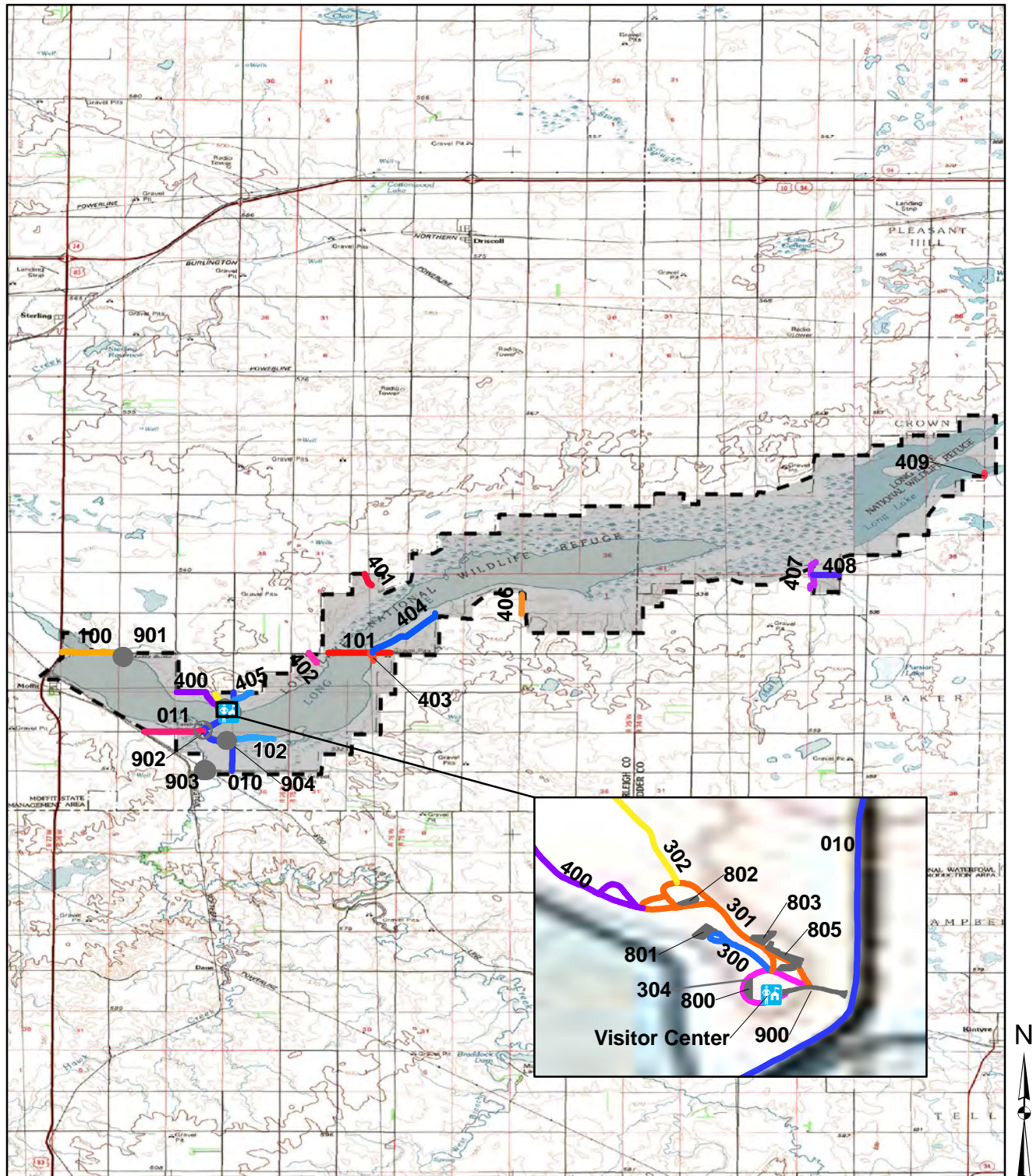
Summaries

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)	3.03	44.0%	3.86	56%							6.90	51%
Admin (FC IV-V)	0.28	4.2%	4.62	68.5%	1.84	27.3%					6.75	49%
Totals	3.32	24.3%	8.49	62%	1.84	13.5%					13.65	

USE TYPE	Parking Condition Rating										Total Square Feet	PERCENT TOTAL SF
	Excellent		Good		Fair		Poor		Failed			
	Square		Square		Square		Square		Square			
	Feet	%	Feet	%	Feet	%	Feet	%	Feet	%		
Public	6802	6.8%	25268	25.2%	12186	12.1%	56090	55.9%			100346	80%
Admin	3287	12.9%	8054	31%	9467	37.0%	4762	18.6%			25570	20%
Totals	10089	8.0%	33322	26.5%	21653	17.2%	61852	49.1%			125916	

LONG LAKE NATIONAL WILDLIFE REFUGE ROUTE LOCATION MAP



0 2.5 5 10 15 Miles

Long Lake - 62522- 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	10036600	Refuge Entrance Road	2.59	From 35th Street SE to end of route	-	2.59	2	1
011	10036570	West Access Road	1.04	From Refuge Entrance Road (Route 010) to railroad tracks	-	1.04	2	1
100	10036561	Observation Area Access Road	1.36	From U.S. HWY 83 to picnic area/overlook	-	1.36	2	2
101	10027416	C Dike Road	1.09	From 102nd Avenue SE to end of route	-	1.09	2	2
102	10036566	Unit 2 Marsh Auto Tour	0.82	From Refuge Entrance Road (Route 010) to plover nesting site	-	0.82	1	2
300	10027510	Employee Housing Road	0.09	From Refuge Entrance Road (Route 010) to end of loop at Employee Quarters Parking (Route 801)	-	0.09	1	4
301	10027510	Shop Access Road	0.35	From Headquarters Parking (Route 900) to end of loop at Shop Parking A (Route 802)	-	0.35	2	4
302	-	Radio Tower Road	0.36	From Shop Access Road (Route 301) to weather station	-	0.36	1	4
303	10045702	Duck Hospital Loop	0.16	From Refuge Entrance Road (Route 010) to end of loop at same	-	0.16	1	4
304	10036600	Headquarters/Visitor Center Loop	0.13	From Headquarters Parking (Route 900) to end of loop at same	-	0.13	2	4
400	10045700	G-7/G-8 Service Trail	1.08	From Shop Access Road (Route 301) to refuge boundary	-	1.08	1	5
401	10045699	G-4 Service Trail	0.32	From refuge boundary to windmill	-	0.32	1	5
402	10045854	G-5 Service Trail	0.28	From 102nd Avenue SE to end of distinguishable route near culvert	-	0.28	1	5
403	10046146	G-11 Service Trail	0.22	From C Dike Road (Route 101) water control structure	-	0.22	1	5
404	10045856	A-11 Service Trail	1.56	From C Dike Road (Route 101) to fence line (central southern boundary)	-	1.56	1	5
405	10045701	G-7 Pit Trail	0.37	From Refuge Entrance Road (Route 010) to pit	-	0.37	1	5
406	10045859	A-12 Service Trail	0.47	From property boundary to end of route south of Long Lake shoreline	-	0.47	1	5
407	10027486	G-19 Dam Service Trail	0.81	From property boundary to pond	-	0.81	1	5
408	10045697	G-19 Service Trail	0.45	From refuge boundary to G-19 Dam Service Trail (Route 407)	-	0.45	1	5
409	10056573	East Peninsula Access Road	0.10	From refuge boundary to impassable wet area	-	0.10	1	5

Long Lake - 62522 - ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:

Green = Unpaved Parking Lots

Blue = Paved Parking Lots

RTE #	ASSET NUMBER	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UN-PAVED SQFT
800	10045727	Headquarters Employee Parking	3287		-	3287
801	10045727	Employee Quarters Parking	5255		-	5255
802	10045733	Shop Parking A	2596		-	2596
803	10045733	Shop Parking B	4762		-	4762
804	10045733	Shop Parking C	2799		-	2799
805	10045733	Shop Parking D	6871		-	6871
900	10045695	Headquarters Entrance Parking	6802		6802	-
901	10036691	Picnic Area Parking	22023		-	22023
902	10027527	Fishing Access Parking	12186		-	12186
903	10056572	South Fishing Access Parking	56090		-	56090
904	10045696	Old Headquarters Parking	2677		-	2677
910	10045695	Headquarters Parking	568		568	-

CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT
Long Lake NWR

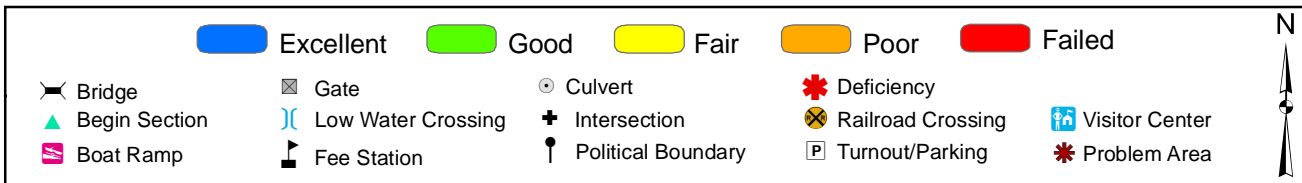
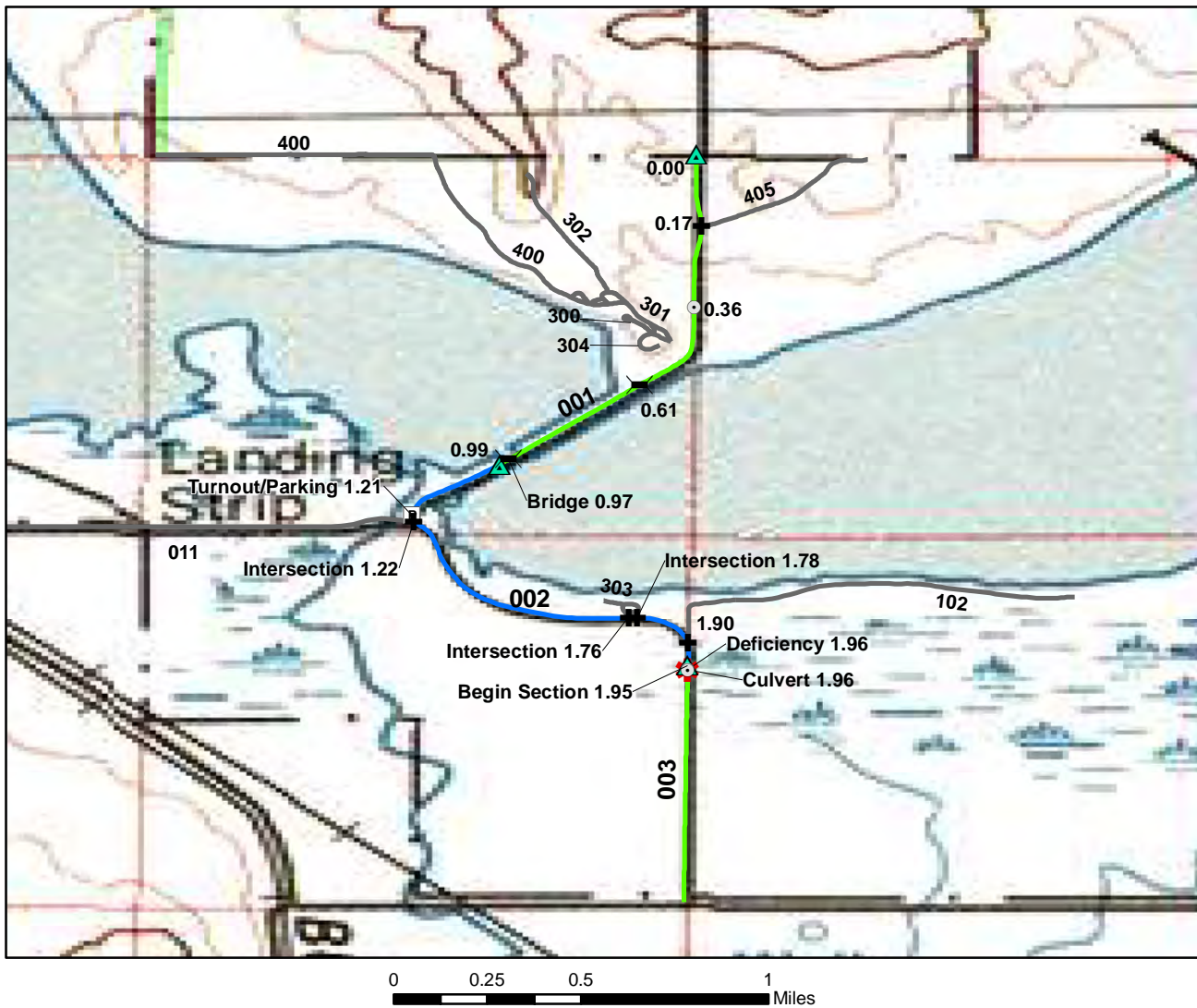
Routes added to previous inventory*:			
	Rte #	Rte Name	Reason for Addition
1.	010-003	Refuge Entrance Road	Missed during previous inventory
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Routes removed from previous inventory:			
	Rte #	Rte Name	Reason for Removal
1.	102-003	Unit 2 Marsh Tour Route	Other
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Routes modified from previous inventory:				
	Rte #	Rte Name	Type of Modification	Description of Modification
1.	010-003	Refuge Entrance Road	Geometry/Length change	1 section added during Cycle 4
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

Comments:

* All Administrative Routes (FC IV & V) are new to the inventory and are not included in this list.



ROUTE: 010 Refuge Entrance Road

TOTAL LENGTH: 2.59 Miles

ASSET: 10036600

RTE DESCRIPTION: From 35th Street SE to end of route

Section Number	001	002	003		
Section Length (miles)	0.99	0.96	0.63		
Inspection Date	6/16/2008	6/16/2008	6/16/2008		
Section Information					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	2	2	2		
Roadway Width (feet)	24	24	24		
Roadway Condition Information					
Condition	Good	Excellent	Good		
Remaining Service Life (years)	7	9	7		
Cost Estimate	\$1500	\$0	\$1000		
CRV	\$653200	\$630200	\$414800		

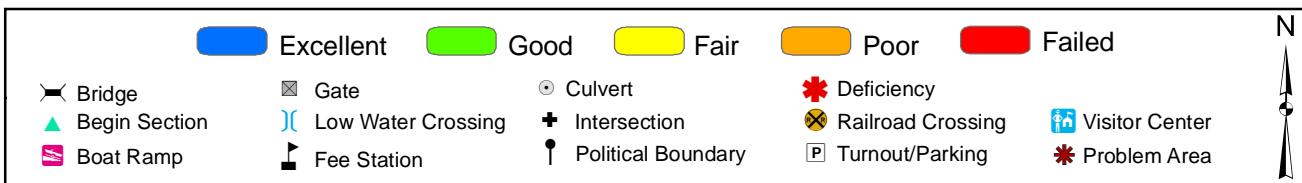


ROUTE: 011 West Access Road TOTAL LENGTH: 1.04 Miles

ASSET: 10036570

RTE DESCRIPTION: From Refuge Entrance Road (Route 010) to railroad tracks

Section Number	001				
Section Length (miles)	1.04				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	2				
Roadway Width (feet)	24				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	8				
Cost Estimate	\$0				
CRV	\$683700				

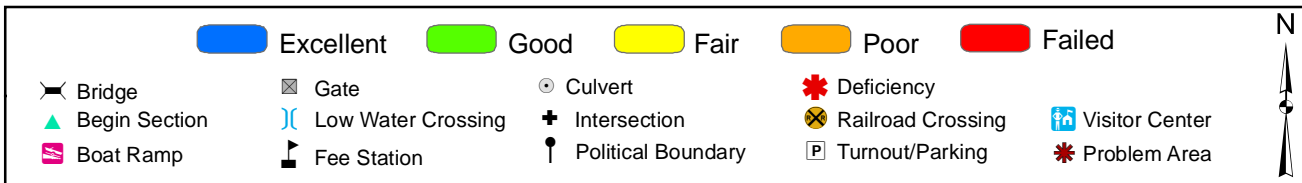


ROUTE: 100 Observation Area Access Road TOTAL LENGTH: 1.36 Miles

ASSET: 10036561

RTE DESCRIPTION: From U.S. HWY 83 to picnic area/overlook

Section Number	001	002	003		
Section Length (miles)	1.04	0.11	0.21		
Inspection Date	6/16/2008	6/16/2008	6/16/2008		
Section Information					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	2	2	1		
Roadway Width (feet)	24	24	14		
Roadway Condition Information					
Condition	Good	Good	Excellent		
Remaining Service Life (years)	7	7	10		
Cost Estimate	\$1600	\$200	\$0		
CRV	\$681800	\$69000	\$140300		



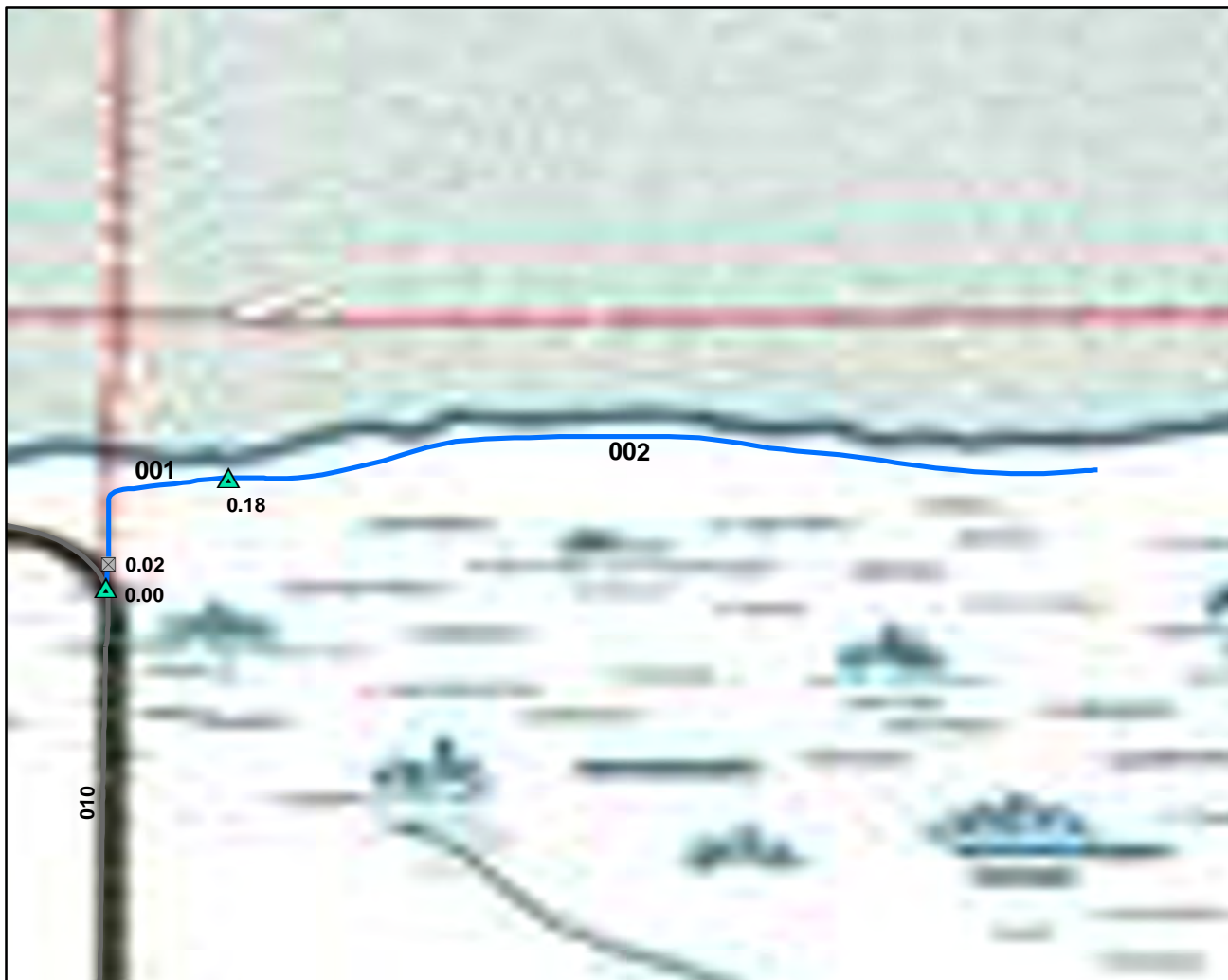
ROUTE: 101 C Dike Road

TOTAL LENGTH: 1.09 Miles

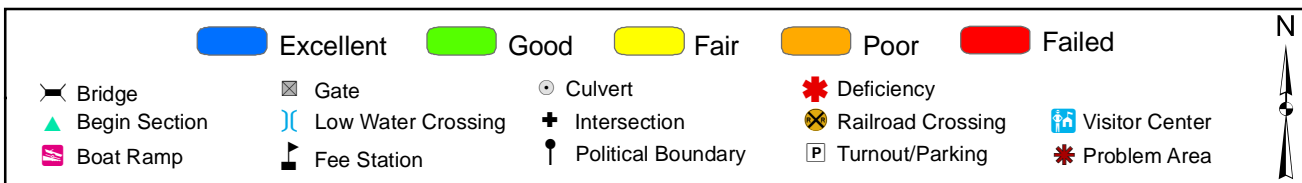
ASSET: 10027416

RTE DESCRIPTION: From 102nd Avenue SE to end of route

Section Number	001				
Section Length (miles)	1.09				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	2				
Roadway Width (feet)	24				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$1700				
CRV	\$718400				



0 0.25 0.5 Miles



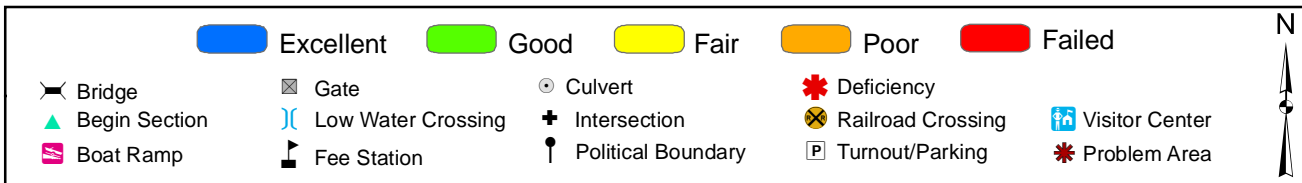
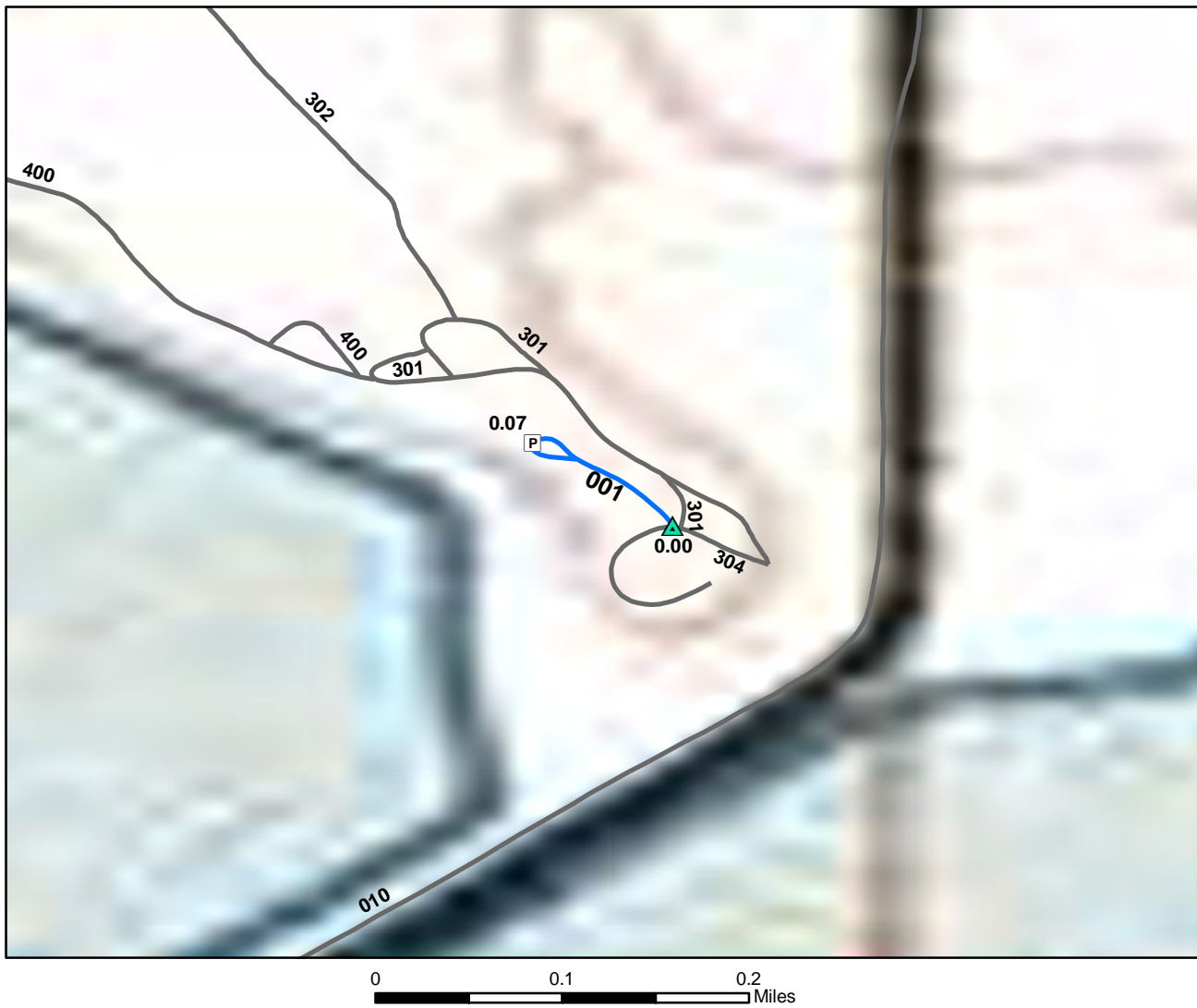
ROUTE: 102 Unit 2 Marsh Auto Tour

TOTAL LENGTH: 0.82 Miles

ASSET: 10036566

RTE DESCRIPTION: From Refuge Entrance Road (Route 010) to plover nesting site

Section Number	001	002			
Section Length (miles)	0.18	0.63			
Inspection Date	6/16/2008	6/16/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	12	12			
Roadway Condition Information					
Condition	Excellent	Excellent			
Remaining Service Life (years)	10	10			
Cost Estimate	\$0	\$0			
CRV	\$121300	\$416100			



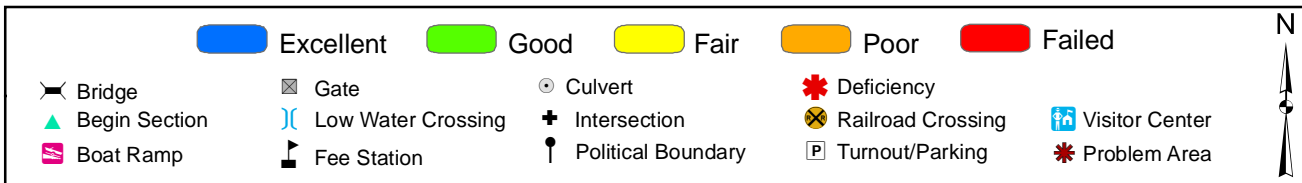
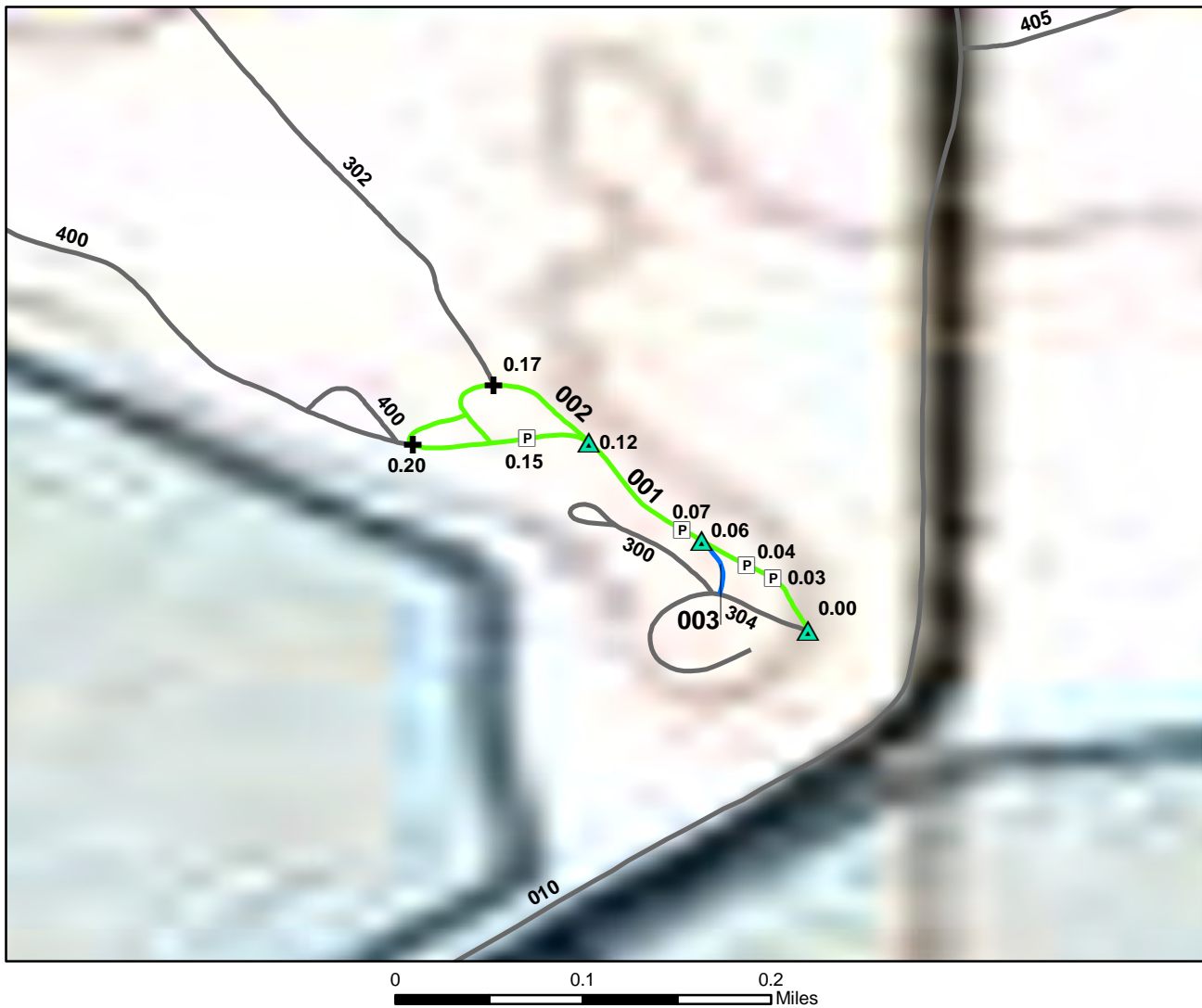
ROUTE: 300 Employee Housing Road

TOTAL LENGTH: 0.09 Miles

ASSET: 10027510

RTE DESCRIPTION: From Refuge Entrance Road (Route 010) to end of loop at Employee Quarters Parking (Route 801)

Section Number	001				
Section Length (miles)	0.09				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
Roadway Condition Information					
Condition	Excellent				
Remaining Service Life (years)	8				
Cost Estimate	\$0				
CRV	\$61700				



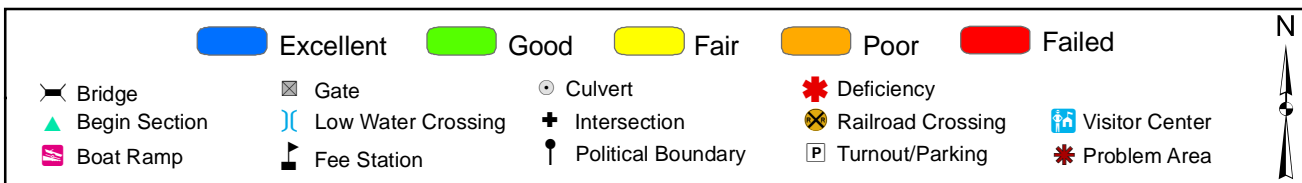
ROUTE: 301 Shop Access Road

TOTAL LENGTH: 0.35 Miles

ASSET: 10027510

RTE DESCRIPTION: From Headquarters Parking (Route 900) to end of loop at Shop Parking A (Route 802)

Section Number	001	002	003		
Section Length (miles)	0.23	0.09	0.03		
Inspection Date	6/16/2008	6/16/2008	6/16/2008		
Section Information					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	2	1	2		
Roadway Width (feet)	16	14	18		
Roadway Condition Information					
Condition	Good	Good	Excellent		
Remaining Service Life (years)	7	5	10		
Cost Estimate	\$300	\$100	\$0		
CRV	\$149000	\$59500	\$20300		

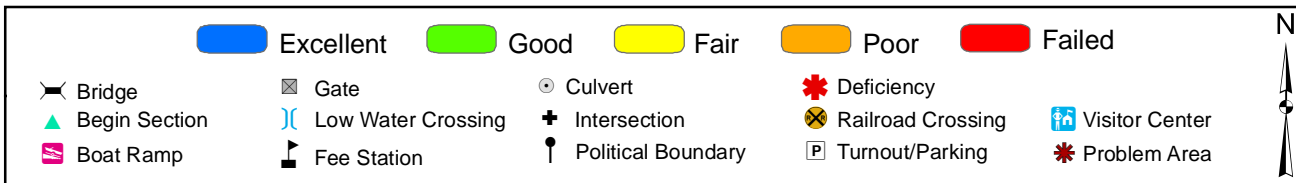


ROUTE: 302 Radio Tower Road TOTAL LENGTH: 0.36 Miles

ASSET:

RTE DESCRIPTION: From Shop Access Road (Route 301) to weather station

Section Number	001				
Section Length (miles)	0.36				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$600				
CRV	\$121300				

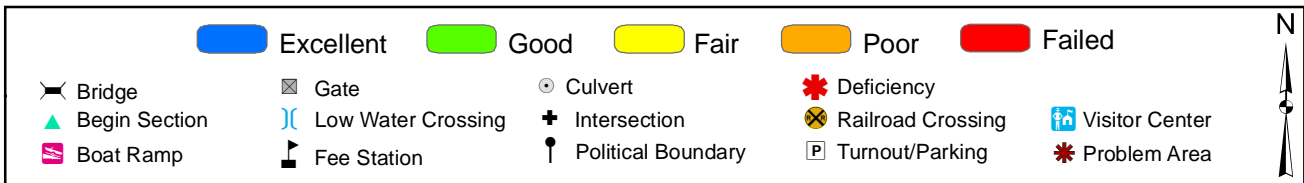


ROUTE: 303 Duck Hospital Loop TOTAL LENGTH: 0.16 Miles

ASSET: 10045702

RTE DESCRIPTION: From Refuge Entrance Road (Route 010) to end of loop at same

Section Number	001	002	003		
Section Length (miles)	0.10	0.02	0.04		
Inspection Date	6/16/2008	6/16/2008	6/16/2008		
Section Information					
Surface Type	Gravel	Gravel	Native		
Number of Lanes	1	1	1		
Roadway Width (feet)	12	14	8		
Roadway Condition Information					
Condition	Excellent	Excellent	Excellent		
Remaining Service Life (years)	9	10	9		
Cost Estimate	\$0	\$0	\$0		
CRV	\$63800	\$14900	\$13300		

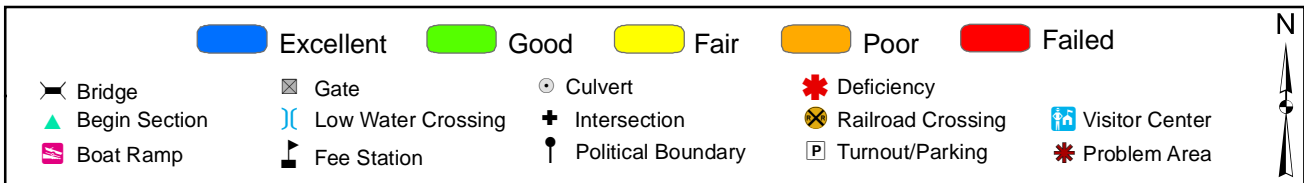
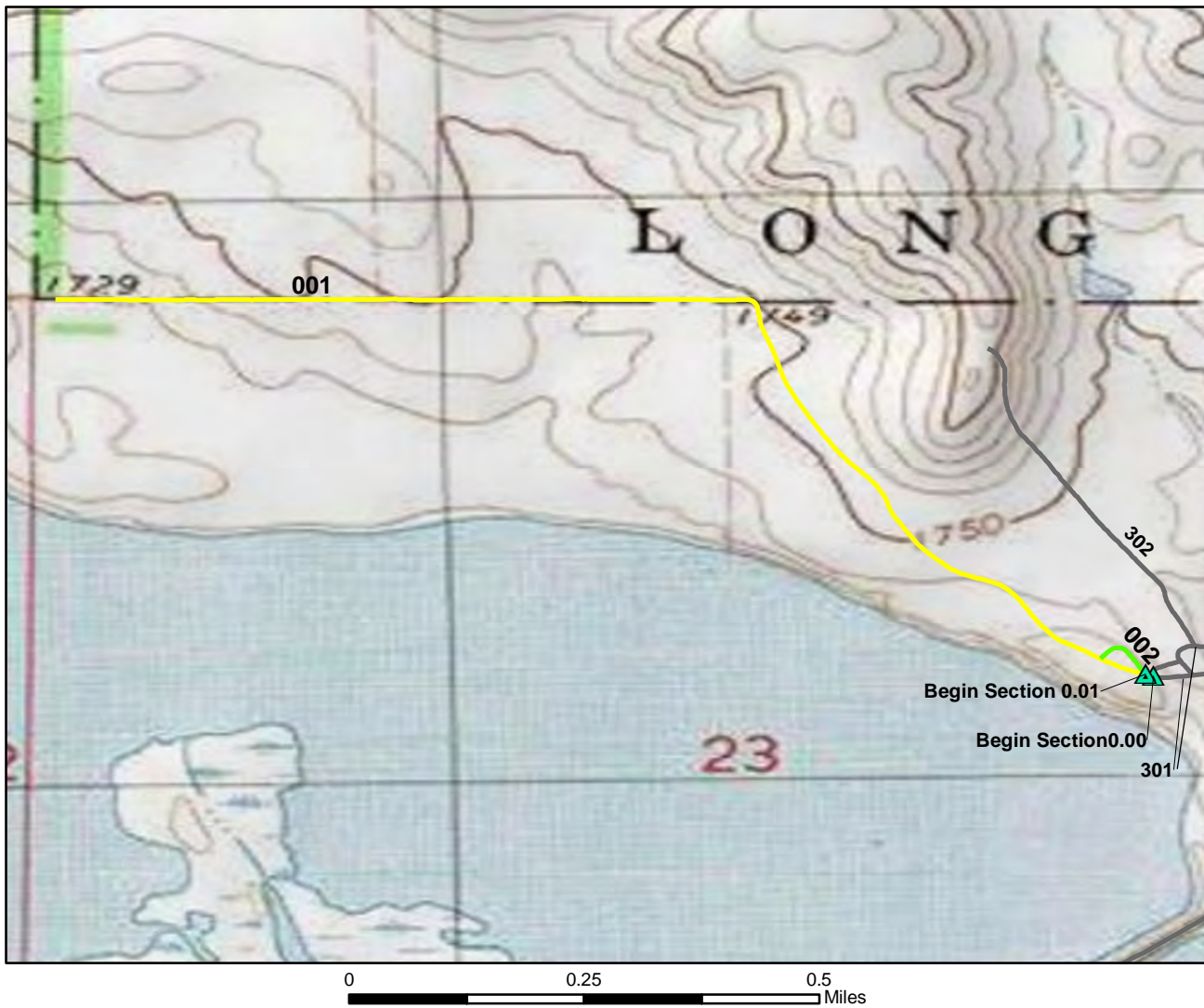


ROUTE: 304 Headquarters/Visitor Center Loop TOTAL LENGTH: 0.13 Miles

ASSET: 10036600

RTE DESCRIPTION: From Headquarters Parking (Route 900) to end of loop at same

Section Number	001				
Section Length (miles)	0.13				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	2				
Roadway Width (feet)	18				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$200				
CRV	\$83900				

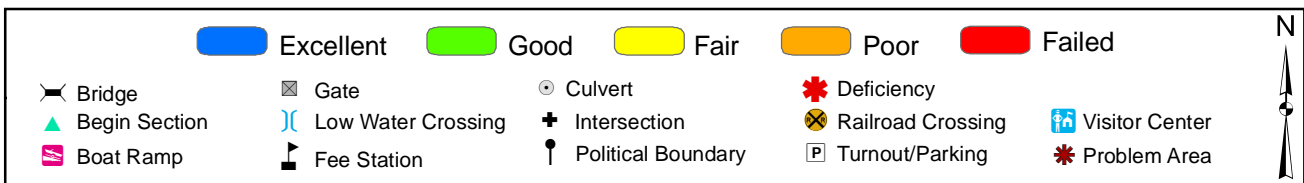
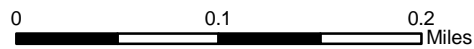


ROUTE: 400 G-7/G-8 Service Trail TOTAL LENGTH: 1.08 Miles

ASSET: 10045700

RTE DESCRIPTION: From Shop Access Road (Route 301) to refuge boundary

Section Number	001	002			
Section Length (miles)	1.03	0.05			
Inspection Date	6/16/2008	6/16/2008			
Section Information					
Surface Type	Native	Primitive			
Number of Lanes	1	1			
Roadway Width (feet)	8	8			
Roadway Condition Information					
Condition	Fair	Good			
Remaining Service Life (years)	3	5			
Cost Estimate	\$2100	\$0			
CRV	\$349100	\$0			



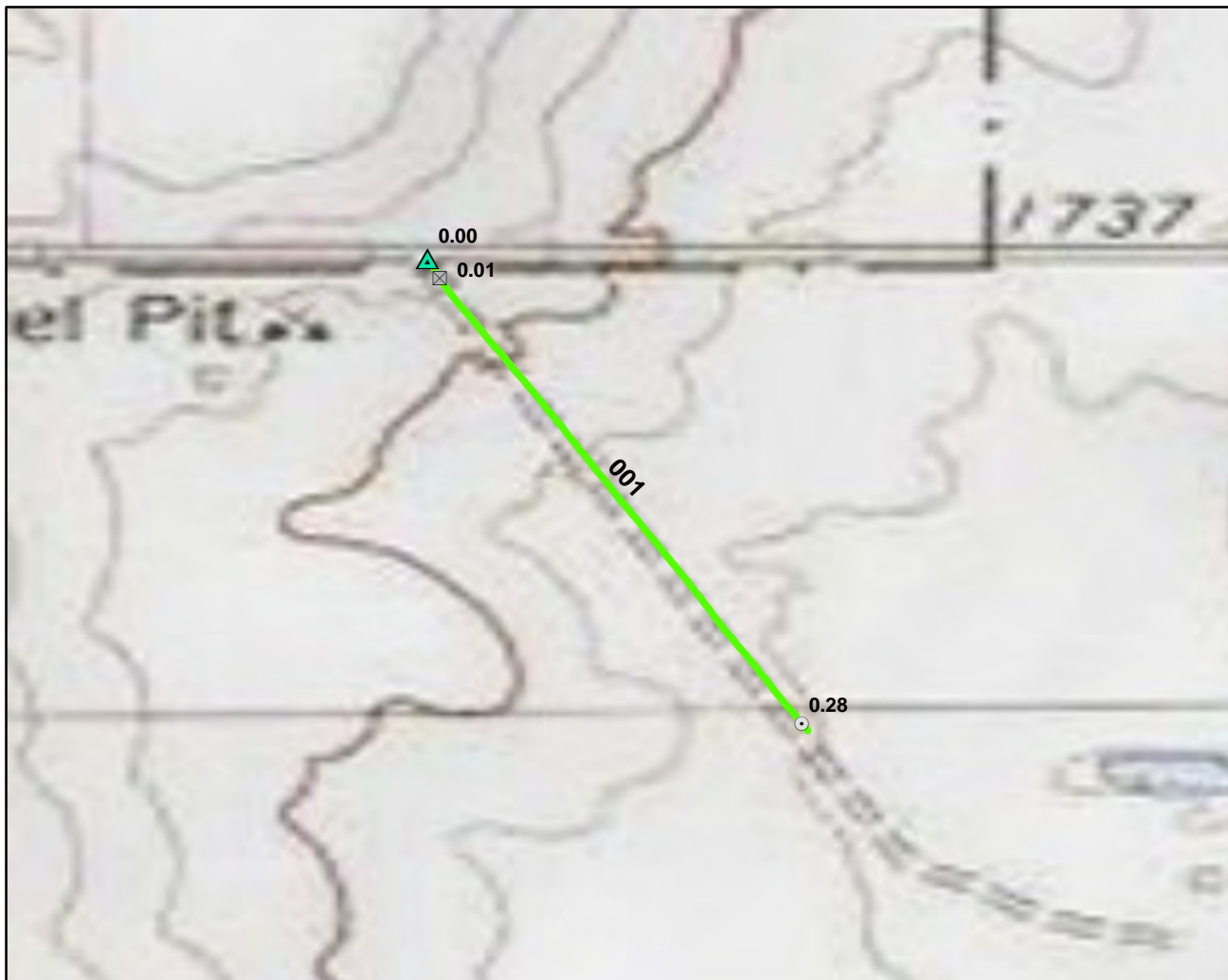
ROUTE: 401 G-4 Service Trail

TOTAL LENGTH: 0.31 Miles

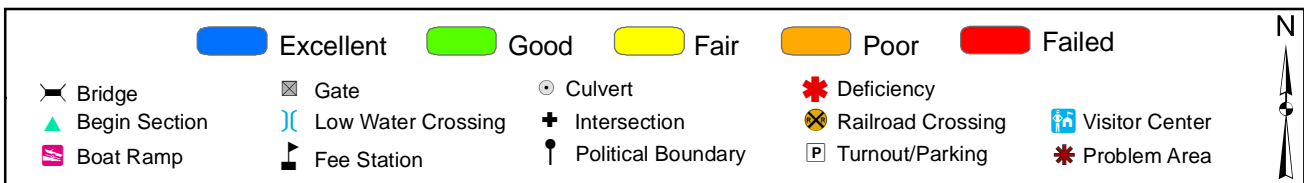
ASSET: 10045699

RTE DESCRIPTION: From refuge boundary to windmill

Section Number	001				
Section Length (miles)	0.32				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$100				
CRV	\$0				



0 0.1 0.2 Miles



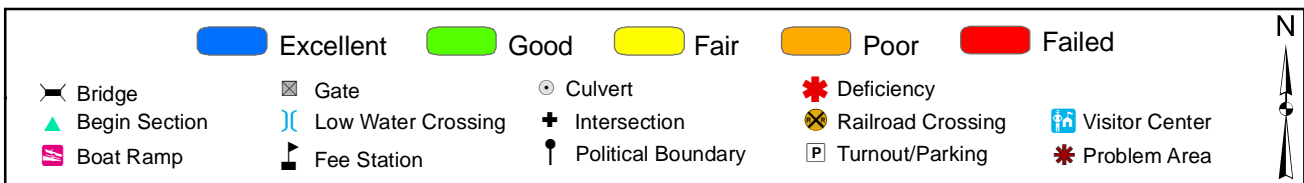
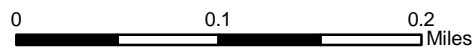
ROUTE: 402 G-5 Service Trail

TOTAL LENGTH: 0.28 Miles

ASSET: 10045854

RTE DESCRIPTION: From 102nd Avenue SE to end of distinguishable route near culvert

Section Number	001				
Section Length (miles)	0.28				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$500				
CRV	\$95500				



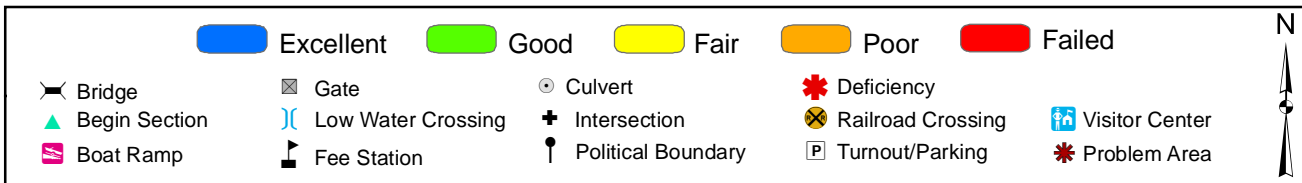
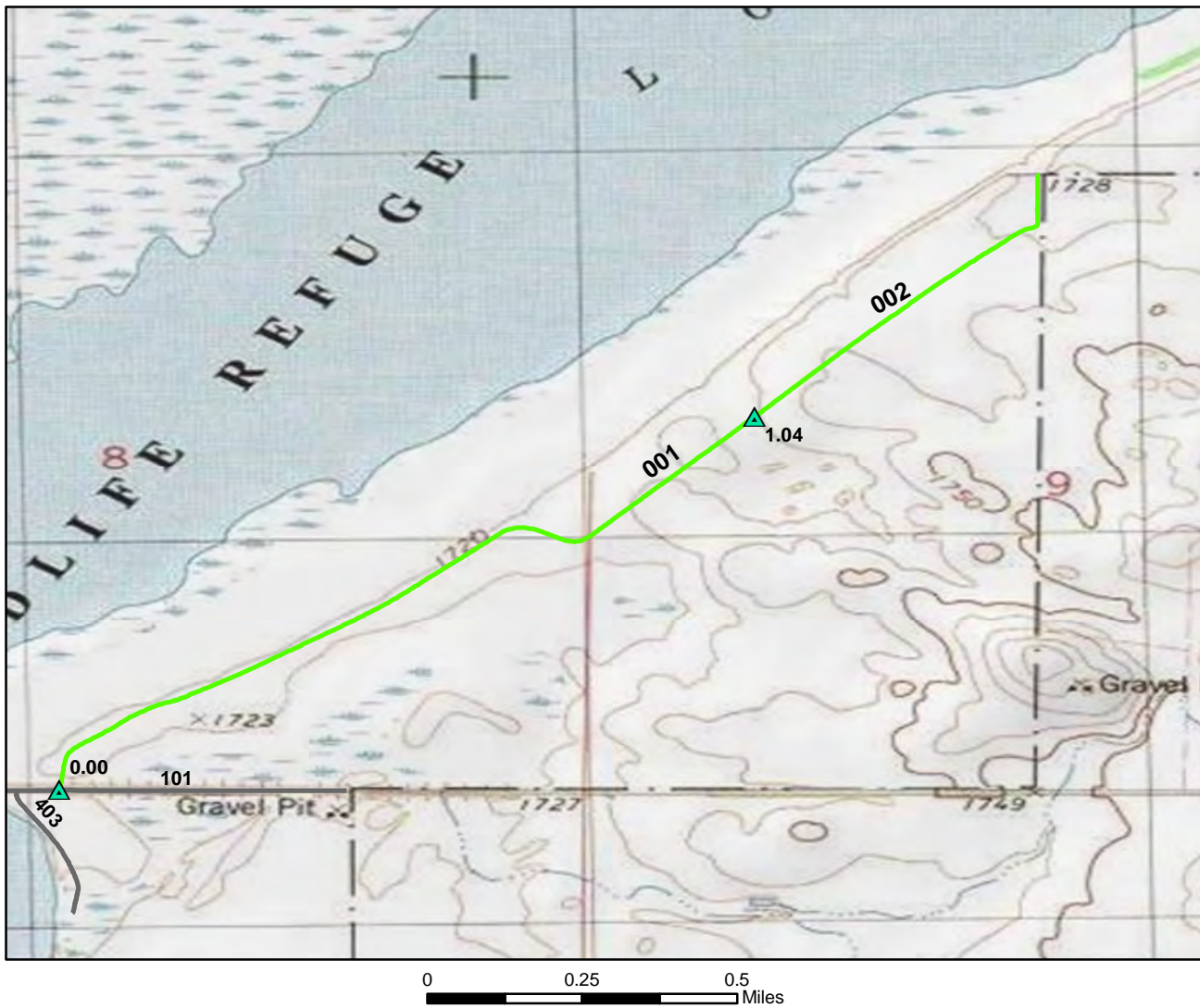
ROUTE: 403 G-11 Service Trail

TOTAL LENGTH: 0.22 Miles

ASSET: 10046146

RTE DESCRIPTION: From C Dike Road (Route 101) water control structure

Section Number	001				
Section Length (miles)	0.22				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$400				
CRV	\$73300				



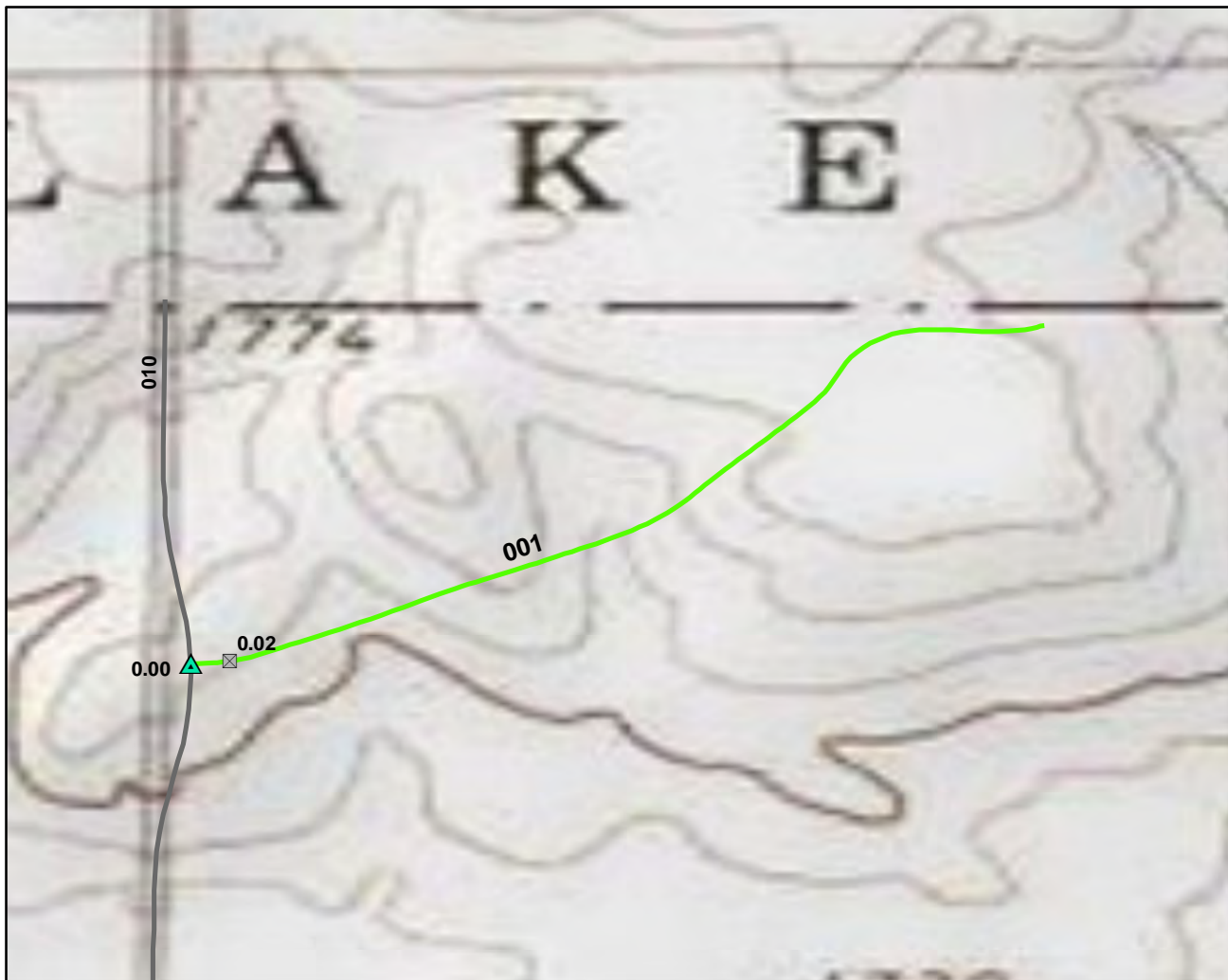
ROUTE: 404 A-11 Service Trail

TOTAL LENGTH: 1.56 Miles

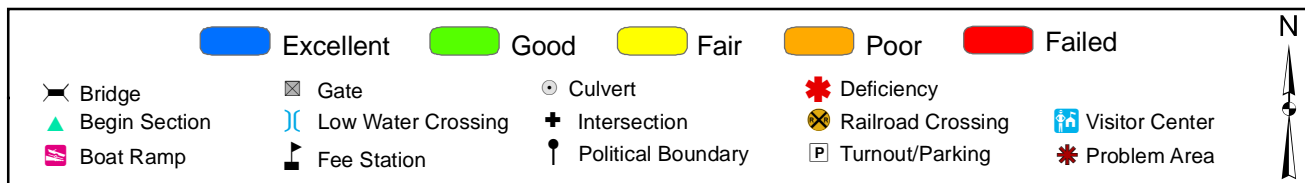
ASSET: 10045856

RTE DESCRIPTION: From C Dike Road (Route 101) to fence line (central southern boundary)

Section Number	001	002			
Section Length (miles)	1.04	0.53			
Inspection Date	6/16/2008	6/16/2008			
Section Information					
Surface Type	Native	Native			
Number of Lanes	1	1			
Roadway Width (feet)	8	8			
Roadway Condition Information					
Condition	Good	Good			
Remaining Service Life (years)	5	5			
Cost Estimate	\$1700	\$900			
CRV	\$352400	\$178800			



0 0.1 0.2 Miles



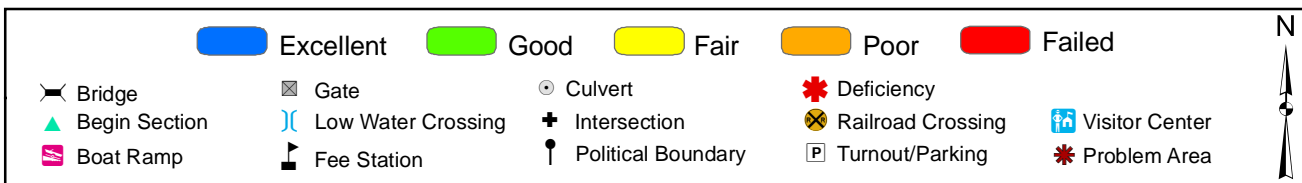
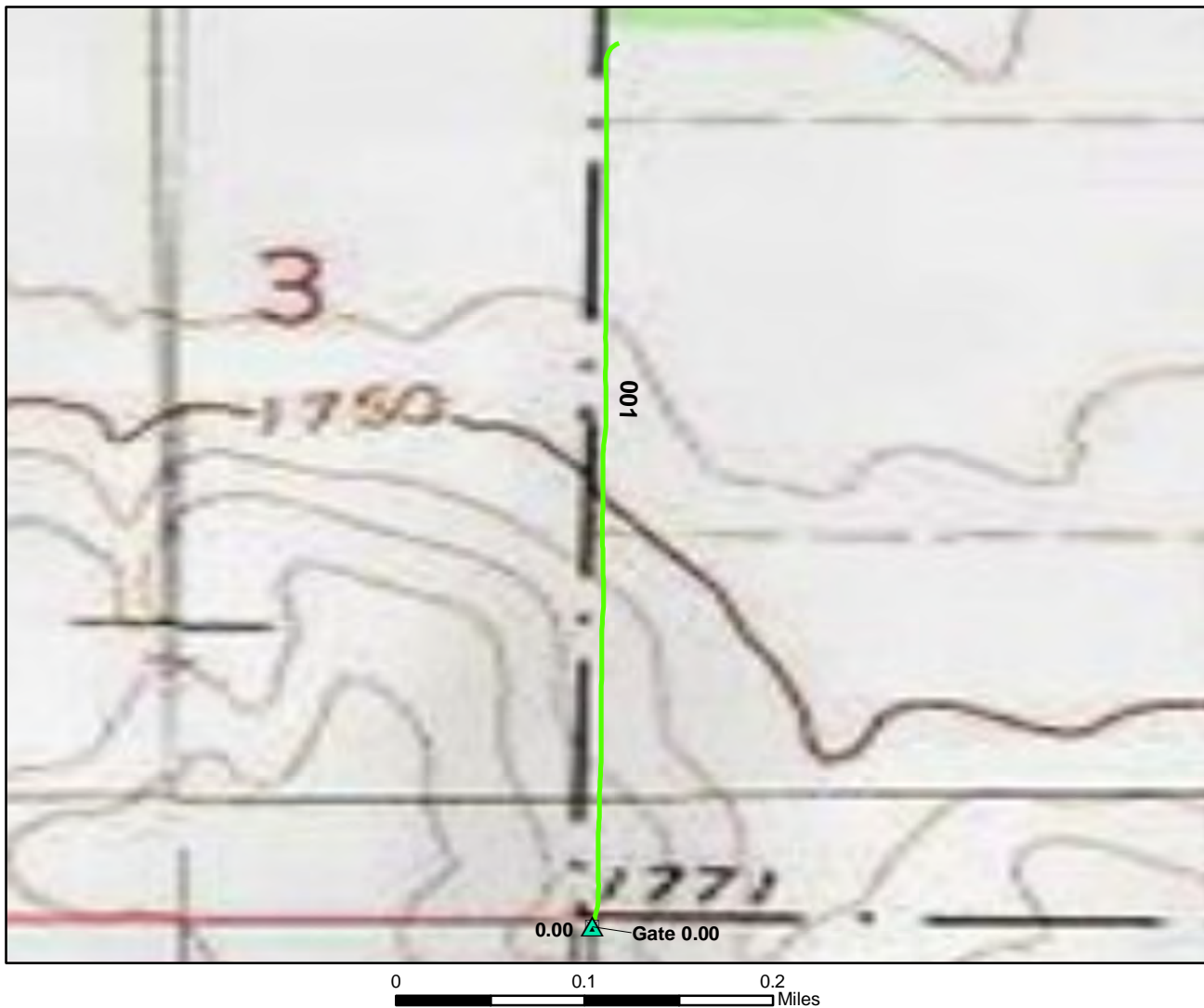
ROUTE: 405 G-7 Pit Trail

TOTAL LENGTH: 0.37 Miles

ASSET: 10045701

RTE DESCRIPTION: From Refuge Entrance Road (Route 010) to pit

Section Number	001				
Section Length (miles)	0.37				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$600				
CRV	\$125300				



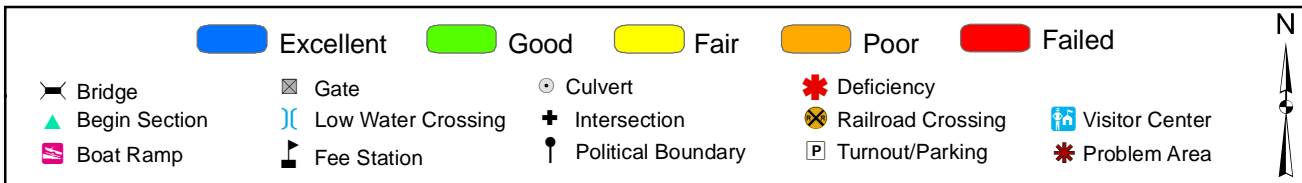
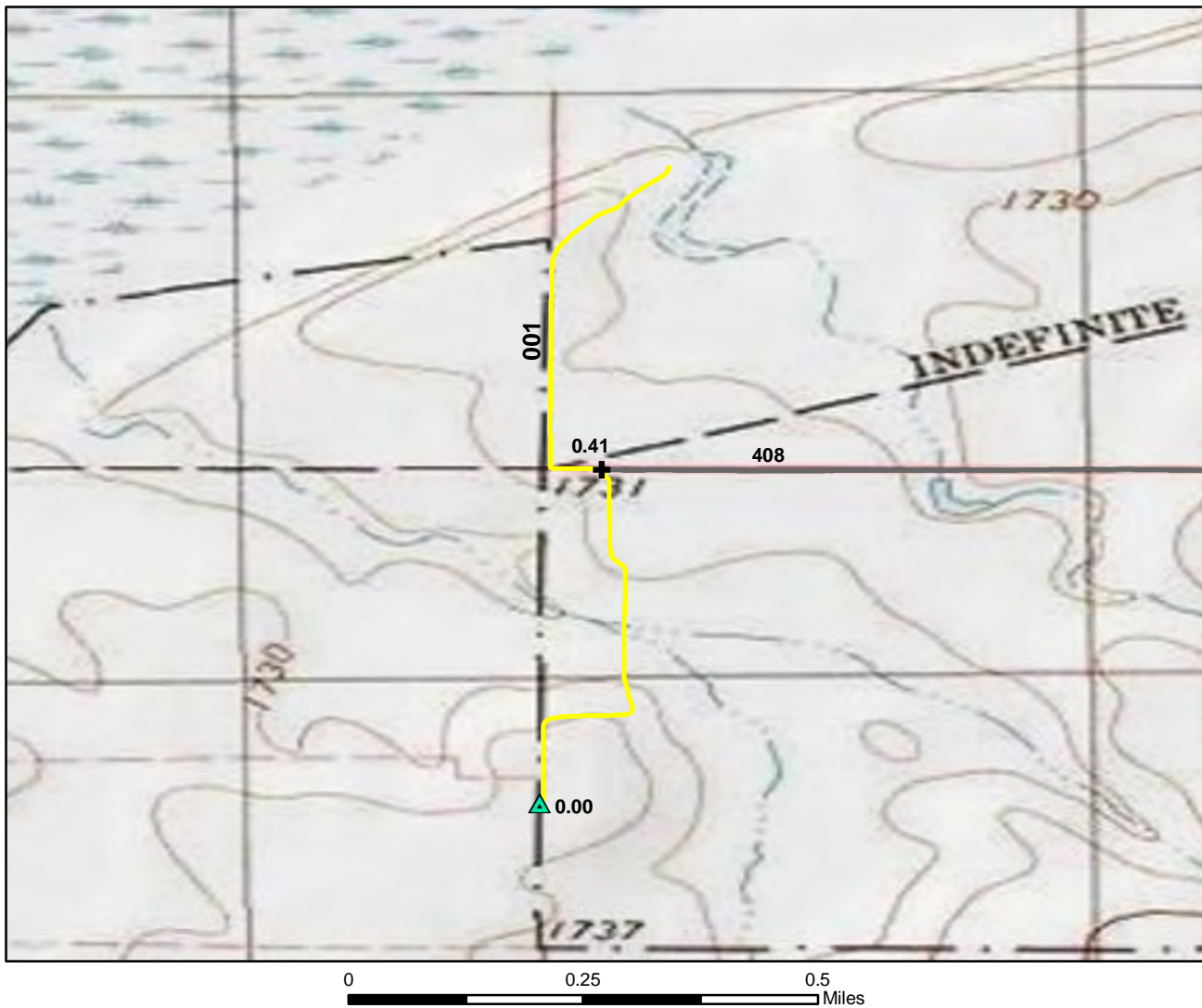
ROUTE: 406 A-12 Service Trail

TOTAL LENGTH: 0.47 Miles

ASSET: 10045859

RTE DESCRIPTION: From property boundary to end of route south of Long Lake shoreline

Section Number	001				
Section Length (miles)	0.47				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$200				
CRV	\$0				



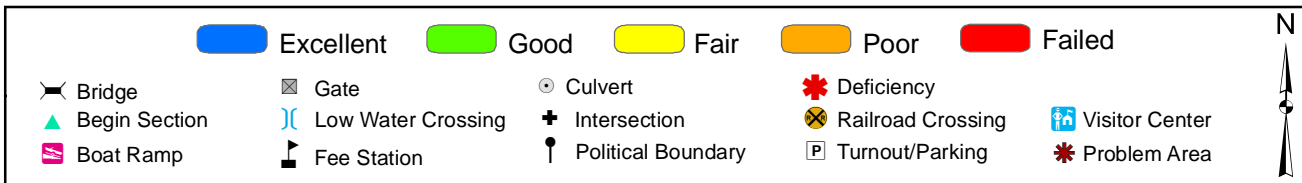
ROUTE: 407 G-19 Dam Service Trail

TOTAL LENGTH: 0.81 Miles

ASSET: 10027486

RTE DESCRIPTION: From property boundary to pond

Section Number	001				
Section Length (miles)	0.81				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Fair				
Remaining Service Life (years)	3				
Cost Estimate	\$500				
CRV	\$0				

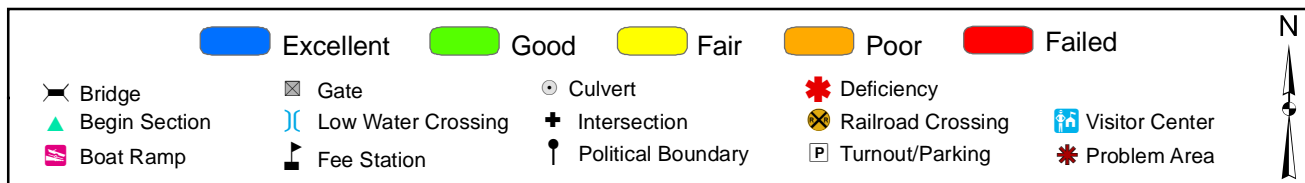
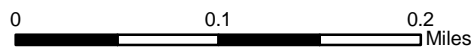


ROUTE: 408 G-19 Service Trail TOTAL LENGTH: 0.45 Miles

ASSET: 10045697

RTE DESCRIPTION: From refuge boundary to G-19 Dam Service Trail (Route 407)

Section Number	001				
Section Length (miles)	0.45				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$700				
CRV	\$153900				



ROUTE: 409 East Peninsula Access Road

TOTAL LENGTH: 0.10 Miles

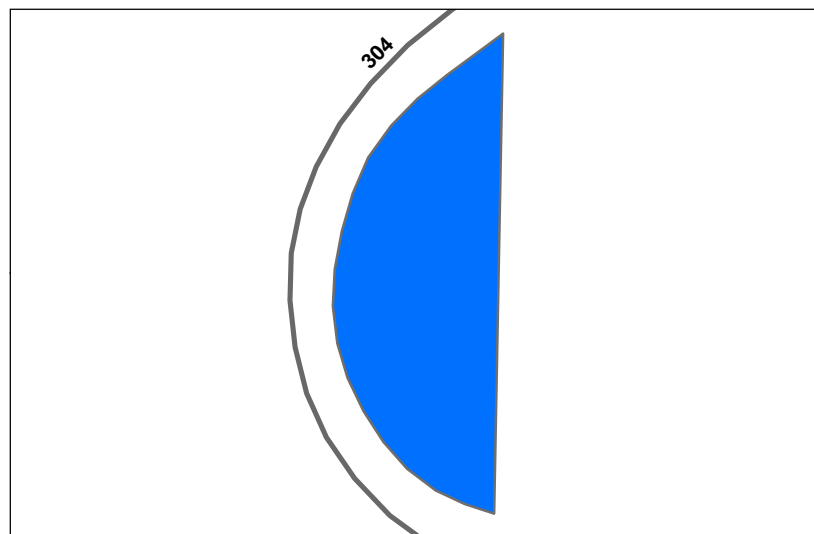
ASSET: 10056573

RTE DESCRIPTION: From refuge boundary to impassable wet area

Section Number	001				
Section Length (miles)	0.10				
Inspection Date	6/16/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$0				
CRV	\$0				

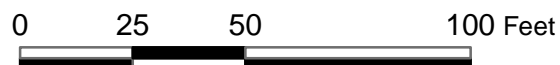
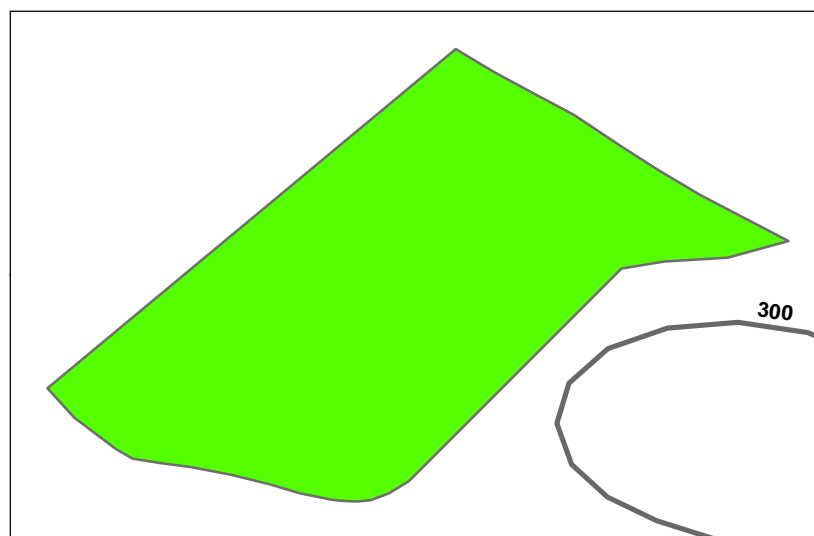
Route 800: Headquarters Employee Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045727	6/16/2008	Gravel	3287	Excellent	\$0



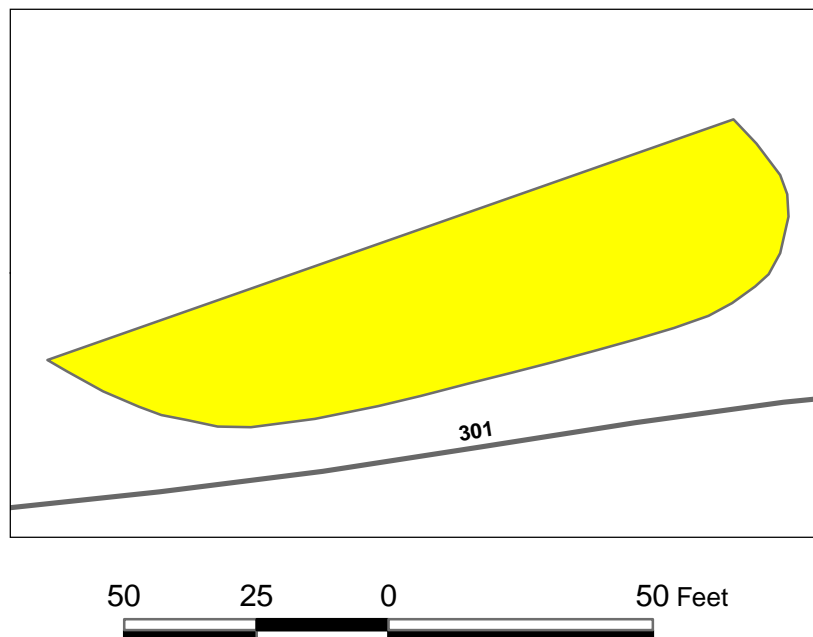
Route 801: Employee Quarters Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045727	6/16/2008	Native	5255	Good	\$800



Route 802: Shop Parking A

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045733	6/16/2008	Gravel	2596	Fair	\$700



Route 803: Shop Parking B

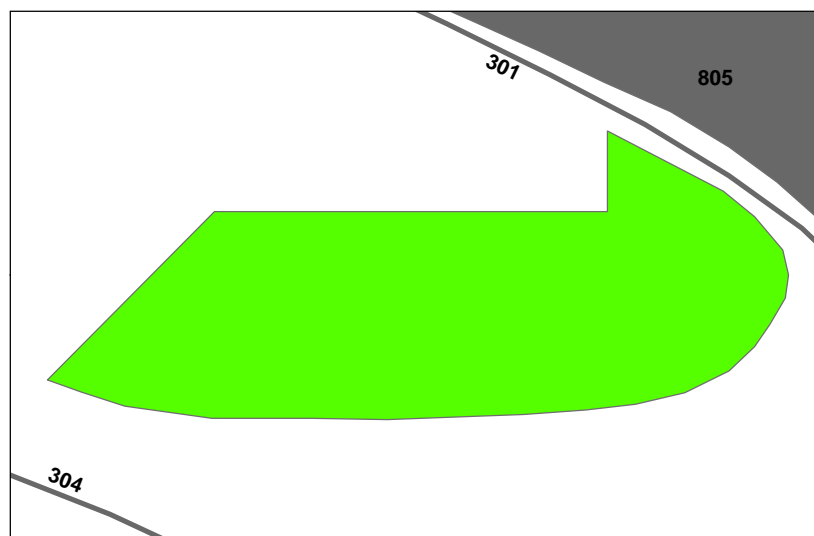
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045733	6/16/2008	Native	4762	Poor	\$3700



50 25 0 50 Feet

Route 804: Shop Parking C

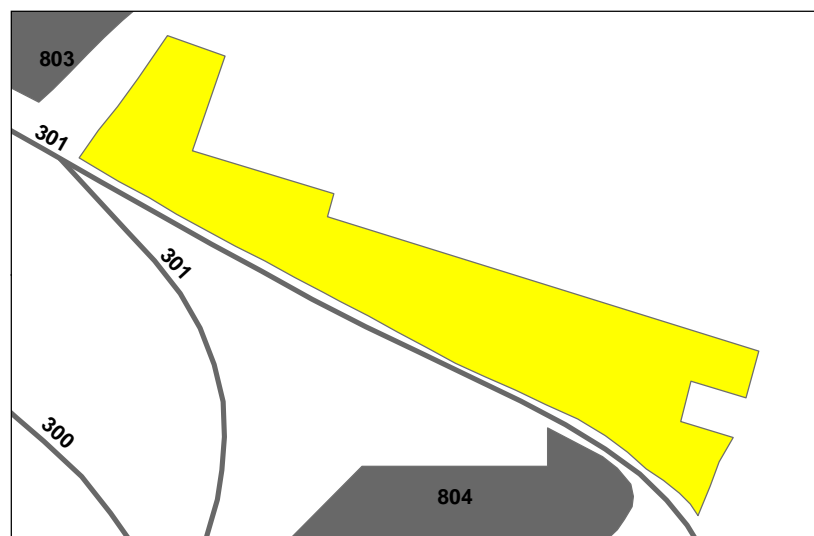
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045733	6/16/2008	Native	2799	Good	\$400



50 25 0 Feet

Route 805: Shop Parking D

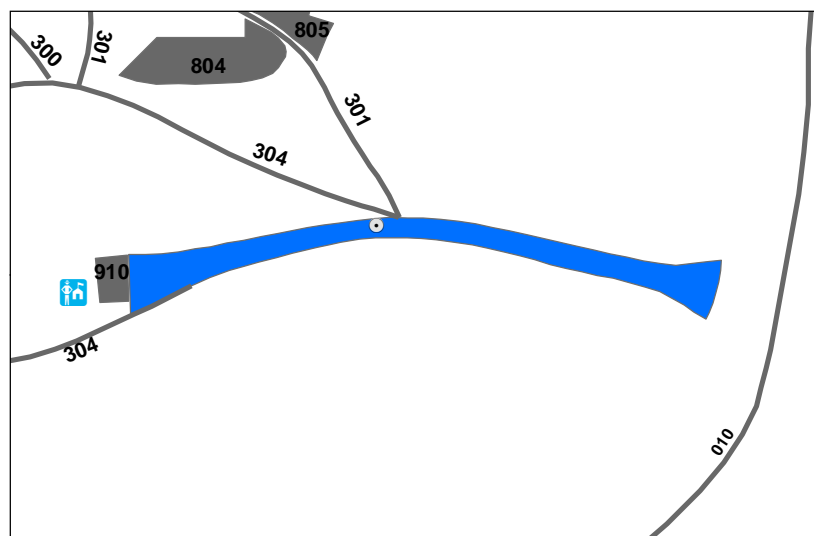
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045733	6/16/2008	Gravel	6871	Fair	\$1700



50 25 0 50 100 Feet

Route 900: Headquarters Entrance Parking

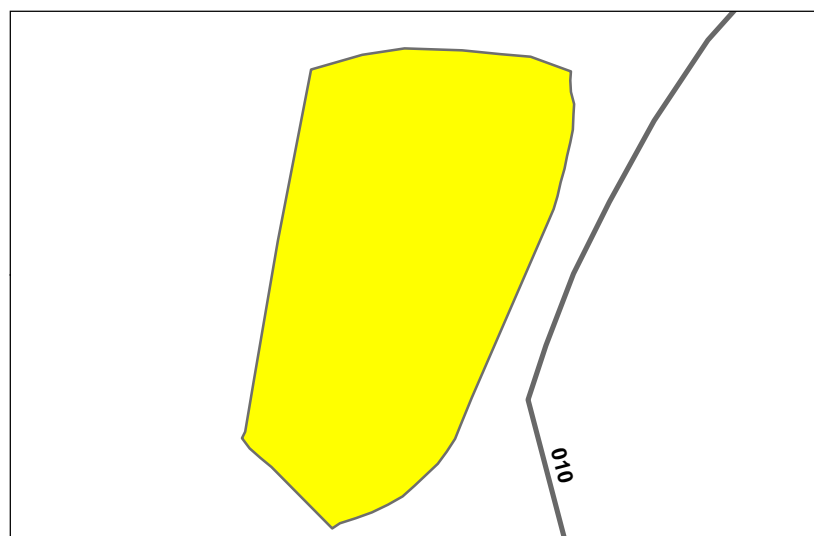
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045695	6/16/2008	Concrete	6802	Excellent	\$0



100 50 0 100 200 Feet

Route 902: Fishing Access Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10027527	6/16/2008	Gravel	12186	Fair	\$3100



50 25 0 50 100 Feet




Route 904: Old Headquarters Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045696	6/16/2008	Gravel	2677	Good	\$400

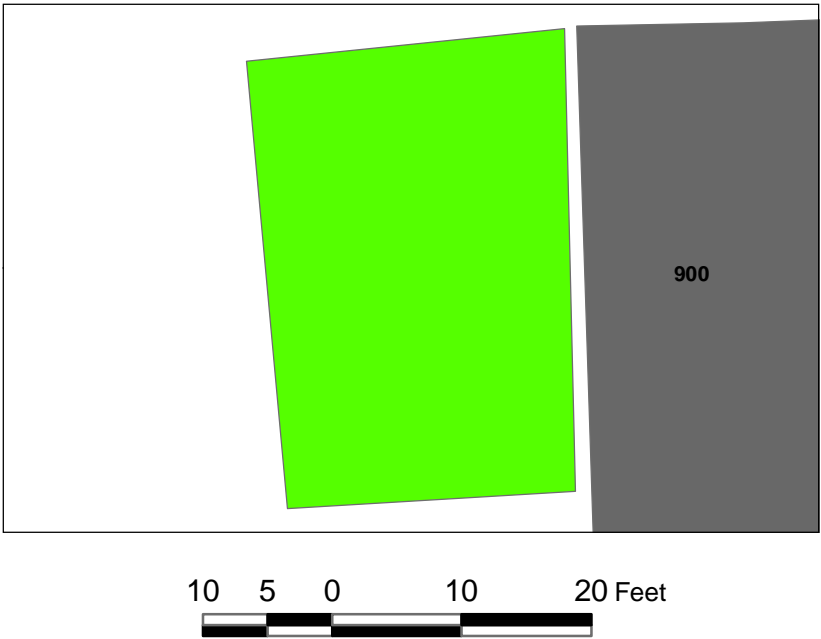


50 25 0 50 Feet



Route 910: Headquarters Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10045695	6/16/2008	Concrete	568	Good	\$100



Refuge Name Bridge Inventory					
Rte #	Milepost	NBIS #	Sufficiency Rating	Functionally Obsolete	Structurally Deficient
010	0.97	000062522-00158	100	NO	NO
010	0.61	n/a	n/a	n/a	n/a
011	0.03	000062522-00022	70.9	YES	NO
100	0.43	n/a	n/a	n/a	n/a

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6013 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6016 - MP 0.61 - Bridge

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6017 - MP 0.97 - Bridge

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6018 - MP 0.99 - Begin Section 002

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6022 - MP 1.95 - Begin Section 003

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6020 - MP 1.96 – Culvert - DEFICIENCY

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Refuge Entrance Road



Photo # 6021 - MP 1.96 – Culvert Deficiency

ROUTE NUMBER: 011 ROUTE NAME: West Access Road



Photo # 6019 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 011 ROUTE NAME: West Access Road



Photo # 6001 - MP 0.03 - Bridge

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 100 ROUTE NAME: Observation Area Access Road



Photo # 6003 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 100 ROUTE NAME: Observation Area Access Road



Photo # 6006 - MP 0.43 - Bridge

ROUTE NUMBER: 100 ROUTE NAME: Observation Area Access Road



Photo # 6007 - MP 1.04 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 100 ROUTE NAME: Observation Area Access Road



Photo # 6010 - MP 1.14 - Begin Section 003

ROUTE NUMBER: 101 ROUTE NAME: C Dike Road



Photo # 6037 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 102 ROUTE NAME: Unit 2 Marsh Auto Tour



Photo # 6025 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 102 ROUTE NAME: Unit 2 Marsh Auto Tour



Photo # 6027 - MP 0.18 - Begin Section 002

ROUTE NUMBER: 300 ROUTE NAME: Employee Housing Road



Photo # 5983 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 301 ROUTE NAME: Shop Access Road



Photo # 5986 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 301 ROUTE NAME: Shop Access Road



Photo # 5987 - MP 0.12 - Begin Section 002

ROUTE NUMBER: 301 ROUTE NAME: Shop Access Road



Photo # 5996 - MP 0.06 - Begin Section 003

ROUTE NUMBER: 302 ROUTE NAME: Radio Tower Road



Photo # 5990 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 303 ROUTE NAME: Duck Hospital Loop



Photo # 6028 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 303 ROUTE NAME: Duck Hospital Loop



Photo # 6029 - MP 0.02 - Begin Section 002

ROUTE NUMBER: 303 ROUTE NAME: Duck Hospital Loop



Photo # 6030 - MP 0.06 - Begin Section 003

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 304 ROUTE NAME: Headquarters/Visitor Center Loop



Photo # 5980 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 400 ROUTE NAME: G-7/G-8 Service Trail



Photo # 5988 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 400 ROUTE NAME: G-7/G-8 Service Trail



Photo # 5989 - MP 0.01 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 401 ROUTE NAME: G-4 Service Trail



Photo # 6011 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 402 ROUTE NAME: G-5 Service Trail



Photo # 6032 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 403 ROUTE NAME: G-11 Service Trail



Photo # 6039 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 404 ROUTE NAME: A-11 Service Trail



Photo # 6040 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 404 ROUTE NAME: A-11 Service Trail



Photo # 6041 - MP 1.04 - Begin Section 002

ROUTE NUMBER: 405 ROUTE NAME: G-7 Pit Trail



Photo # 6042 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 406 ROUTE NAME: A-12 Service Trail



Photo # 6044 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 407 ROUTE NAME: G-19 Dam Service Trail



Photo # 6045 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 408 ROUTE NAME: G-19 Service Trail



Photo # 6049 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 409 ROUTE NAME: East Peninsula Access Road



Photo # 6051 - MP 0.00 - Begin Route at Begin Section

Accident Summary

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