Federal Lands Highway

Road Inventory Program

Road Inventory and Condition Assessment

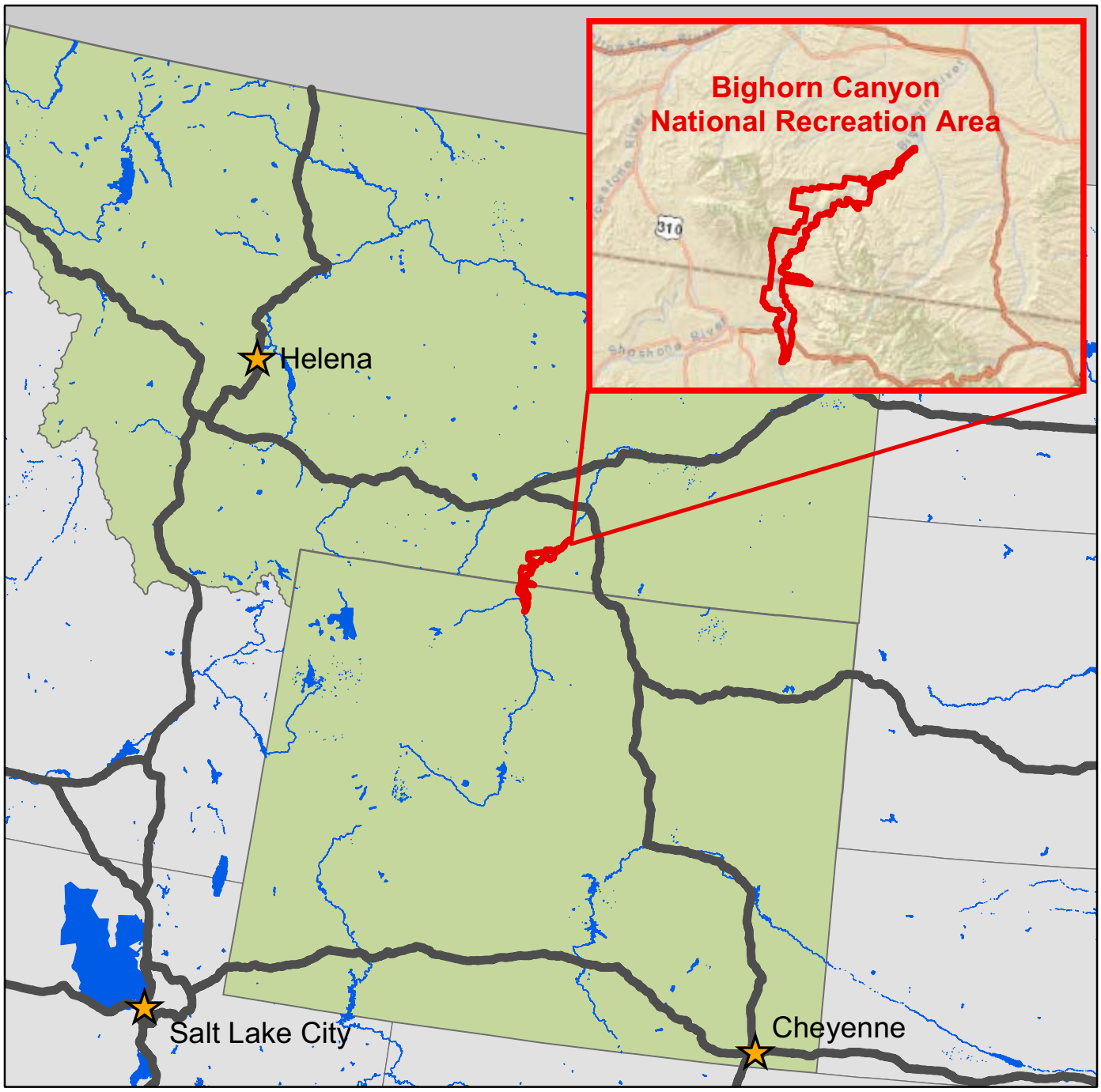
Bighorn Canyon National Recreation Area

BICA - 1320

Cycle 5 Report

Prepared By: Federal Highway Administration
Road Inventory Program (RIP)
Data Collected: 08/2011
Report Date: 04/2012

Bighorn Canyon National Recreation Area
in
Montana and Wyoming



DCV = Data Collection Vehicle

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INTRODUCTION

The Federal Highway Administration, (FHWA), in the mid 1970s, was charged with the task of identifying surface condition deficiencies and corrective priorities on National Park Service (NPS) roads and parkways. Additionally, FHWA was tasked with establishing an integrated maintenance features inventory, locating features such as culverts, guardrails, and signs, among others, along NPS roads and parkways. As a result, in 1976 the NPS and FHWA entered into an MOA (Memorandum Of Agreement) which established the RIP (Road Inventory Program). This MOA was terminated and revised in 1980 to establish a new MOA aiming to update RIP data and develop a long-range program to improve and maintain NPS roads to designated condition standards and establish a maintenance management program.

The FHWA completed this initial phase of the RIP in the early 1980s. As a result of this effort, each NPS site included in the study received a RIP Report known as the "Brown Book" which included the information collected during this first RIP phase.

In the 1990s, the effort was again renewed to update and maintain the RIP data. By this time the computer age was upon us and a process was employed that relied heavily on electronic data collection and computer technology. A cyclical program was developed and the RIP completed two cycles of data collection from 1994 to 2001. Cycle 1, starting in 1994, was conducted in 44 "large parks" (parks containing 10 or more paved route miles). Cycle 2 began in 1997 and comprised 79 large parks and 5 small parks totaling 4,874 paved route miles. Each of these parks received a RIP Report known as the "Blue Book". Cycle 3, from 2001 to 2004, was conducted in all parks, large and small, that contained any paved routes, including parking areas and, again, each park received a RIP Report and associated electronic files.

Cycle 4 was initiated in the spring of 2006 covering 86 large parks and several associated small parks consisting of 5,553 paved route miles and 6,232 paved parking areas. Data collection has been completed for Cycle 4 and all data has been delivered to the NPS.

In 2005, the FHWA began implementing the use of a Pavement Management System (PMS) to assist the NPS in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Regional, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions, an extensive study was completed throughout 2010 that has resulted in changes to the RIP condition reporting method, specifically the distresses and indexes that comprise the Pavement Condition Rating (PCR). It was determined that a better representation of PCR could

be achieved by modifying the relative impact certain distresses would have on the overall rating. The changes that were implemented were endorsed by management at both the FHWA and NPS in October 2010. These changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection. Because of these changes, the PCR Condition ratings reported in Cycle 5 do not directly relate to the condition ratings reported in previous cycle RIP Reports. For more detailed information about the changes, see Section 3 and Section 10 in this RIP Report.

Cycle 5 has launched in the summer of 2010 and will again comprise all parks, large and small, that are served by paved roads and/or parking areas. For Cycle 5, the decision was made to collect condition data in large parks on Functional Class 1, 2, and 7 paved routes only, as well as any new routes that were previously not collected. In small parks, all paved routes and parking areas will be collected. As a result, this will include 81 large parks with 4,459 paved route miles and 168 small parks with 529 paved route miles and associated paved parking areas.

Since 1984, the Road Inventory Program has been funded through the Federal Lands Highway Park Roads and Parkways (PRP) Program. Currently, coordination of the RIP with FLH is under the NPS Washington Headquarters Park Facility Management Division. The FLH Washington office coordinates policy and prepares national reports and needs assessment studies for Congress.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) amended Title 23 U.S.C., and inserted Section 204(a)(6) requiring the FHWA and NPS, to develop by rule, a Pavement Management System (PMS) applied to park roads and parkways serving the National Park System.

FLH is responsible for the accuracy of all data presented in this report. Any questions or comments concerning the contents of this report should be directed to the national RIP Coordinator located in Sterling, Virginia.

Respectfully,

FHWA RIP Team

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Section 2
Park Route Inventory

Bighorn Canyon
National Recreation Area

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Road Inventory Program

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

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** DCV - Data Collection Vehicle

*** Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0010	**5**	**71756**		**FORT SMITH ACCESS ROAD**	**FROM STATE HIGHWAY 313 AT CATTLEGUARD (3 MILES NE OF ENTRANCE SIGN)**	**TO YELLOWTAIL DAM**	**NORTH**	**5.37**	**0.00**	**5.37**	**1**	**0**	**AS**	**1,1A**
0011	**5**	**77037**		**OK-A-BEH ROAD**	**FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.27 (ON LEFT)**	**TO ROUTE 0904 (LOWER OK-A-BEH PARKING)**	**NORTH**	**9.37**	**0.00**	**9.37**	**1**	**0**	**AS**	**1,1A**
0012	**5**	**75346**		**AFTERBAY ROAD**	**FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.02 (ON RIGHT)**	**TO PARK BOUNDARY**	**NORTH**	**1.91**	**0.40**	**2.31**	**1**	**0**	**AS**	**1,1A**
0013	**5**	**71794**		**BAD PASS ROAD**	**FROM WYOMING ROUTE 37 AT PARK BOUNDARY**	**TO END OF PAVEMENT / BEGINNING OF ROUTE 0218 (LOCKHART LANE BAD PASS ROAD)**	**SOUTH**	**13.60**	**0.00**	**13.60**	**1**	**0**	**AS**	**2**
0200	4	75577		AFTERBAY CAMPGROUND ROAD	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.97 (ON RIGHT)	TO END	NORTH	0.23	0.67	0.90	3	0	AS	1,1A
0201	4	75567		AFTERBAY BOAT RAMP ROAD	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 1.03 (ON LEFT)	TO ROUTE 0909 (AFTERBAY BOAT RAMP PARKING)	NORTH	0.19	0.00	0.19	3	0	AS	1,1A
0202	4	75764		M-K HILL PICNIC ROAD	FROM ROUTE 0212ZZ (AVENUE B ROADS)	TO DEAD END	NORTH	0.32	0.00	0.32	3	0	AS	1,1A
0203	4	72381		HORSESHOE BEND ROAD	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 0.74 (ON RIGHT)	TO BOAT LAUNCH / RAMP	SOUTH	1.66	0.00	1.66	3	0	AS	2
0204	4	72534		DEVIL'S CANYON OVERLOOK ROAD	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 6.34 (ON RIGHT)	TO ROUTE 0921 (DEVIL'S CANYON OVERLOOK PARKING)	SOUTH	0.80	0.00	0.80	3	0	AS	2
0205	4	73251		EWING-SNELL RANCH ROAD	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 10.93 (ON LEFT)	TO RANGER STATION	SOUTH	0.00	0.20	0.20	3	1,563	AS	2
0207ZZ	4	77521		HORSESHOE BEND CAMPGROUND ROADS	FROM ROUTE 0203 (HORSESHOE BEND ROAD)	THROUGH CAMPGROUND	SOUTH	0.93	0.00	0.93	3	0	AS	2
0208	4	75575		AIRSTRIP ACCESS ROAD	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 1.36 (ON RIGHT)	TO AIRSTRIP PARKING	NORTH	0.13	0.00	0.13	3	0	AS	1,1A
0209	**5**	**71837**		**M. L. RANCH ROAD SOUTH UNIT**	**FROM U.S. HIGHWAY 14A**	**TO RANCH**	**SOUTH**	**0.03**	**0.50**	**0.53**	**3**	**0**	**AS**	**4**

Cycle 5 NPS/RIP Route ID Report

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BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0210	4	77027		WAPPA UPPER SWITCHYARD ROAD	FROM END OF ROUTE 0010 (FORT SMITH ACCESS ROAD)	TO END AT SWITCHYARD	NORTH	0.81	0.00	0.81	3	0	AS	1,1A
0211	4	77026		YELLOWTAIL POWER PLANT ROAD	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 4.22 (ON RIGHT)	TO ROUTE 0923 (YELLOWTAIL POWER PLANT PARKING)	NORTH	1.14	0.00	1.14	3	0	AS	1,1A
0212ZZ	4	102671		AVENUE B ROADS	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD)	TO ROUTE 0010 (FORT SMITH ACCESS ROAD)	NORTH	0.51	0.00	0.51	3	0	AS	1,1A
0213	4	75529		DITCHRIDER ROAD	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.21 (ON RIGHT)	TO END OF PAVEMENT AT CATTLE GUARD	NORTH	0.08	0.00	0.08	3	0	AS	1,1A
0214	4	75534		BIGHORN CANAL ROAD	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.43 (ON RIGHT)	TO END OF PAVEMENT	NORTH	0.14	0.40	0.54	3	0	AS	1,1A
0215	**5**	**75544**		**AFTERBAY RIVER LAUNCH ROAD**	**FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.70 (ON RIGHT)**	**TO ROUTE 0908 (BIGHORN RIVER LAUNCH NORTH PARKING)**	**NORTH**	**0.03**	**0.03**	**0.06**	**3**	**0**	**AS**	**1,1A**
0216	**5**	**75576**		**GRAPEVINE CAMPGROUND ROAD**	**FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 1.63 (ON LEFT)**	**TO END**	**NORTH**	**0.03**	**0.03**	**0.06**	**3**	**0**	**AS**	**1,1A**
0217	NC	75202		THREE MILE ACCESS ROAD	FROM WAR MAN COUNTY LOOP	TO END	NORTH	0.00	0.48	0.48	3	0	GR	
0218	NC	73017		LOCKHART LANE BAD PASS ROAD	FROM END OF ROUTE 0013 (BAD PASS ROAD)	TO PARK BOUNDARY	SOUTH	0.00	4.80	4.80	3	0	GR	
0219	4	110972		BARRY'S LANDING BOAT RAMP ROAD	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 13.55 (ON RIGHT)	TO PAVEMENT CHANGE NEAR WATER AND BOAT RAMP	SOUTH	2.09	0.00	2.09	3	0	AS	2
0220	NC	107867		CEMETERY POND SERVICE ROAD	FROM ROUTE 0421 (GAMS TO CEMETERY ROAD)	TO ROUTE 0422 (JIM CREEK ROAD)	SOUTH	0.00	2.43	2.43	4	0	GR	
0226	**5**	**71844**		**JOHN BLUE CANYON ROAD**	**FROM U.S. HIGHWAY 14A**	**TO PARK BOUNDARY**	**SOUTH**	**0.04**	**2.24**	**2.27**	**3**	**0**	**AS**	**4**
0227	NC	71860		CLIFF ROAD	FROM ROUTE 0209 (M. L. RANCH ROAD SOUTH UNIT)	TO U.S. HIGHWAY 14A	SOUTH	0.00	3.40	3.40	3	0	GR	
0231	NC	107434		EAGLE NEST ROAD	FROM ROUTE 0227 (CLIFF ROAD)	TO END	SOUTH	0.00	0.10	0.10	4	0	NV	
0243	NC	109079		SOUTH KANE ACCESS ROAD	FROM U.S. HIGHWAY 14A	TO END	SOUTH	0.00	0.50	0.50	3	0	GR	
0244	NC	71846		NORTH KANE ACCESS ROAD	FROM ROUTE 0226 (JOHN BLUE CANYON ROAD)	TO BOAT LAUNCH RAMP	SOUTH	0.00	1.80	1.80	3	0	GR	

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0245	NC	71848		BRICK HOUSE ROAD	FROM WYOMING ROUTE 37	TO END	SOUTH	0.00	0.10	0.10	3	0	GR	
0246	NC	72407		HBR-RED CLIFF ACCESS ROAD	FROM ROUTE 0203 (HORSESHOE BEND ROAD)	TO END	SOUTH	0.00	0.40	0.40	3	0	GR	
0247	NC	72540		CCR-COMMON CORRALS GRAVEL ACCESS ROAD	FROM ROUTE 0013 (BAD PASS ROAD)	TO END	SOUTH	0.00	0.30	0.30	3	0	GR	
0248	NC	72548		HIR-HILLSBORO ACCESS GRAVEL ROAD	FROM ROUTE 0219 (BARRY'S LANDING BOAT RAMP ROAD)	TO END	SOUTH	0.00	0.40	0.40	3	0	GR	
0249	NC	75578		ABR AFTERBAY LAGOON GRAVEL ROAD	FROM ROUTE 0200 (AFTERBAY CAMPGROUND ROAD)	TO END	NORTH	0.00	0.60	0.60	3	0	GR	
0250	NC	77032		YDR WEST TEST WELL ROAD	FROM ROUTE 0012 (AFTERBAY ROAD)	TO END	NORTH	0.00	2.00	2.00	3	0	GR	
0256	NC	108076		POND 6 ROAD	FROM ROUTE 0424 (ABERCROMBY ROAD)	TO ROUTE 0220 (CEMETERY POND SERVICE ROAD)	SOUTH	0.00	1.50	1.50	4	0	GR	
0401	NC	76965		FIREBREAK ROAD	FROM ROUTE 0202 (M-K HILL PICNIC ROAD) AT MP 0.04 (ON RIGHT)	TO ROUTE 0415 (FOURTH STREET)	NORTH	0.00	0.90	0.90	6	0	GR	
0402	NC	77038		FIRING RANGE ROAD	FROM ROUTE 0011 (OK-A-BEH ROAD)	TO END	NORTH	0.00	0.20	0.20	5	0	GR	
0410	4	76962		AVENUE A	FROM ROUTE 0417 (SEVENTH STREET) AT MP 0.00 (ON RIGHT)	TO END OF ROUTE 0412 (FIRST STREET)	NORTH	0.31	0.00	0.31	5	0	AS	1,1A
0411	4	102680		AVENUE C	FROM ROUTE 0212ZZ (AVENUE B ROADS) AT MP 0.17 (ON RIGHT)	TO ROUTE 0416 (SIXTH STREET) AT MP 0.00 (ON LEFT)	NORTH	0.30	0.00	0.30	5	0	AS	1,1A
0412	4	102685		FIRST STREET	FROM ROUTE 0212ZZ (AVENUE B ROADS) AT MP 0.16 (ON LEFT)	TO ROUTE 0410 (AVENUE A) AT END	NORTH	0.09	0.00	0.09	5	0	AS	1,1A
0413	4	103144		SECOND STREET	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.83 (ON LEFT)	TO ROUTE 0212ZZ (AVENUE B ROADS) AT MP 0.22 (ON LEFT)	NORTH	0.13	0.00	0.13	5	0	AS	1,1A
0414	4	103148		THIRD STREET	FROM ROUTE 0410 (AVENUE A) AT MP 0.21 (ON LEFT)	TO ROUTE 0411 (AVENUE C) AT MP 0.16 (ON LEFT)	NORTH	0.19	0.00	0.19	5	0	AS	1,1A
0415	4	103151		FOURTH STREET	FROM ROUTE 0410 (AVENUE A) AT MP 0.16 (ON LEFT)	TO DEAD END	NORTH	0.25	0.00	0.25	5	0	AS	1,1A

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0416	4	103153		SIXTH STREET	FROM ROUTE 0411 (AVENUE C) AT MP 0.30 (ON LEFT)	TO ROUTE 0410 (AVENUE A) AT MP 0.06 (ON LEFT)	NORTH	0.18	0.00	0.18	5	0	AS	1,1A
0417	4	103158		SEVENTH STREET	FROM ROUTE 0410 (AVENUE A) AT MP 0.00 (ON LEFT)	TO ROUTE 0212ZZ (AVENUE B ROADS) AT MP 0.05 (ON LEFT)	NORTH	0.09	0.00	0.09	5	0	AS	1,1A
0419	4	103165		AVENUE A ACCESS ROAD	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.67 (ON LEFT)	TO ROUTE 0410 (AVENUE A) AT MP 0.11 (ON RIGHT)	NORTH	0.00	0.00	0.00	5	5,400	AS	1,1A
0420	NC	107821		SYKES MOUNTAIN ROAD	FROM WYOMING ROUTE 37	TO COUNTY ROAD 8 1/2	SOUTH	0.00	2.30	2.30	5	0	GR	
0421	NC	107823		GAMS TO CEMETERY ROAD	FROM PARK BOUNDARY	TO ROUTE 0422 (JIM CREEK ROAD)	SOUTH	0.00	1.50	1.50	5	0	GR	
0422	NC	108077		JIM CREEK ROAD	FROM ROUTE 0220 (CEMETERY POND SERVICE ROAD)	TO ROUTE 0424 (ABERCROMBY ROAD)	SOUTH	0.00	2.60	2.60	5	0	GR	
0424	NC	108080		ABERCROMBY ROAD	FROM COUNTY ROAD 8 1/2	TO END	SOUTH	0.00	4.80	4.80	5	0	GR	
0426	NC	107947		LOCKHART RANCH ACCESS ROAD	FROM ROUTE 0218 (LOCKHART RANCH ACCESS ROAD)	TO END	SOUTH	0.00	0.33	0.33	6	0	GR	
0427	NC	71870		FLICKER HOUSE ROAD	FROM WYOMING ROUTE 37	TO END	SOUTH	0.00	0.25	0.25	5	0	GR	
0428	NC	72643		BLR-MEDICINE CREEK ACCESS ROAD	FROM ROUTE 0922 (BARRYS LANDING PARKING)	TO END	SOUTH	0.00	3.10	3.10	6	0	GR	
0429	NC	76964		FSR M-K HILL WATER TANK ROAD	FROM ROUTE 0202 (M-K HILL PICNIC ROAD)	TO END	NORTH	0.00	0.10	0.10	6	0	GR	
0430	NC	77029		YDR WEST DAM EMERGENCY ACCESS RD	FROM ROUTE 0012 (AFTERBAY ROAD)	TO YELLOWTAIL DAM	NORTH	0.00	2.14	2.14	6	0	NV	
0431	NC	77031		YDR EAST TEST WELL ROAD	FROM ROUTE 0210 (WAPPA UPPER SWITCHYARD ROAD)	TO END	NORTH	0.00	0.50	0.50	6	0	GR	
0432	NC	77033		YDR LOWER SPILLWAY ROAD	FROM ROUTE 0923 (YELLOWTAIL POWER PLANT PARKING)	TO SPILLWAY	NORTH	0.00	0.10	0.10	6	0	GR	
0900	4	77034		YELLOWTAIL DAM VISITOR CENTER PARKING	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 5.26 (ON RIGHT)	TO PARKING	NORTH	0.00	0.00	0.00		27,689	AS	1,1A

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0901	4	75254		FORT SMITH CONTACT STATION PARKING	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.06 (ON LEFT)	TO ROUTE 0012 (AFTERBAY ROAD) AT MP 0.11 (ON LEFT)	NORTH	0.00	0.00	0.00		36,477	AS	1,1A
0902	4	75542		AFTERBAY OVERLOOK PARKING	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.70 (ON LEFT)	TO PARKING	NORTH	0.00	0.00	0.00		26,086	AS	1,1A
0903	4	77041		UPPER OK-A-BEH PARKING	FROM ROUTE 0011 (OK-A-BEH ROAD) AT MP 9.15 (ON RIGHT)	TO PARKING	NORTH	0.00	0.00	0.00		120,811	AS	1
0904	4	77042		LOWER OK-A-BEH PARKING	FROM END OF ROUTE 0011 (OK-A-BEH ROAD)	TO PARKING	NORTH	0.00	0.00	0.00		53,615	AS	1
0905	4	77040		OK-A-BEH OVERLOOK PARKING	FROM ROUTE 0011 (OK-A-BEH ROAD) AT MP 8.60 (ON LEFT)	TO PARKING	NORTH	0.00	0.00	0.00		23,331	AS	1
0906	4	104541		OK-A-BEH EXHIBIT PARKING	ADJACENT TO ROUTE 0011 (OK-A-BEH ROAD) AT MP 4.58 (ON RIGHT)		NORTH	0.00	0.00	0.00		2,086	AS	1
0907	NC	103951		SOUTH AFTERBAY RIVER ACCESS PARKING	FROM ROUTE 0214 (BIGHORN CANAL ROAD) AT END	TO PARKING	NORTH	0.00	0.00	0.00		37,500	GR	
0908	NC	75549		BIGHORN RIVER LAUNCH NORTH PARKING	FROM END OF ROUTE 0215 (AFTERBAY RIVER LAUNCH ROAD)	TO PARKING	NORTH	0.00	0.00	0.00		24,825	GR	
0909	4	75574		AFTERBAY BOAT RAMP PARKING	FROM END OF ROUTE 0201 (AFTERBAY BOAT RAMP ROAD)	TO PARKING	NORTH	0.00	0.00	0.00		57,702	AS	1,1A
0910	NC	75212		THREE MILE RIVER ACCESS PARKING	FROM END OF ROUTE 0217 (THREE MILE ACCESS ROAD)	TO PARKING	NORTH	0.00	0.00	0.00		57,460	GR	
0912	NC	90205		UPPER SWITCHYARD GATE PARKING	ADJACENT TO ROUTE 0210 (WAPPA UPPER SWITCHYARD ROAD) AT MP 0.319		NORTH	0.00	0.00	0.00		14,500	GR	
0913ZZ	4	103172		PARK HEADQUARTERS PARKING AREAS	FROM ROUTE 0212ZZ (AVENUE B ROADS)	TO PARKING	NORTH	0.00	0.00	0.00		19,633	AS	1,1A
0914	4	103176		MAINTENANCE PARKING	ADJACENT TO ROUTE 0212ZZ (AVENUE B ROADS) AT MP 0.08 (ON RIGHT)		NORTH	0.00	0.00	0.00		32,519	AS	1,1A

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven | Yellow = Unpaved Routes, DCV not Driven | Blue = All Paved Parking Areas | Green = All Unpaved Parking Areas
Grey = Paved Routes, DCV not Driven | Black = State, Local or Private non-NPS Routes | = Concession Route Flag ON

*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

** DCV - Data Collection Vehicle

*** Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0915ZZ	4	103178		BALLFIELD PARKING LOTS	ADJACENT TO ROUTES 0212ZZ (AVENUE B ROADS), 0415 (FOURTH STREET), AND 0416 (SIXTH STREET)		NORTH	0.00	0.00	0.00		5,427	AS	1,1A
0918	4	103187		SCHOOL PARKING	FROM ROUTE 0411 (AVENUE C) AT MP 0.24 (ON RIGHT)	TO ROUTE 0411 (AVENUE C) AT MP 0.29 (ON RIGHT)	NORTH	0.00	0.00	0.00		10,616	AS	1,1A
0919	4	72160		LOVELL VISITORS CENTER PARKING	FROM U.S. HIGHWAY 14A	TO PARKING	SOUTH	0.00	0.00	0.00		56,083	AS	3
0920	4	77532		HORSESHOE BEND PARKING	FROM ROUTE 0203 (HORSESHOE BEND ROAD) AT MP 1.49 (ON RIGHT)	TO ROUTE 0203 (HORSESHOE BEND ROAD) AT MP 1.59 (ON RIGHT)	SOUTH	0.00	0.00	0.00		66,837	AS	2
0921	4	72537		DEVIL'S CANYON OVERLOOK PARKING	FROM END OF ROUTE 0204 (DEVIL'S CANYON OVERLOOK ROAD)	TO PARKING	SOUTH	0.00	0.00	0.00		17,598	AS	2
0922	NC	90206		BARRYS LANDING PARKING	FROM ROUTE 0219 (BARRY'S LANDING BOAT RAMP ROAD) AT MP 1.96 (ON LEFT)	TO PARKING	SOUTH	0.00	0.00	0.00		105,450	GR	
0923	4	103959		YELLOWTAIL POWER PLANT PARKING	FROM END OF ROUTE 0211 (YELLOWTAIL POWER PLANT ROAD)	TO PARKING	NORTH	0.00	0.00	0.00		16,008	AS	1,1A
0924	4	76966		BUREAU OF RECLAMATION PARKING	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 4.04 (ON LEFT)	TO PARKING	NORTH	0.00	0.00	0.00		15,223	AS	1,1A
0925	4	104621		BAD PASS PARKING B	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 7.60 (ON RIGHT)	TO ROUTE 0013 (BAD PASS ROAD) AT MP 7.63 (ON RIGHT)	SOUTH	0.00	0.00	0.00		11,771	AS	2
0926	4	104624		BAD PASS PARKING A	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 7.18 (ON RIGHT)	TO ROUTE 0013 (BAD PASS ROAD) AT MP 7.22 (ON RIGHT)	SOUTH	0.00	0.00	0.00		15,540	AS	2
0927	4	77537		HORSESHOE BEND MARINA PARKING	FROM ROUTE 0203 (HORSESHOE BEND ROAD) AT MP 1.61 (ON RIGHT)	TO PARKING	SOUTH	0.00	0.00	0.00		46,182	AS	2
0928	4	72426		CROOKED CREEK CONTACT STATION PARKING	FROM ROUTE 0013 (BAD PASS ROAD) AT MP 0.62 (ON LEFT)	TO PARKING	SOUTH	0.00	0.00	0.00		21,564	AS	2
0931	4	104611		YELLOW HILL PARKING	ADJACENT TO ROUTE 0013 (BAD PASS ROAD) AT MP 3.35 (ON LEFT)		SOUTH	0.00	0.00	0.00		11,483	AS	2

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven
Yellow = Unpaved Routes, DCV not Driven
Blue = All Paved Parking Areas
Green = All Unpaved Parking Areas
Grey = Paved Routes, DCV not Driven
Black = State, Local or Private non-NPS Routes
= Concession Route Flag ON

*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

** DCV - Data Collection Vehicle

*** Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0933	NC	237016		NORTH KANE BOAT LAUNCH PARKING	FROM ROUTE 0244 (NORTH KANE ACCESS ROAD)	TO PARKING	SOUTH	0.00	0.00	0.00		65,575	GR	

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven	Yellow = Unpaved Routes, DCV not Driven	Blue = All Paved Parking Areas	Green = All Unpaved Parking Areas
Grey = Paved Routes, DCV not Driven	Black = State, Local or Private non-NPS Routes	= Concession Route Flag ON	

*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

** DCV - Data Collection Vehicle

*** Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

CYCLE 5 COLLECTED SUMMARY TOTALS FOR BIGHORN CANYON NATIONAL RECREATION AREA

CYCLE 5 COLLECTED ROUTE TOTALS

DCV Driven Route Miles	30.38
Manually Rated Route Miles	0.00
TOTAL PARK ROUTE MILES COLLECTED IN CYCLE 5	30.38
Manually Rated Routes (SQFT)	0

* CYCLE 5 COLLECTED PARKING AREA TOTALS

Paved Parking (SQFT)	719,341

CYCLE 5 COLLECTED CONCESSION TOTALS

Concession Paved Route Miles	0.00
Concession Paved Parking Area SQFT	0
Concession Manually Rated Rotes SQFT	0

CYCLE 5 COLLECTED WEIGHTED AVERAGE PARK VALUES

DCV Driven PCR	94
**Manually Rated Routes PCR	N/A
**Parking PCR	N/A
***Total Equivalent Lane Miles	93.85

TOTAL PARK SUMMARY FOR BIGHORN CANYON NATIONAL RECREATION AREA

ROUTE TOTALS

TOTAL PAVED PARK ROUTE MILES	40.95
TOTAL PAVED PARKING (SQFT)	719,341

* - The Parking Area Totals SQFT value represents **all** parking areas collected in Cycle 5, both park and concessionaire.

** - Parking and Manually Rated Routes are assigned the following PCR values based on their observed condition: Construction=-1, Excellent=97, Good=90, Fair=73, and Poor=45.

*** - Equivalent Lane Miles are calculated by route using the following equations : DCV and Manually Rated Lines Routes=(PAVE_WIDTHxPAVED_MI)/11 foot lane. Parking Areas=SQ_FEET/5280/11. Manually Rated Polygons=SQ_FEET/5280/11.

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven	Yellow = Unpaved Routes, DCV not Driven	Blue = All Paved Parking Areas	Green = All Unpaved Parking Areas
Grey = Paved Routes, DCV not Driven	Black = State, Local or Private non-NPS Routes	= Concession Route Flag ON	

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** DCV - Data Collection Vehicle

*** Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

General Park Road Functional Classification Table

Class 1 Principal Park Road/Rural Parkway (Public Roads) Roads which constitute the main access route, circulatory tour, or thoroughfare for park visitors. Route Numbers 1 - 99. Note: Rural parkways (e.g. Natchez Trace) are numbered 1 - 9. State Routes Inventoried for Park. Route Numbers 5000-5999

Class 2 Connector Park Road (Public Roads) - Roads which provide access within a park to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, etc. Route Numbers 100-199.

Class 3 Special Purpose Park Road (Public Roads) - Roads which provide circulation within public areas, such as campgrounds, picnic areas, visitor center complexes, concessionaire facilities, etc. These roads generally serve low-speed traffic and are often designed for one-way circulation. Route Numbers 200-299.

Class 4 Primitive Park Roads (Public Roads) - Roads which provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas. These roads frequently have no minimum design standards and their use may be limited to specially equipped vehicles. Route Numbers 200-299.
Note: Functional Classes 3 and 4 have the same route numbers because, historically, they were numbered similarly.

Class 5 Administrative Access Road (Administrative Roads) - All public roads intended for access to administrative developments or structures such as park offices, employee quarters, or utility areas. Route Numbers 400-499.

Class 6 Restricted Road (Administrative Roads) - All roads normally closed to the public, including patrol roads, truck trails, and other similar roads. Route Numbers 400-499.
Note: Functional Classes 5 and 6 have the same route numbers because historically they were numbered similarly and often there is little distinction between these routes. For example, because utility areas and employee housing are often closed to the public, this restriction would result in classification of FC 6 rather than FC 5.

Class 7 Urban Parkway (Urban Parkways and City Streets) - These facilities serve high volumes of park and non-park related traffic and are restricted, limited-access facilities in an urban area. This category of roads primarily encompasses the major parkways which serve as gateways to our nation's capital. Other major park roads or portions thereof, however, may be included in this category. Route Numbers 1-9.

Class 8 City Streets (Urban Parkways and City Streets) - City streets are usually extensions of the adjoining street system that are owned and maintained by the National Park Service. The construction and/or reconstruction should conform with accepted local engineering practice and local conditions. Route Numbers 600-699.

****

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

The historic route numbering system also included a 300 number series for interpretive roads, and a 500 series for one-way roads. There are approximately 250 roads nationwide which are designated by the 300 and 500 series. The numbers for these roads will be maintained for reporting consistency. However, since these interpretive and one-way routes are not as clearly tied to a specific functional class, the 300 and 500 series will be discontinued for future use.

5000 route numbers are assigned to Non-NPS Routes that are State, County or City owned which border, traverse, or provide access to Park Facilities or Assets. 5000 Routes are driven for GPS and Video Log only.

Surface Type Abbreviations:

AS - Asphaltic Concrete Pavement
CO - Portland Cement Concrete Pavement
BR - Brick or Pavers Road Bed
CB - Cobble Stone Road Bed
GR - Gravel Road Bed
SA - Sand Road Bed
NV - Native or Dirt Material Road Bed
OT - Other Materials Road Bed

NPS/RIP Subcomponent Details for BICA

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven | Yellow = Unpaved Routes, DCV not Driven | Blue = All Paved Parking Areas | Green = All Unpaved Parking Areas

Grey = Paved Routes, DCV not Driven | Black = State, Local or Private non-NPS Routes | = Concession Route Flag ON

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BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Asset Entered in FMSS System

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0207ZZ	77521	4	HORSESHOE BEND CAMPGROUND ROADS	FROM ROUTE 0203 (HORSESHOE BEND ROAD)	THROUGH CAMPGROUND		3	0.93	0.00	0.93	0
0212ZZ	102671	4	AVENUE B ROADS	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD)	TO ROUTE 0010 (FORT SMITH ACCESS ROAD)		3	0.51	0.00	0.51	0
0913ZZ	103172	4	PARK HEADQUARTERS PARKING AREAS	FROM ROUTE 0212ZZ (AVENUE B ROADS)	TO PARKING			0.00	0.00	0.00	19,633
0915ZZ	103178	4	BALLFIELD PARKING LOTS	ADJACENT TO ROUTES 0212ZZ (AVENUE B ROADS), 0415 (FOURTH STREET), AND 0416 (SIXTH STREET)				0.00	0.00	0.00	5,427

Asset BICA-0207ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0207AZ	77521	4	HORSESHOE BEND CAMPGROUND ROAD LOOP A	FROM ROUTE 0207Z (HORSESHOE BEND CAMPGROUND ACCESS ROAD)	TO END OF LOOP		3	0.33	0.00	0.33	0
0207BZ	77521	4	HORSESHOE BEND CAMPGROUND ROAD LOOP B	FROM END OF ROUTE 0207Z (HORSESHOE BEND CAMPGROUND ACCESS ROAD)	TO END OF LOOP		3	0.44	0.00	0.44	0
0207Z	77521	4	HORSESHOE BEND CAMPGROUND ACCESS ROAD	FROM ROUTE 0203 (HORSESHOE BEND ROAD) AT MP 1.36 (ON LEFT)	TO ROUTE 0207BZ (HORSESHOE BEND CAMPGROUND ROAD LOOP B)		3	0.16	0.00	0.16	0

Asset BICA-0212ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0212AZ	102671	4	AVENUE B (WEST)	FROM ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.96 (ON LEFT)	TO ROUTE 0915AZ (BALLFIELD PARKING A)		3	0.35	0.00	0.35	0
0212BZ	102671	4	AVENUE B (EAST)	FROM ROUTE 0416 (SIXTH STREET) AT MP 0.07 (ON RIGHT)	TO ROUTE 0010 (FORT SMITH ACCESS ROAD) AT MP 3.48 (ON LEFT)		3	0.16	0.00	0.16	0

NPS/RIP Subcomponent Details for BICA

Shading Color Key:
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Grey = Paved Routes, DCV not Driven | Black = State, Local or Private non-NPS Routes | = Concession Route Flag ON

*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

BICA

BIGHORN CANYON NATIONAL RECREATION AREA

Asset BICA-0913ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0913AZ	103172	4	PARK HEADQUARTERS PARKING NORTH	FROM ROUTE 0212AZ (AVENUE B (WEST)) AT MP 0.04 (ON LEFT)	TO PARKING			0.00	0.00	0.00	7,475
0913BZ	103172	4	PARK HEADQUARTERS PARKING SOUTH	ADJACENT TO ROUTE 0212AZ (AVENUE B (WEST)) AT MP 0.10 (ON LEFT)				0.00	0.00	0.00	12,158

Asset BICA-0915ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0915AZ	103178	4	BALLFIELD PARKING A	ADJACENT TO ROUTE 0212AZ (AVENUE B (WEST)) AT MP 0.35 (ON LEFT)				0.00	0.00	0.00	2,415
0915BZ	103178	4	BALLFIELD PARKING B	ADJACENT TO ROUTE 0415 (FOURTH STREET) AT MP 0.02 (ON LEFT)				0.00	0.00	0.00	1,460
0915CZ	103178	4	BALLFIELD PARKING C	ADJACENT TO ROUTE 0416 (SIXTH STREET) AT MP 0.09 (ON LEFT)				0.00	0.00	0.00	1,552

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - BICA

ROUTES ADDED FROM PREVIOUS INVENTORY:			
Route #	**Route Name**	**Reason for Addition**	**Comments**
0226	JOHN BLUE CANYON ROAD	OTHER	NEW ROUTE ADDED TO THE INVENTORY WITH A VERY SHORT PAVED SEGMENT.
0915ZZ	BALLFIELD PARKING LOTS	ROUTES COMBINED	NEW SUMMARY RECORD ADDED IN CYCLE 5 FOR ROUTES 0915AZ, 0915BZ, AND 0915CZ.

ROUTES MODIFIED FROM PREVIOUS INVENTORY:			
Route #	**Route Name**	**Type of Modification**	**Comments**
0010	FORT SMITH ACCESS ROAD	LENGTH CHANGE	ROUTE EXTENDED TO YELLOWTAIL DAM. ROUTE ENDED AT ROUTE 0900 IN CYCLE 4. OLD LENGTH WAS 5.29 MILES AND NEW LENGTH IS 5.37 MILES.
0215	AFTERBAY RIVER LAUNCH ROAD	SURFACE TYPE CHANGE	ROUTE WAS COMPLETELY UNPAVED IN CYCLE 4. A SHORT PAVED SEGMENT WAS ADDED AND COLLECTED IN CYCLE 5.
0216	GRAPEVINE CAMPGROUND ROAD	SURFACE TYPE CHANGE	ROUTE WAS COMPLETELY UNPAVED IN CYCLE 4. A SHORT PAVED SEGMENT WAS ADDED AND COLLECTED IN CYCLE 5.

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - BICA

OTHER CHANGES FROM PREVIOUS INVENTORY:

Route #	Route Name	Type of Change	Comments
0209	M. L. RANCH ROAD SOUTH UNIT	COLLECTION METHOD CHANGE	ROUTE WAS COLLECTED IN CYCLE 5 BECAUSE NO DATA WAS COLLECTED FOR THIS ROUTE IN CYCLE 4. ROUTE 0209 WAS MANUALLY RATED IN CYCLE 3.
0915AZ	BALLFIELD PARKING A	ROUTES COMBINED	ROUTE NUMBER CHANGED FROM 0915 TO 0915AZ. COMBINED WITH 0915BZ AND 0915CZ.
0915BZ	BALLFIELD PARKING B	ROUTES COMBINED	ROUTE NUMBER CHANGED FROM 0916 TO 0915BZ. COMBINED WITH 0915AZ AND 0915CZ.
0915CZ	BALLFIELD PARKING C	ROUTES COMBINED	ROUTE NUMBER CHANGED FROM 0917 TO 0915CZ. COMBINED WITH 0915AZ AND 0915BZ.

ROUTES REMOVED FROM PREVIOUS INVENTORY:

Route #	Route Name	Reason for Removal	Comments
0911	AIRSTRIP PARKING	OTHER	REMOVED BETWEEN CYCLE 4 AND CYCLE 5 BECAUSE IT IS PART OF THE AIRSTRIP.
0929	CROOKED CREEK AUTOMATIC FEE PAY STATION	OTHER	REMOVED BECAUSE THE PARK CONSIDERS THIS A PULLOUT THAT IS MANAGED WITH THE ADJACENT ROAD.
0930	HORSESHOE BEND DUMP STATION	OTHER	REMOVED BECAUSE THE PARK CONSIDERS THIS A PULLOUT THAT IS MANAGED WITH THE ADJACENT ROAD.
0932	HORSESHOE BEND BOAT LAUNCH PARKING	OTHER	REMOVED BECAUSE THIS AREA IS A GAS STATION NEAR THE BOAT RAMP AND PARKING IS NOT ALLOWED.

Section 3
Park Summary Information

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

BICA: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

F.C.	Pavement Condition Rating (PCR)								TOTAL MILES
	Poor (0-60)		Fair (61-84)		Good (85-94)		Excellent (95-100)		
	MILES	%	MILES	%	MILES	%	MILES	%	
1	0.24	0.79%	3.70	12.18%	7.80	25.67%	18.51	60.93%	**30.25**
2									
3	0.01	0.03%	0.02	0.07%	0.07	0.23%	0.03	0.10%	**0.13**
4									
5									
6									
7									
8									
Totals	**0.25**	**0.82%**	**3.72**	**12.24%**	**7.87**	**25.90%**	**18.54**	**61.03%**	**30.38**

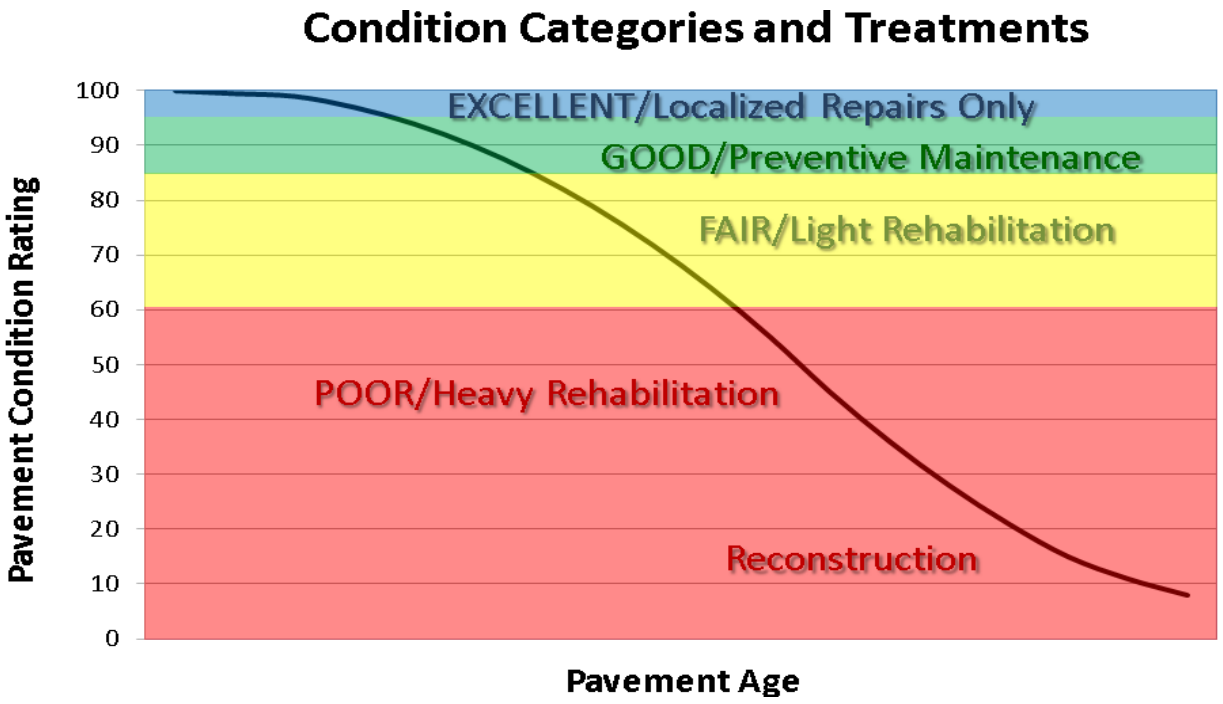
Note: **The information in this table is derived from the PMS_20 table in the Park database, which only contains processed data from routes collected with the Data Collection Vehicle (DCV). Information for Manually Rated Routes (MRR) and Parking Areas is not reported in this table. Only Functional Class 1, 2, & 7 routes, and any new routes not previously collected by RIP, are collected in Large Parks.**

Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that have been implemented in Cycle 5, we will also aim to provide greater assistance in translating excellent/good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 0-60. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

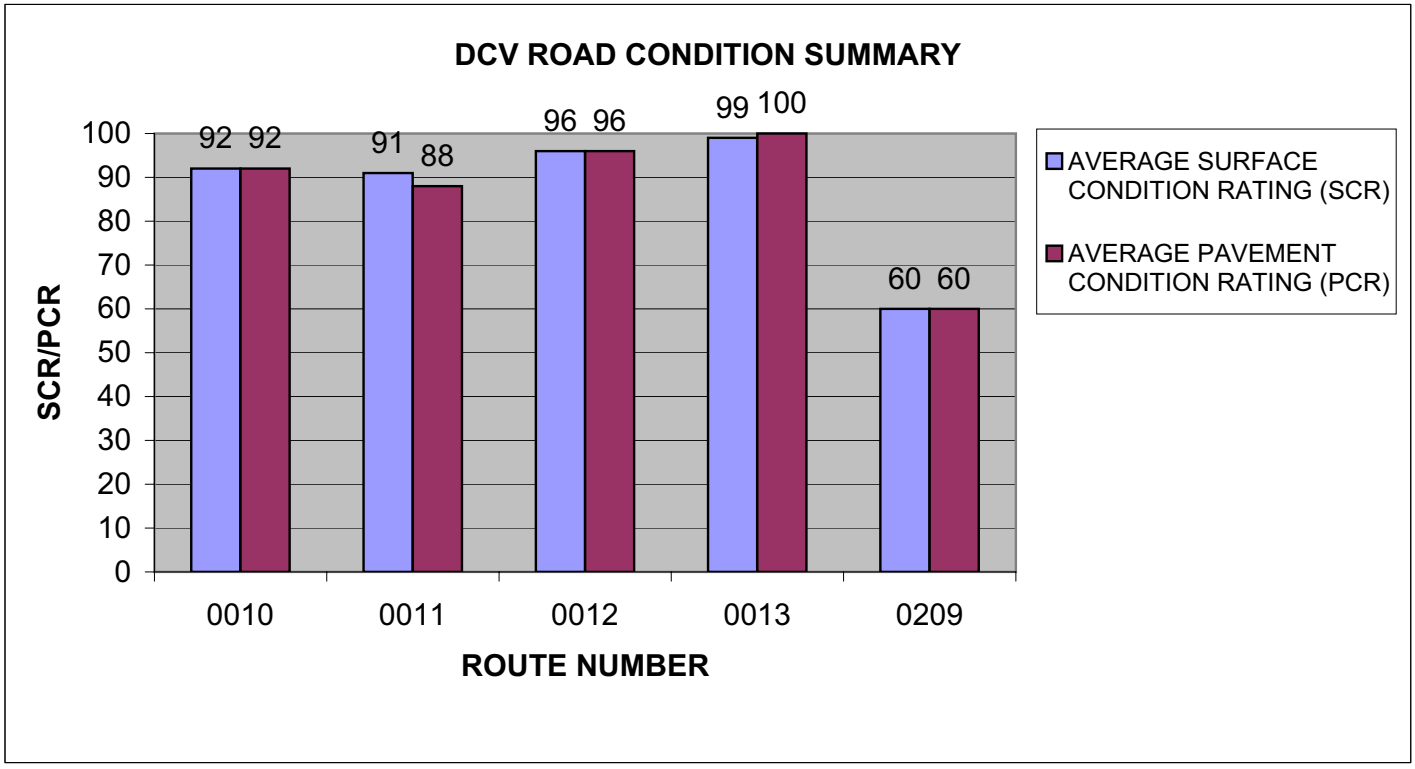
At this time, specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.



BICA: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

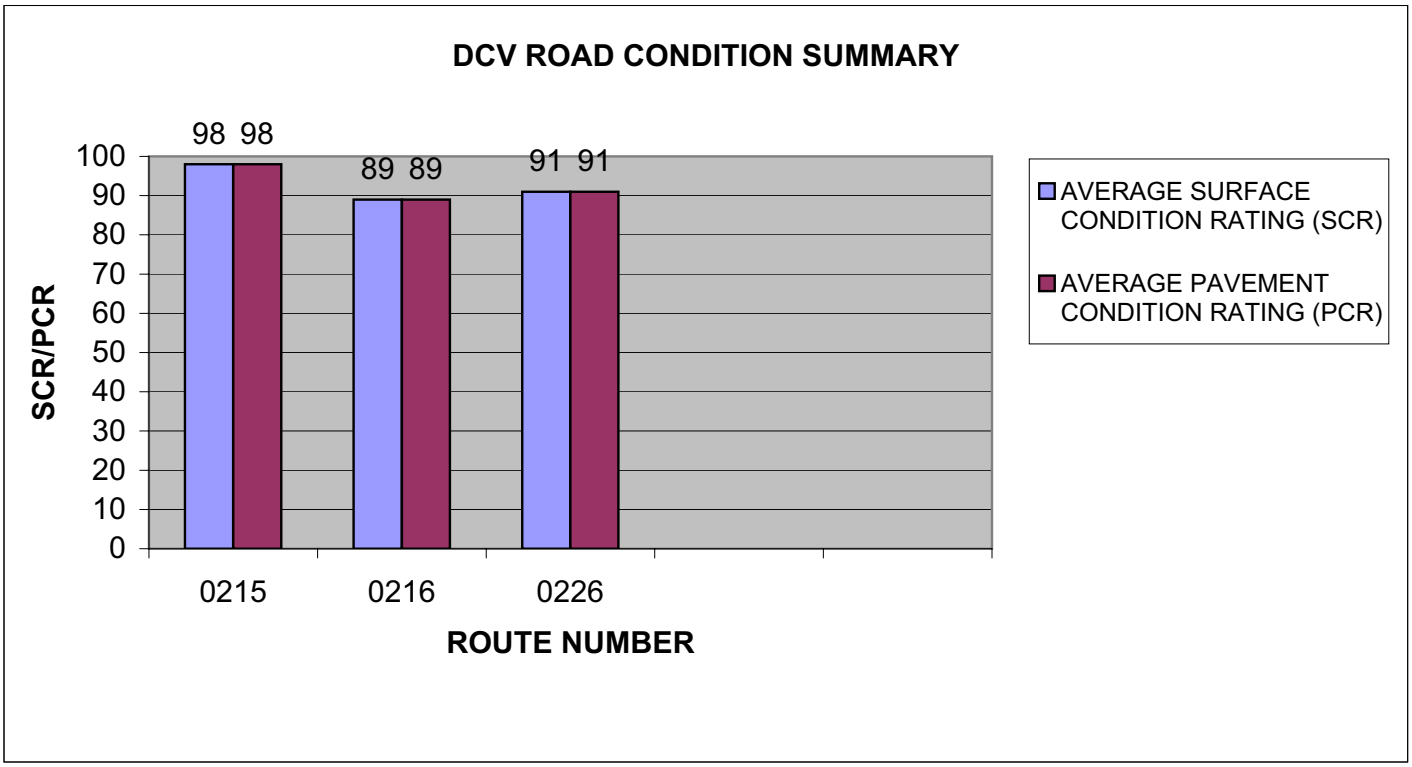
ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0010	FORT SMITH ACCESS ROAD	1	5.37	ASPHALT	92	92
0011	OK-A-BEH ROAD	1	9.37	ASPHALT	91	88
0012	AFTERBAY ROAD	1	2.31	ASPHALT	96	96
0013	BAD PASS ROAD	1	13.60	ASPHALT	99	100
0209	M. L. RANCH ROAD SOUTH UNIT	3	0.53	ASPHALT	60	60



BICA: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0215	AFTERBAY RIVER LAUNCH ROAD	3	0.06	ASPHALT	98	98
0216	GRAPEVINE CAMPGROUND ROAD	3	0.06	ASPHALT	89	89
0226	JOHN BLUE CANYON ROAD	3	2.27	ASPHALT	91	91

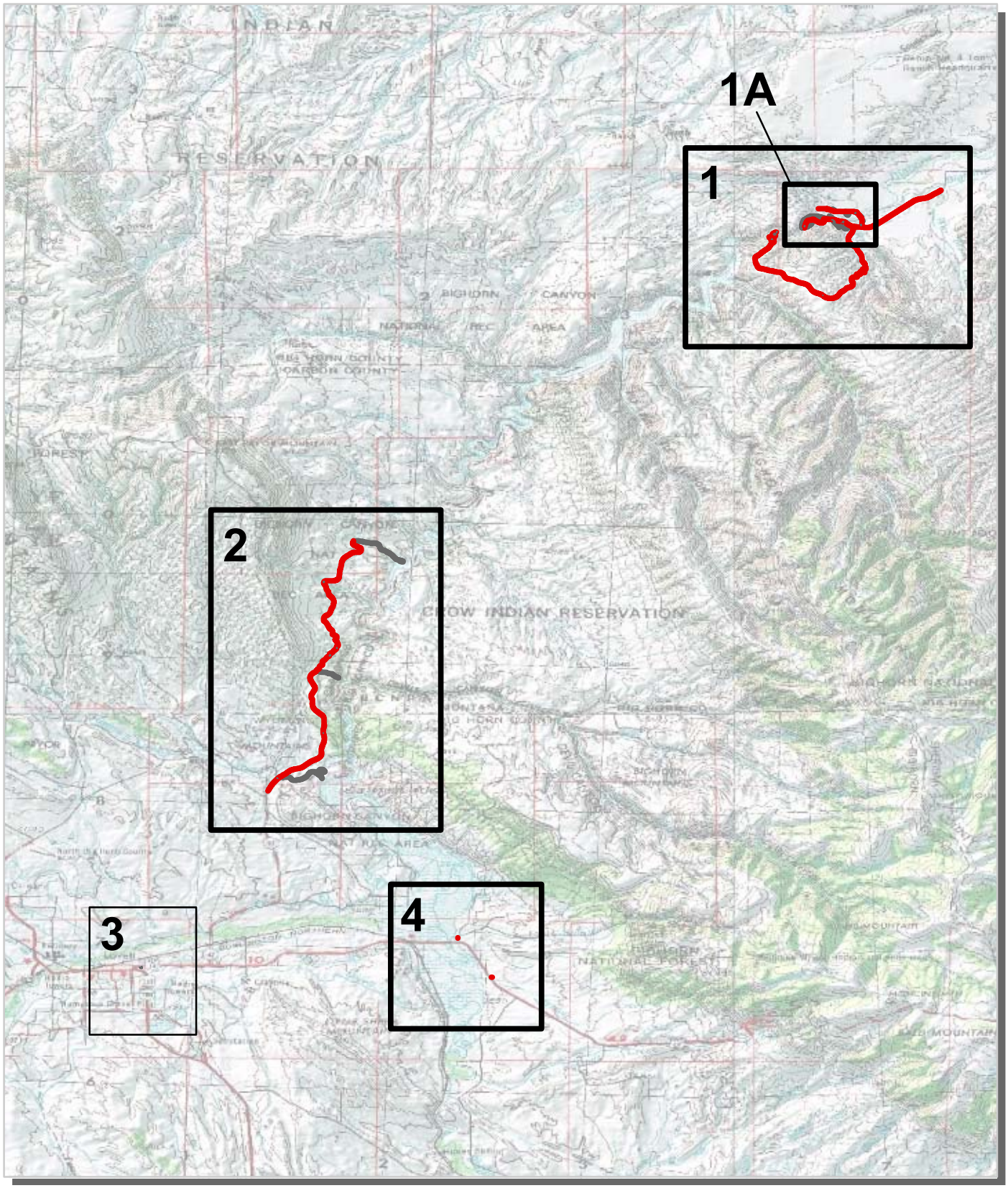


Section 4
Park Route Location Maps

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

Bighorn Canyon National Recreation Area
Route Location Map
Key Map



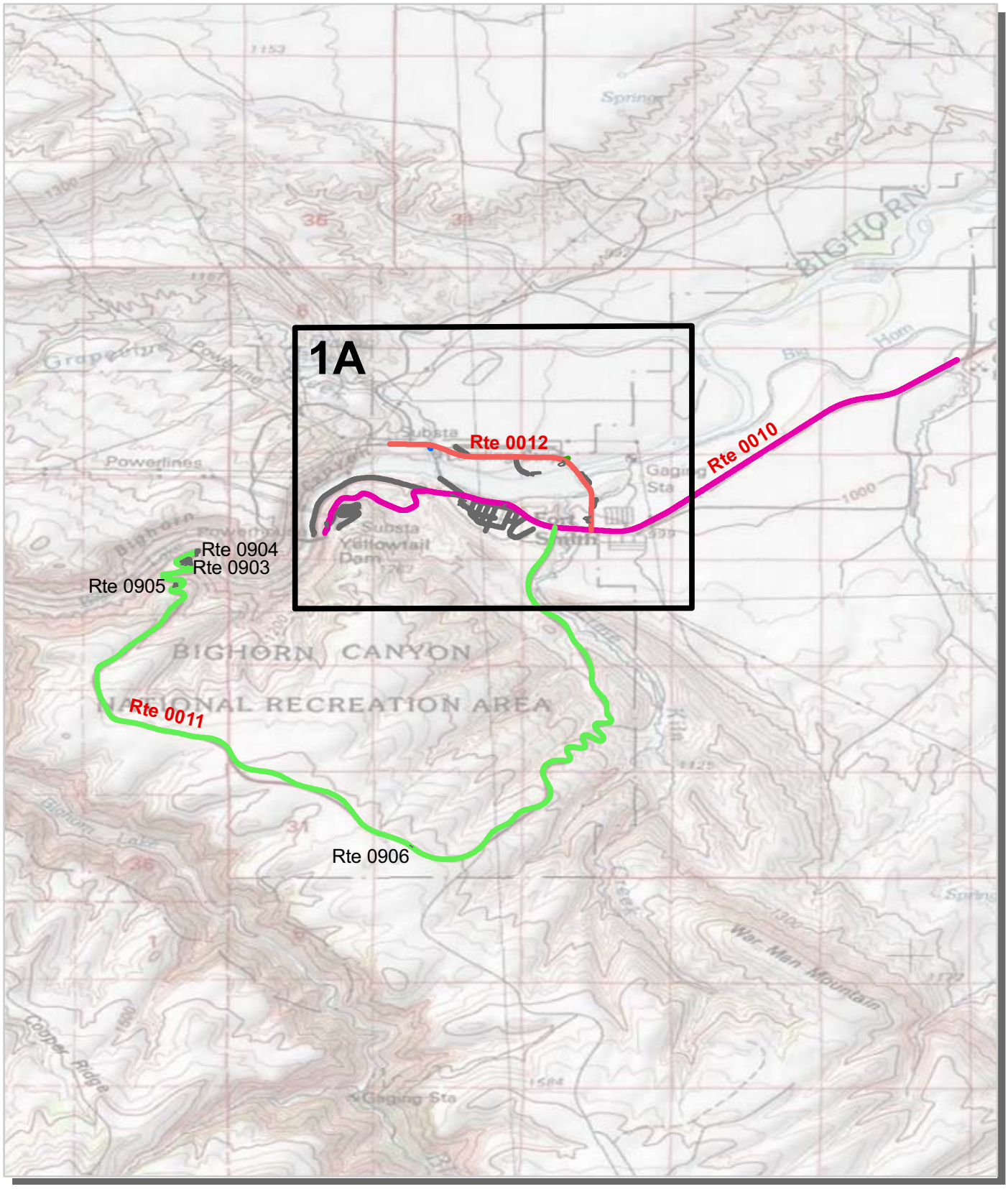
Cycle 5 Collected Routes

Routes Collected in Previous Cycle

6 3 0 6 Miles

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 1



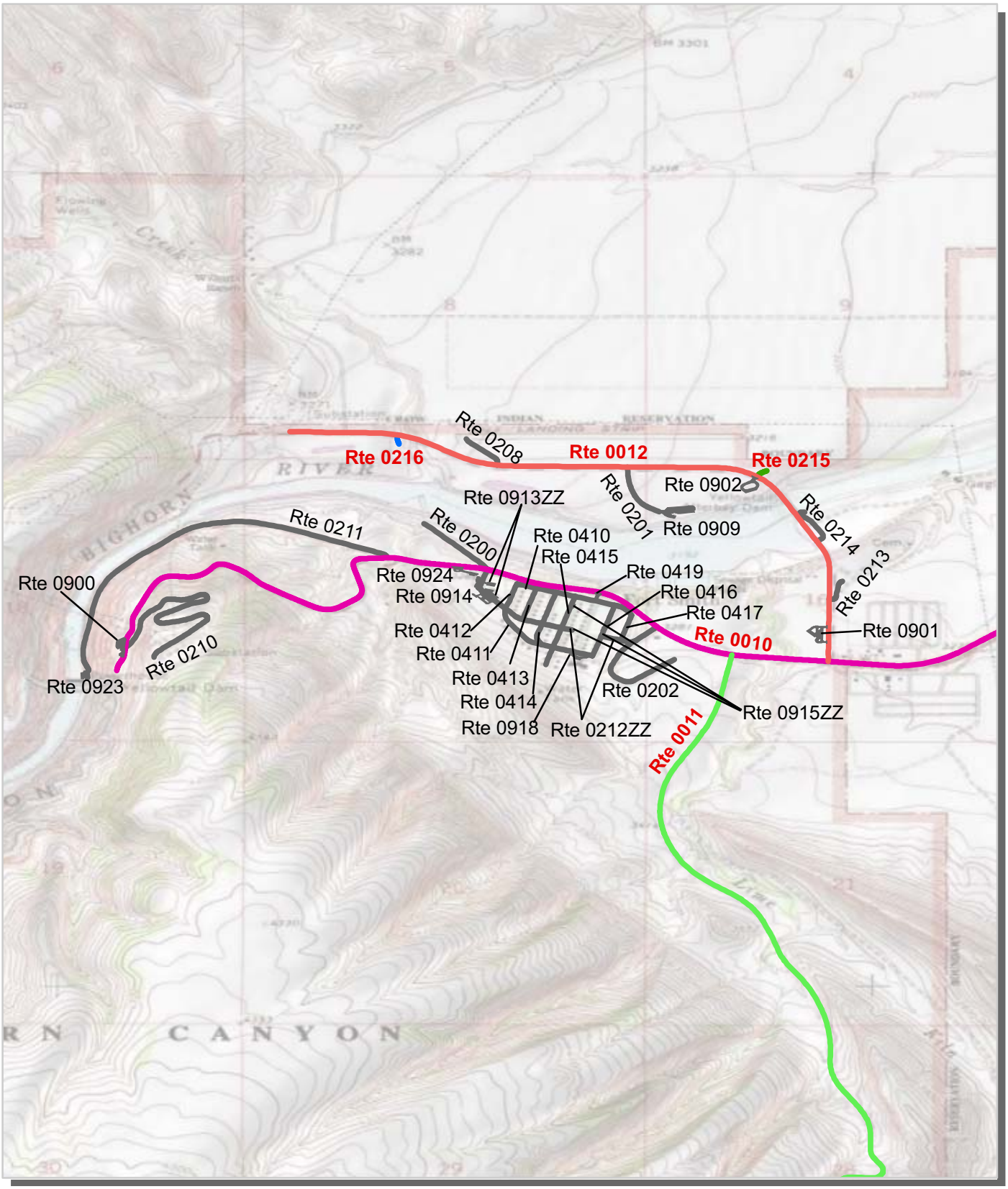
Unique colors used to differentiate routes

Routes Collected in Previous Cycle

1 0.5 0 1 Miles

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 1A



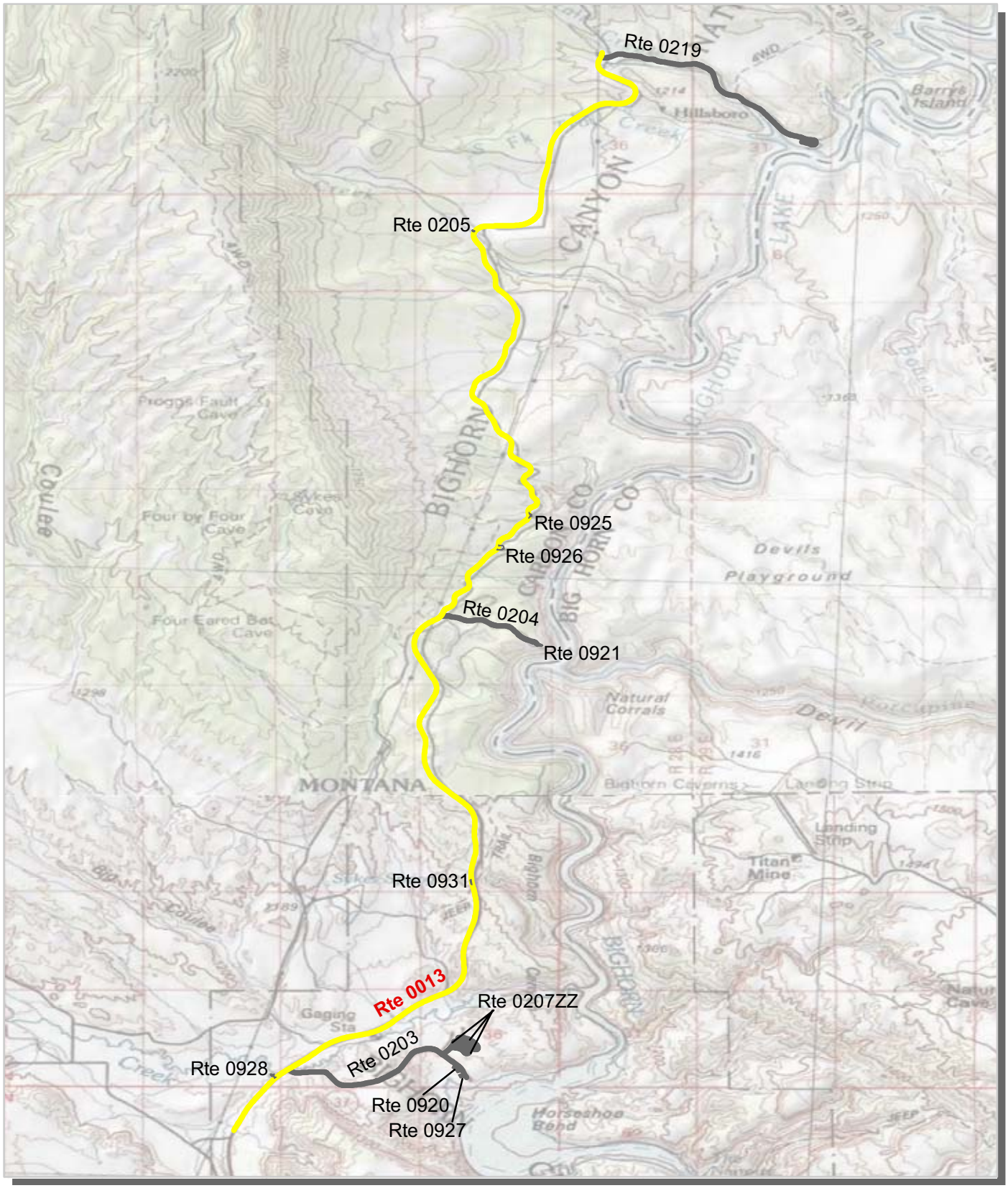
Unique colors used to differentiate routes

Routes Collected in Previous Cycle

0.4 0.2 0 0.4 Miles

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 2



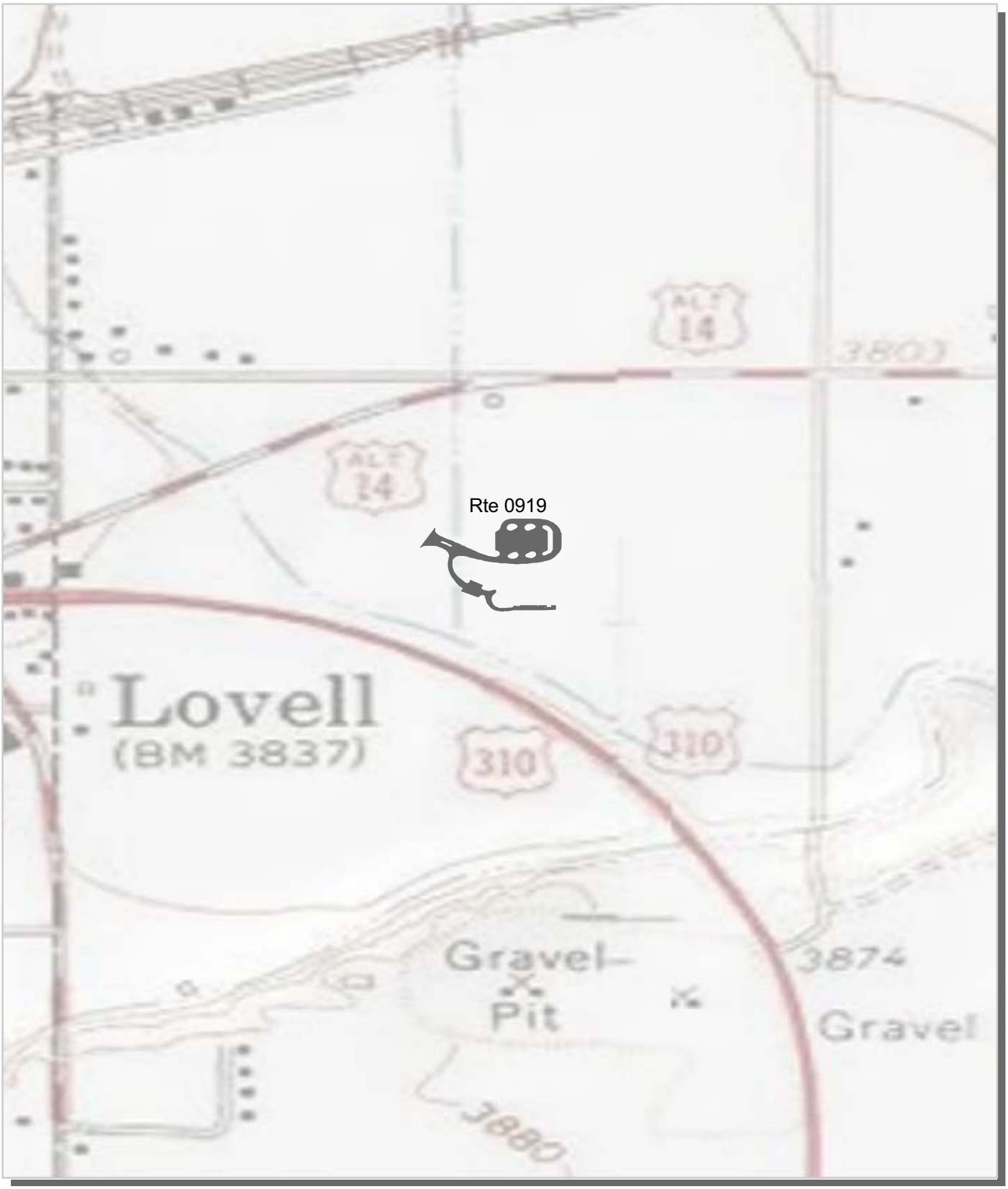
Unique colors used to differentiate routes

Routes Collected in Previous Cycle

2 1 0 2 Miles

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 3



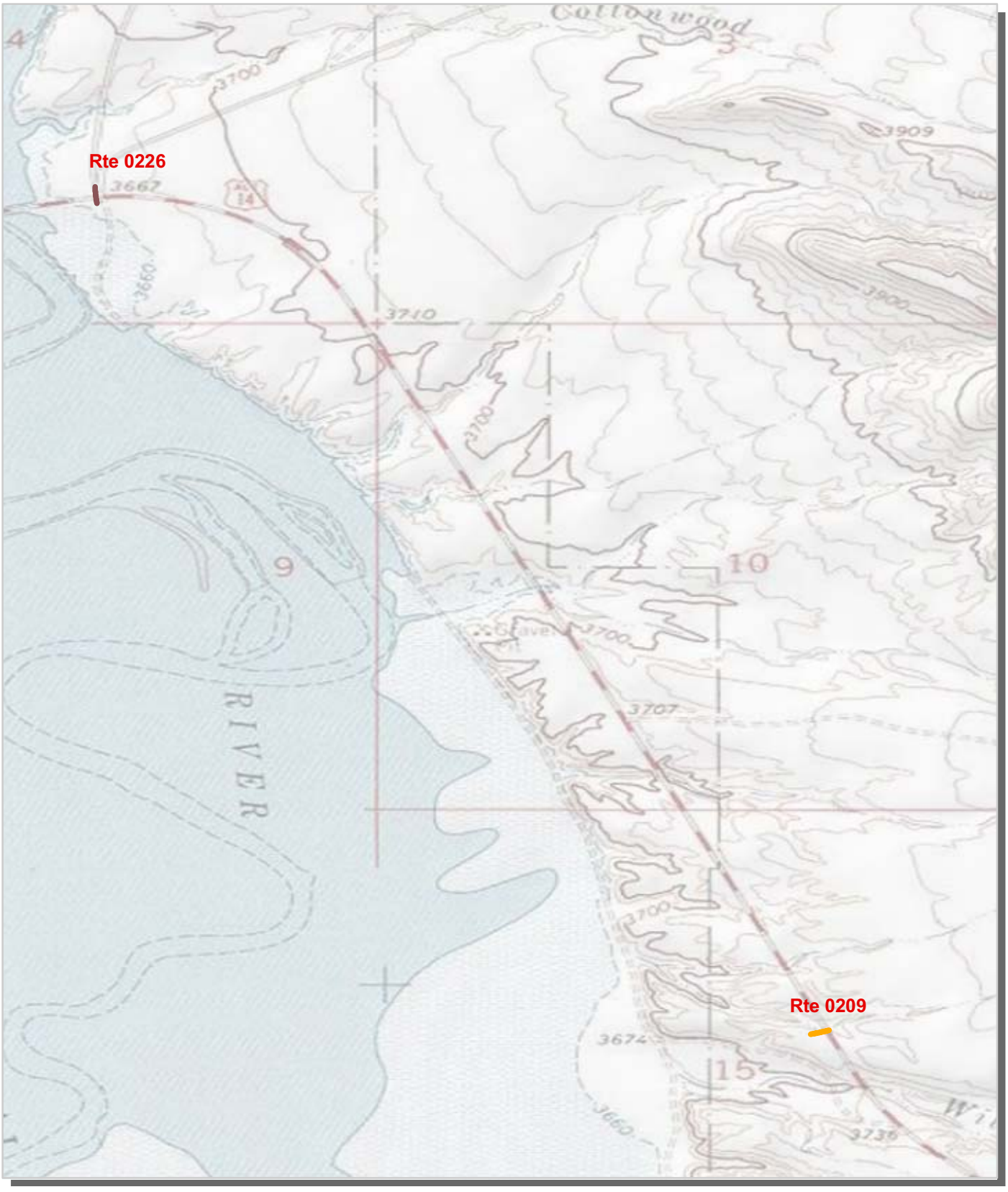
Unique colors used to differentiate routes

Routes Collected in Previous Cycle

820 410 0 820
Feet

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 4



Unique colors used to differentiate routes

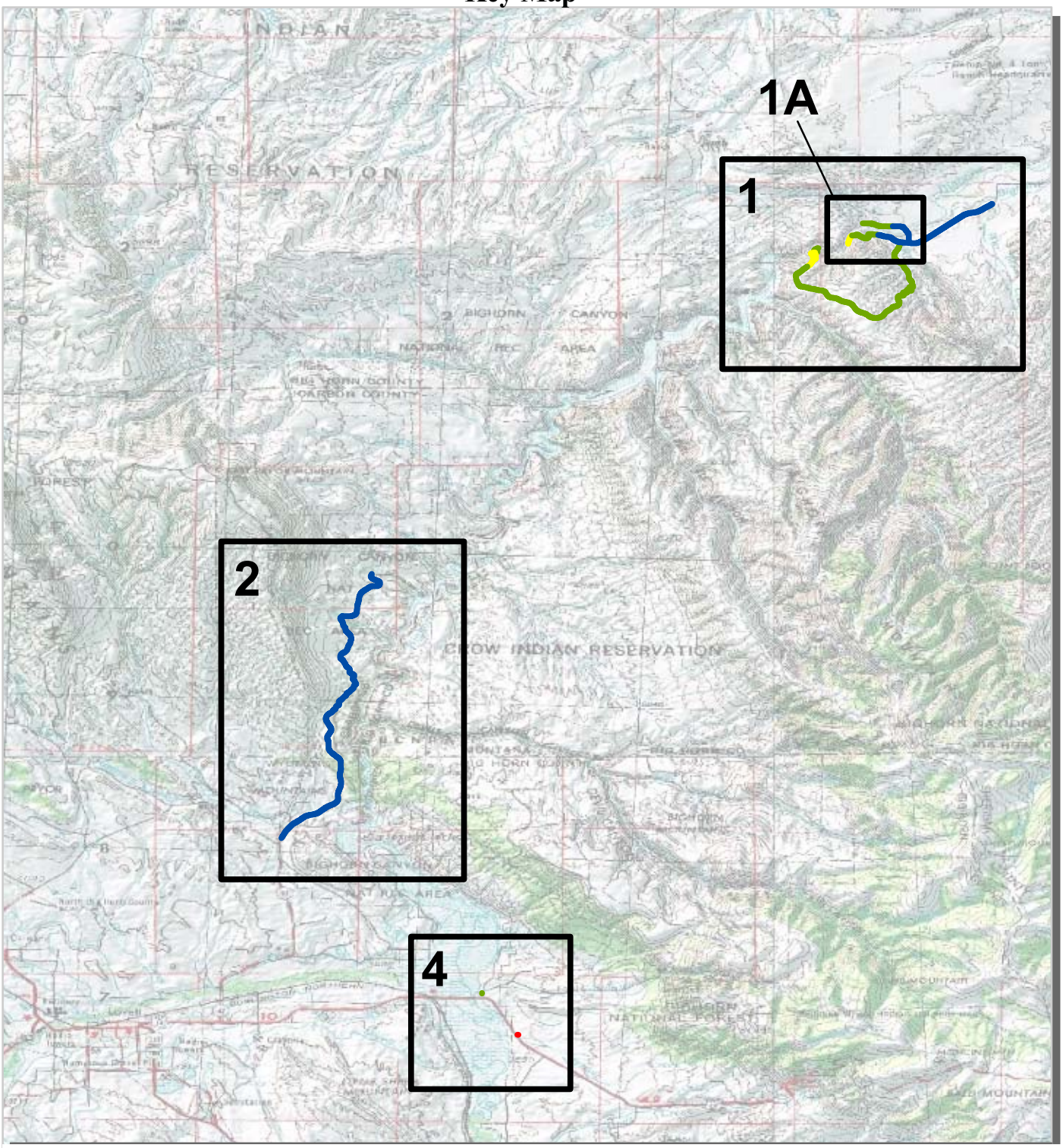
Routes Collected in Previous Cycle

0.4 0.2 0 0.4

Miles

N

Bighorn Canyon National Recreation Area
Route Condition Map
PCR - Mile by Key Map



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

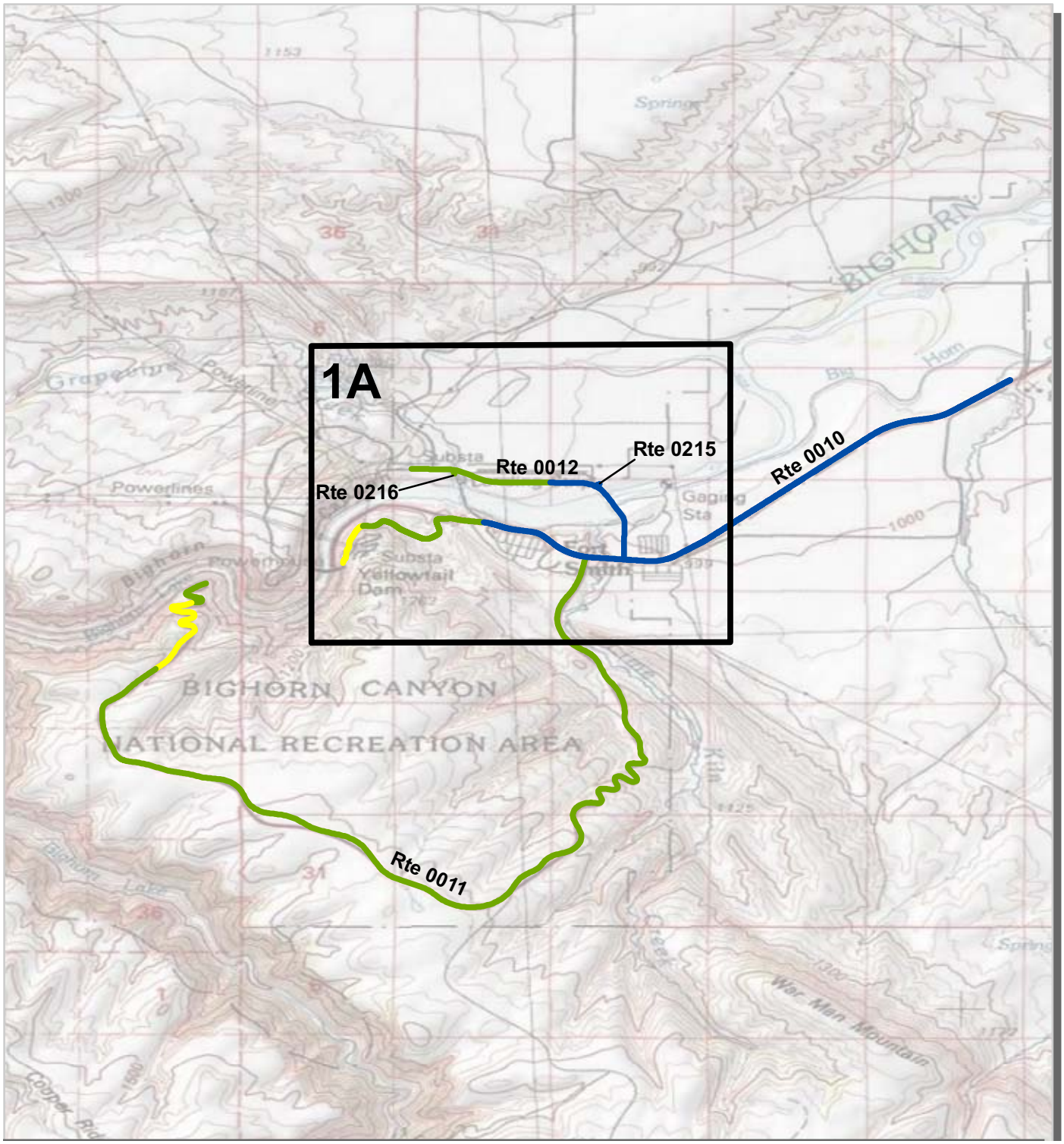
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

Note: Only routes collected by the DCV in Cycle-5 are displayed.

6 3 0 6 Miles

N

Bighorn Canyon National Recreation Area
Route Condition Map
PCR - Mile by Mile
Area 1



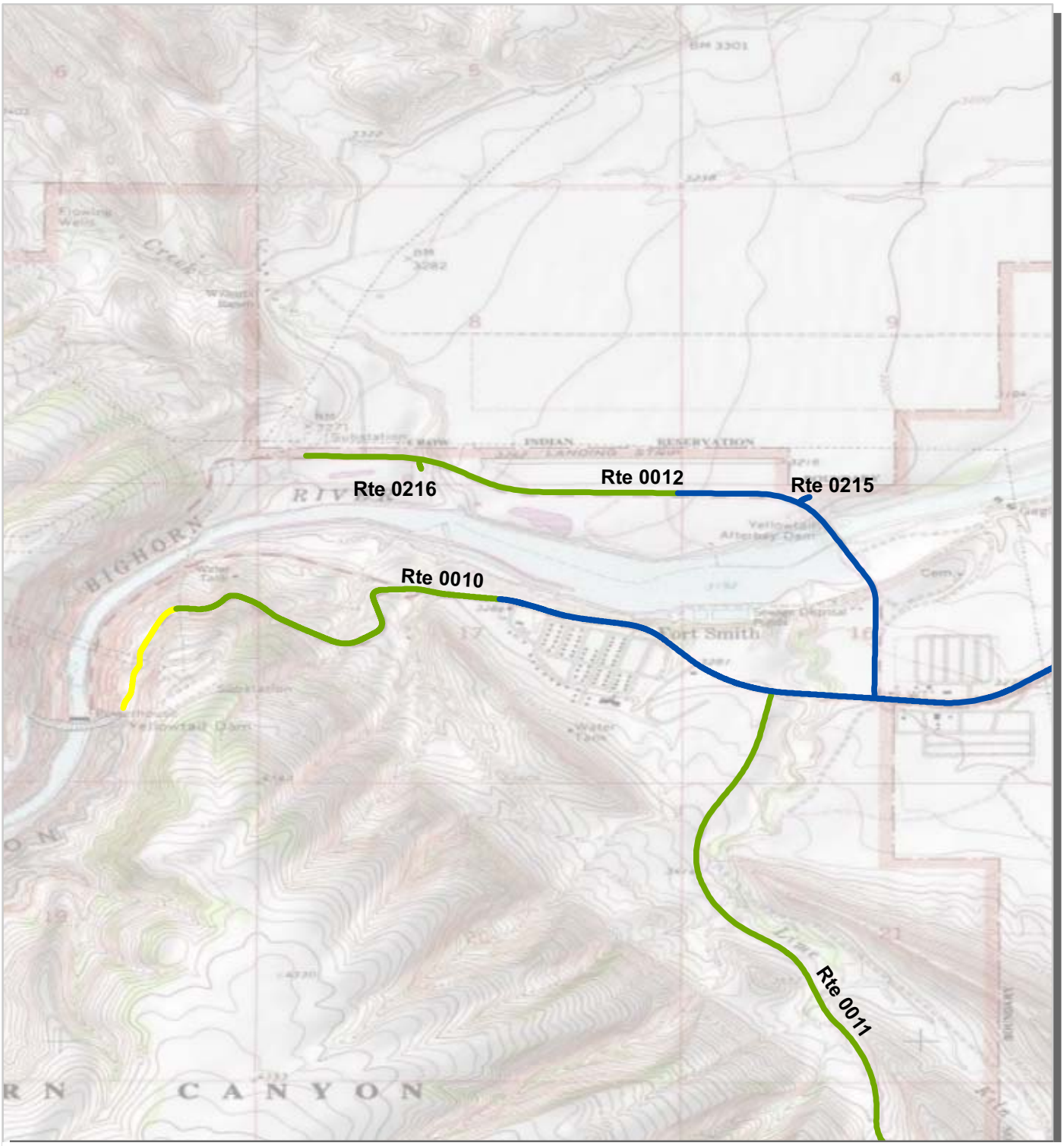
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

1 0.5 0 1 Miles

N

Bighorn Canyon National Recreation Area
Route Condition Map
PCR - Mile by Mile
Area 1A



PCR — Poor (0 - 60) | Fair (61 - 84) | Good (85 - 94) | Excellent (95 - 100) | No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

0.4 0.2 0 0.4 Miles

N

Bighorn Canyon National Recreation Area
Route Location Map
Area 2

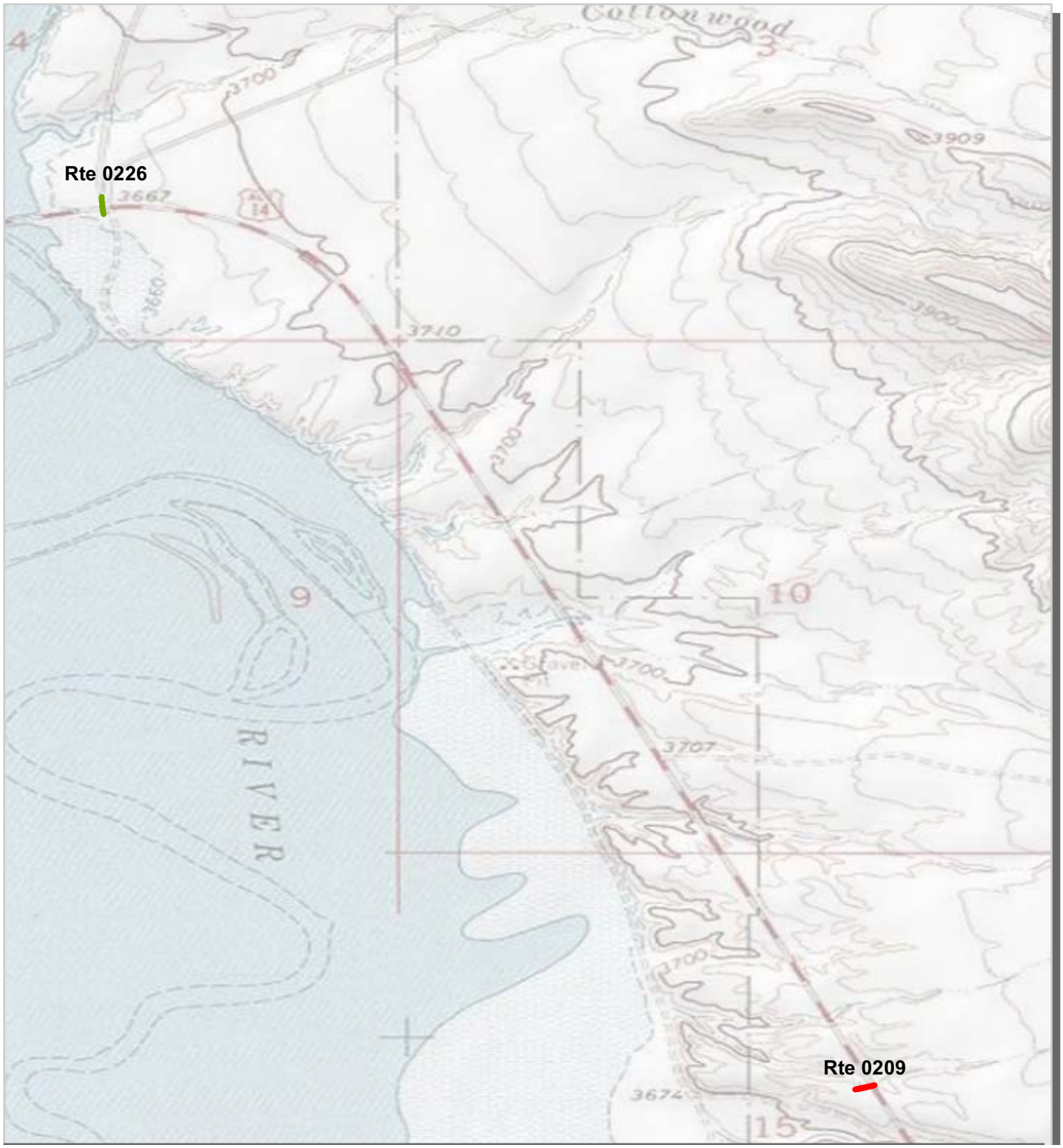
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

2.5 1.25 0 2.5 Miles

N

Bighorn Canyon National Recreation Area
Route Condition Map
PCR - Mile by Mile
Area 4



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

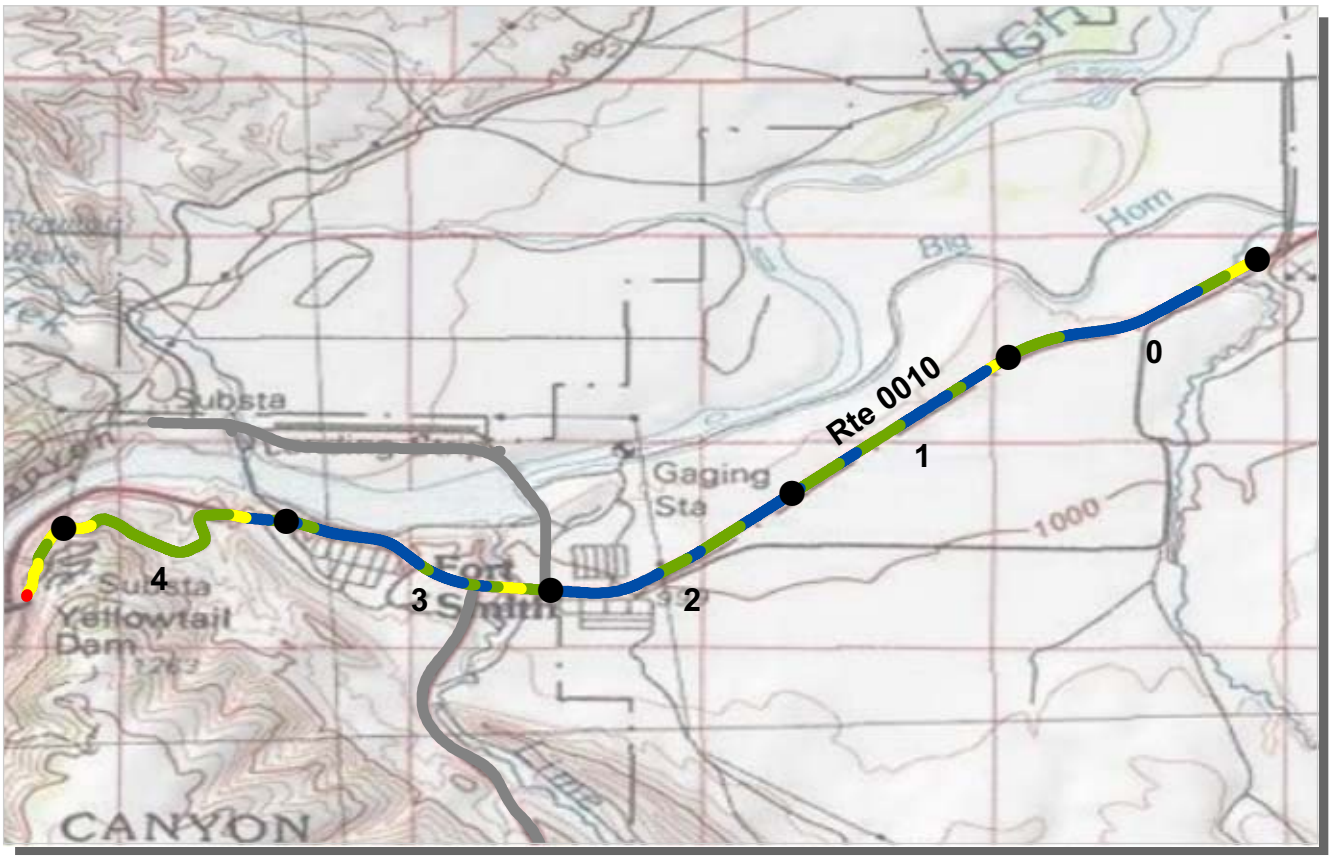
0.4 0.2 0 0.4 Miles

N

Section 5
Paved Route
Condition Rating Sheets

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

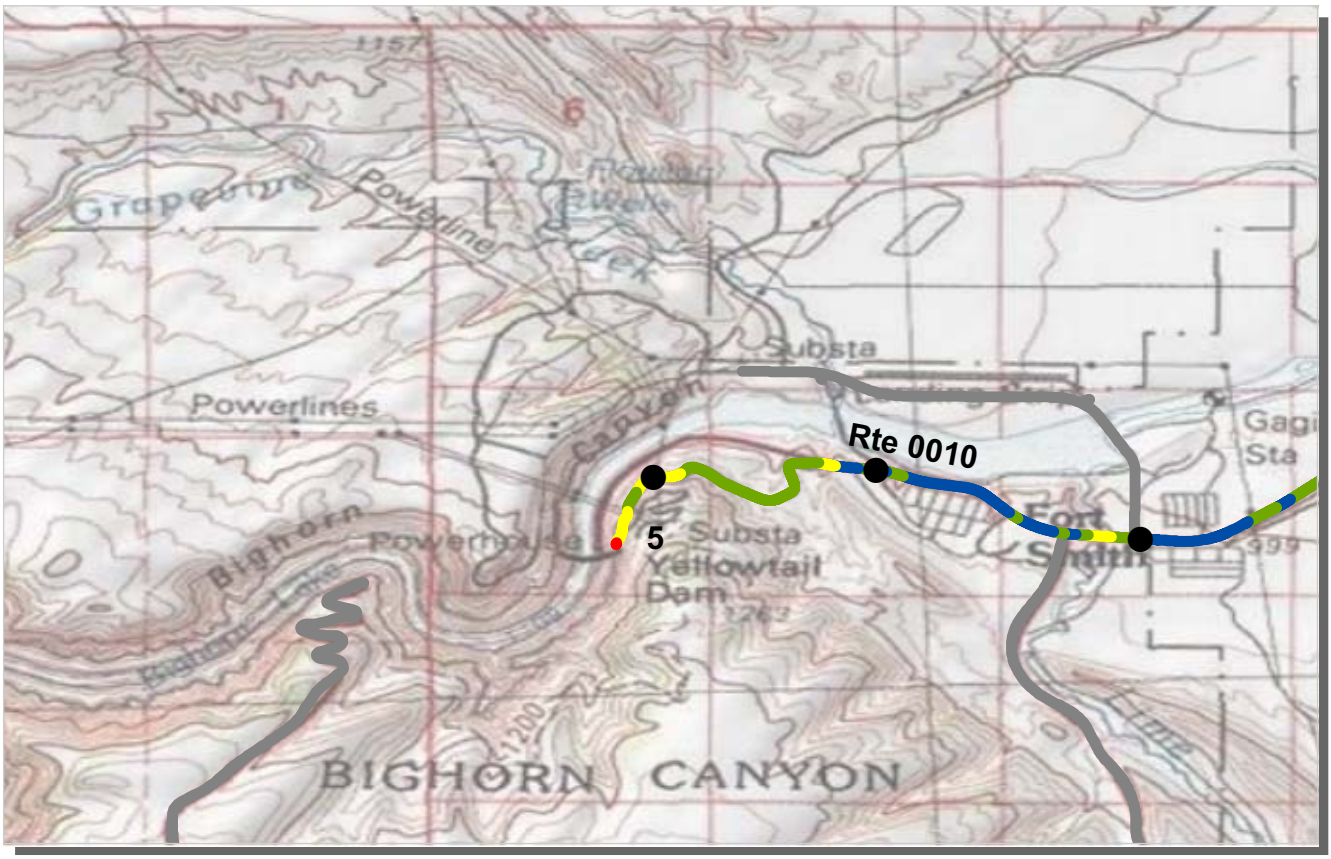
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0010 FORT SMITH ACCESS ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 5.37 Miles**

Section Number	0	1	2	3	4
Section Length (mi)	1.00	1.00	1.00	1.00	1.00
Cross Section Information					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	24	25	25	25	26
Lane Width (ft)	11	11	11	10	10
Roadway Condition Information					
SCR (Surface Condition Rating)	93	92	92	94	93
PCR (Pavement Condition Rating)	96	95	95	96	86
Distress Index Values					
Structural Crack Index	98	100	100	95	98
Transverse Cracking Index	93	92	96	94	95
Patching Index	100	100	100	100	100
Rutting Index	96	94	92	99	93
Roughness Condition Index (RCI)	100	100	100	100	75

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

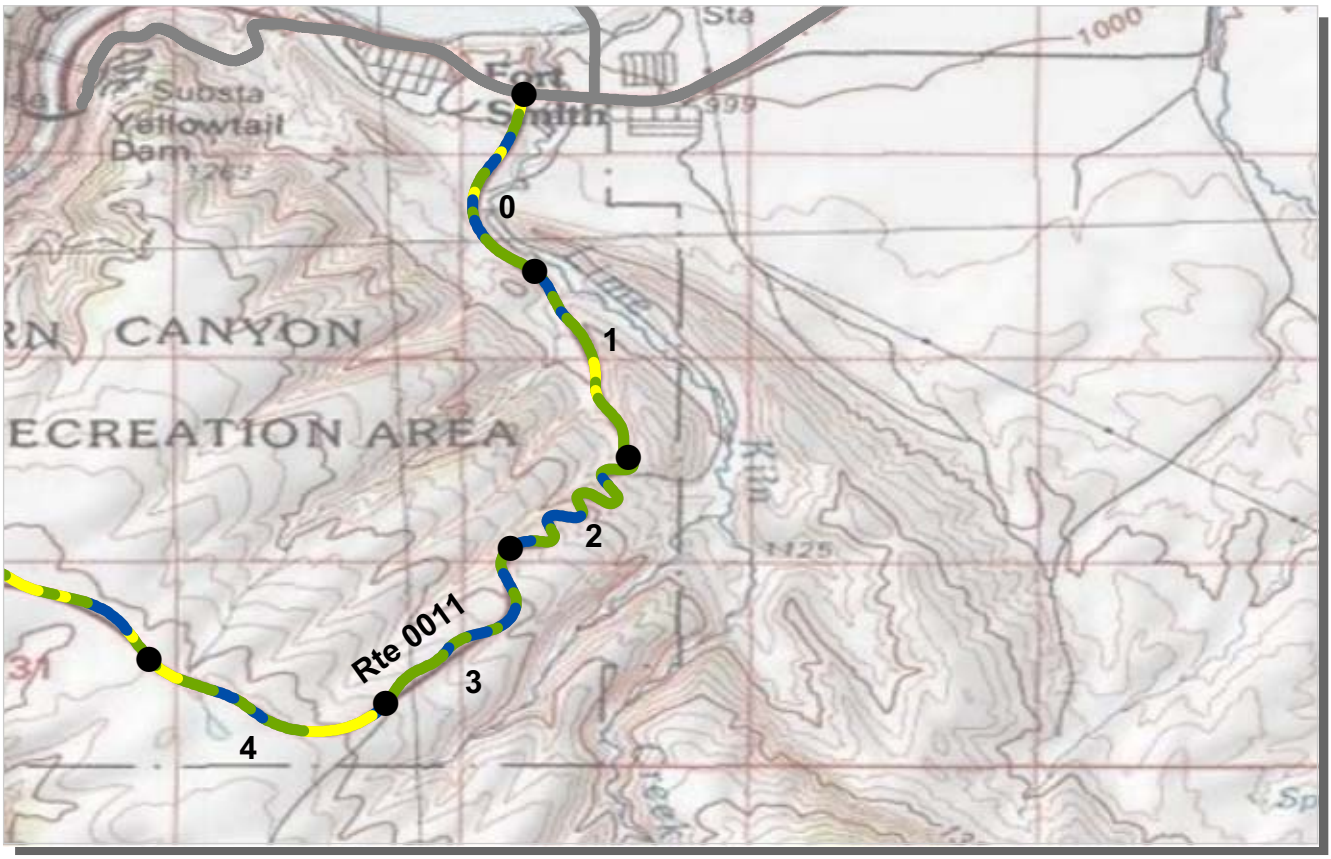
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0010 FORT SMITH ACCESS ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 5.37 Miles**

Section Number	5				
Section Length (mi)	0.37				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	26				
Lane Width (ft)	11				
Roadway Condition Information					
SCR (Surface Condition Rating)	88				
PCR (Pavement Condition Rating)	74				
Distress Index Values					
Structural Crack Index	98				
Transverse Cracking Index	97				
Patching Index	100				
Rutting Index	88				
Roughness Condition Index (RCI)	53				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

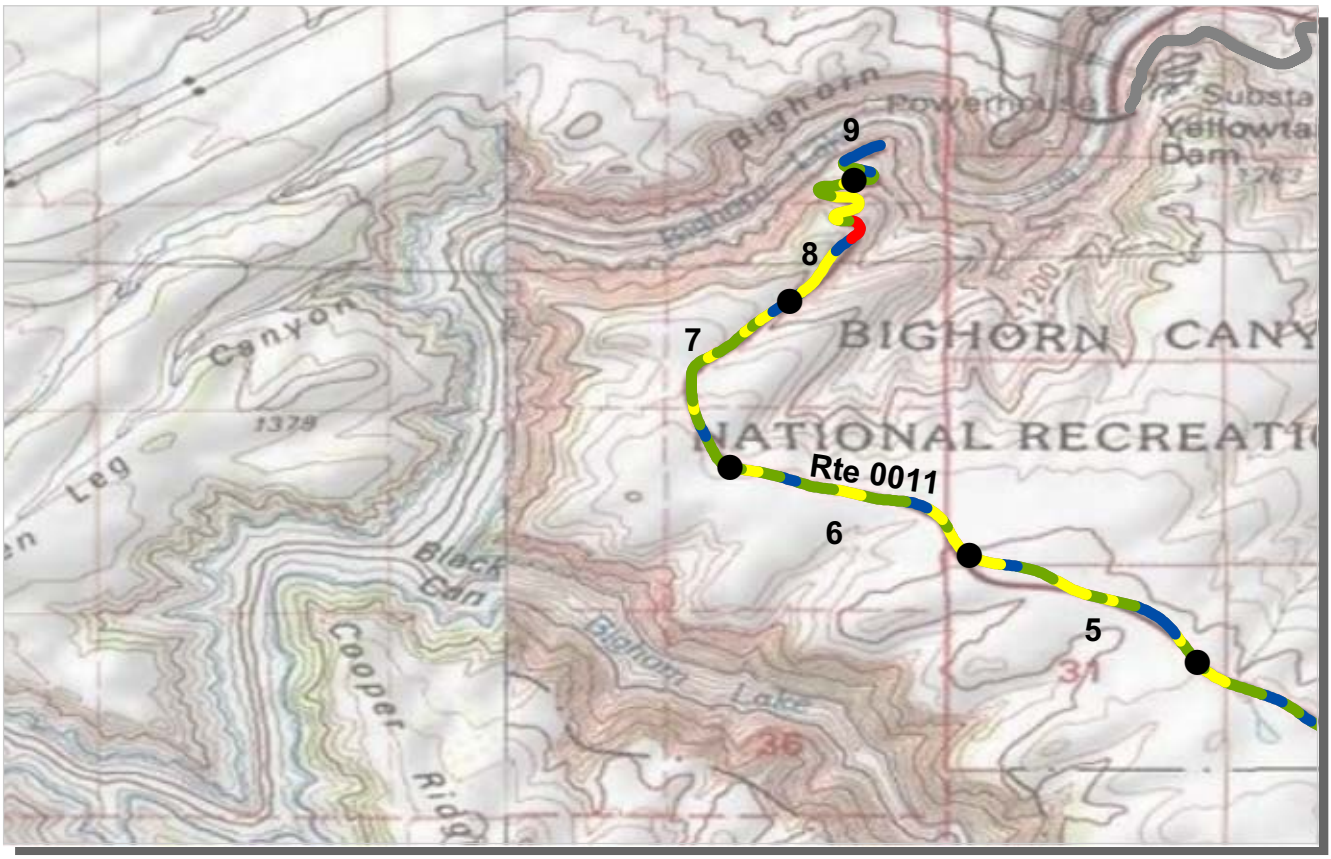
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0011 OK-A-BEH ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 9.37 Miles**

Section Number	0	1	2	3	4
Section Length (mi)	1.00	1.00	1.00	1.00	1.00
Cross Section Information					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	23	23	29	29	27
Lane Width (ft)	10	10	10	10	10
Roadway Condition Information					
SCR (Surface Condition Rating)	92	89	93	91	89
PCR (Pavement Condition Rating)	86	90	91	92	87
Distress Index Values					
Structural Crack Index	98	98	100	100	97
Transverse Cracking Index	98	98	100	100	99
Patching Index	100	100	100	100	100
Rutting Index	92	89	93	91	89
Roughness Condition Index (RCI)	78	92	89	93	85

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

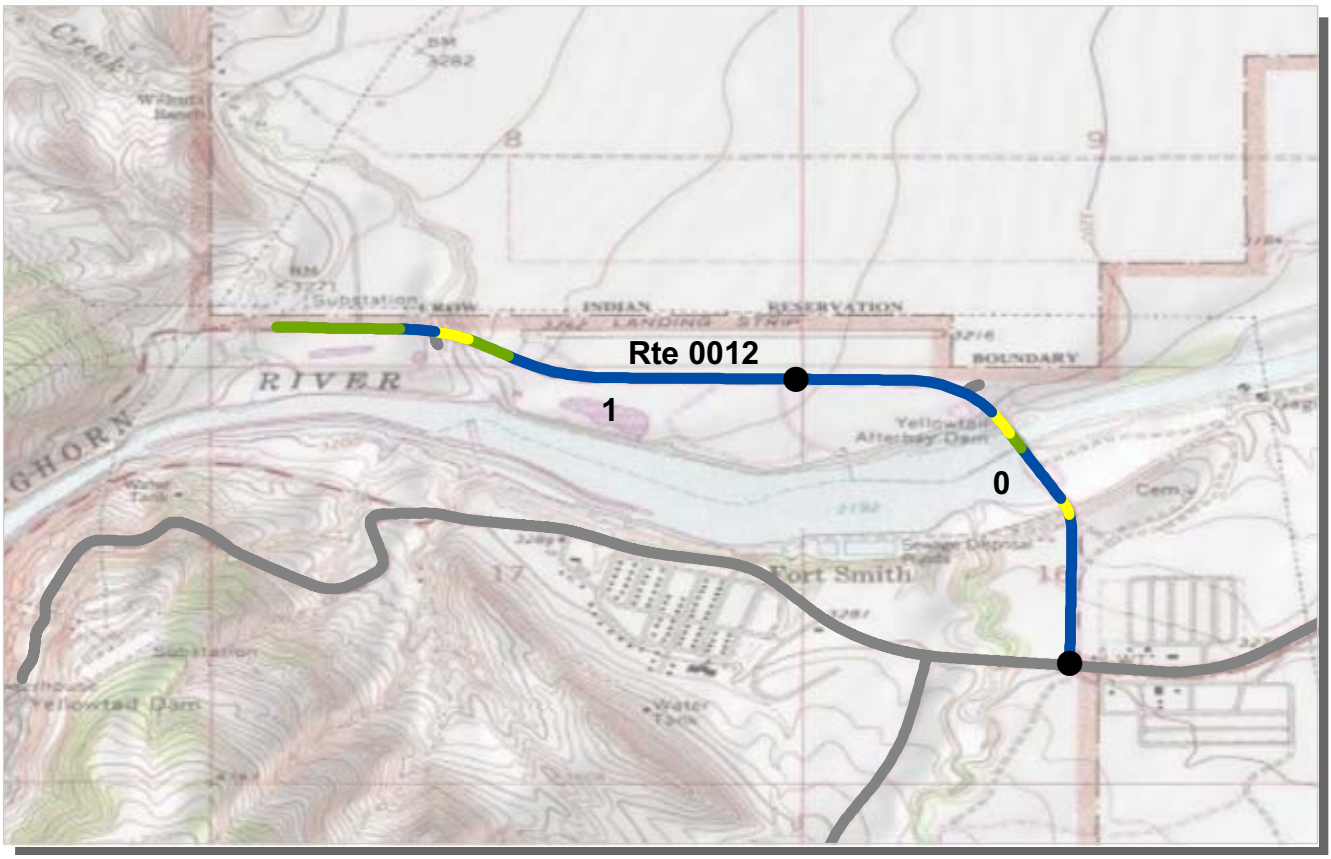
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0011 OK-A-BEH ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 9.37 Miles**

Section Number	5	6	7	8	9
Section Length (mi)	1.00	1.00	1.00	1.00	0.37
Cross Section Information					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	24	26	27	27	29
Lane Width (ft)	10	10	10	10	10
Roadway Condition Information					
SCR (Surface Condition Rating)	89	89	90	92	96
PCR (Pavement Condition Rating)	86	85	88	81	89
Distress Index Values					
Structural Crack Index	97	99	100	100	100
Transverse Cracking Index	98	98	99	99	100
Patching Index	100	100	100	95	100
Rutting Index	89	89	90	92	96
Roughness Condition Index (RCI)	82	79	84	64	79

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0012 AFTERBAY ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 1.91 Miles**

Section Number	0	1			
Section Length (mi)	1.00	0.91			
Cross Section Information					
Number of Lanes	2	2			
Paved Width (ft)	34	32			
Lane Width (ft)	11	11			
Roadway Condition Information					
SCR (Surface Condition Rating)	97	95			
PCR (Pavement Condition Rating)	97	94			
Distress Index Values					
Structural Crack Index	98	97			
Transverse Cracking Index	97	96			
Patching Index	100	100			
Rutting Index	98	95			
Roughness Condition Index (RCI)	96	92			

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0013 BAD PASS ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/9/2011

INTERMOUNTAIN REGION **TOTAL LENGTH: 13.60 Miles**

Section Number	0	1	2	3	4
Section Length (mi)	1.00	1.00	1.00	1.00	1.00
Cross Section Information					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	37	31	31	31	31
Lane Width (ft)	13	12	12	11	11
Roadway Condition Information					
SCR (Surface Condition Rating)	100	100	100	100	100
PCR (Pavement Condition Rating)	100	100	100	100	100
Distress Index Values					
Structural Crack Index	100	100	100	100	100
Transverse Cracking Index	100	100	100	100	100
Patching Index	100	100	100	100	100
Rutting Index	100	100	100	100	100
Roughness Condition Index (RCI)	100	100	100	100	100

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0013 BAD PASS ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/9/2011

INTERMOUNTAIN REGION **TOTAL LENGTH: 13.60 Miles**

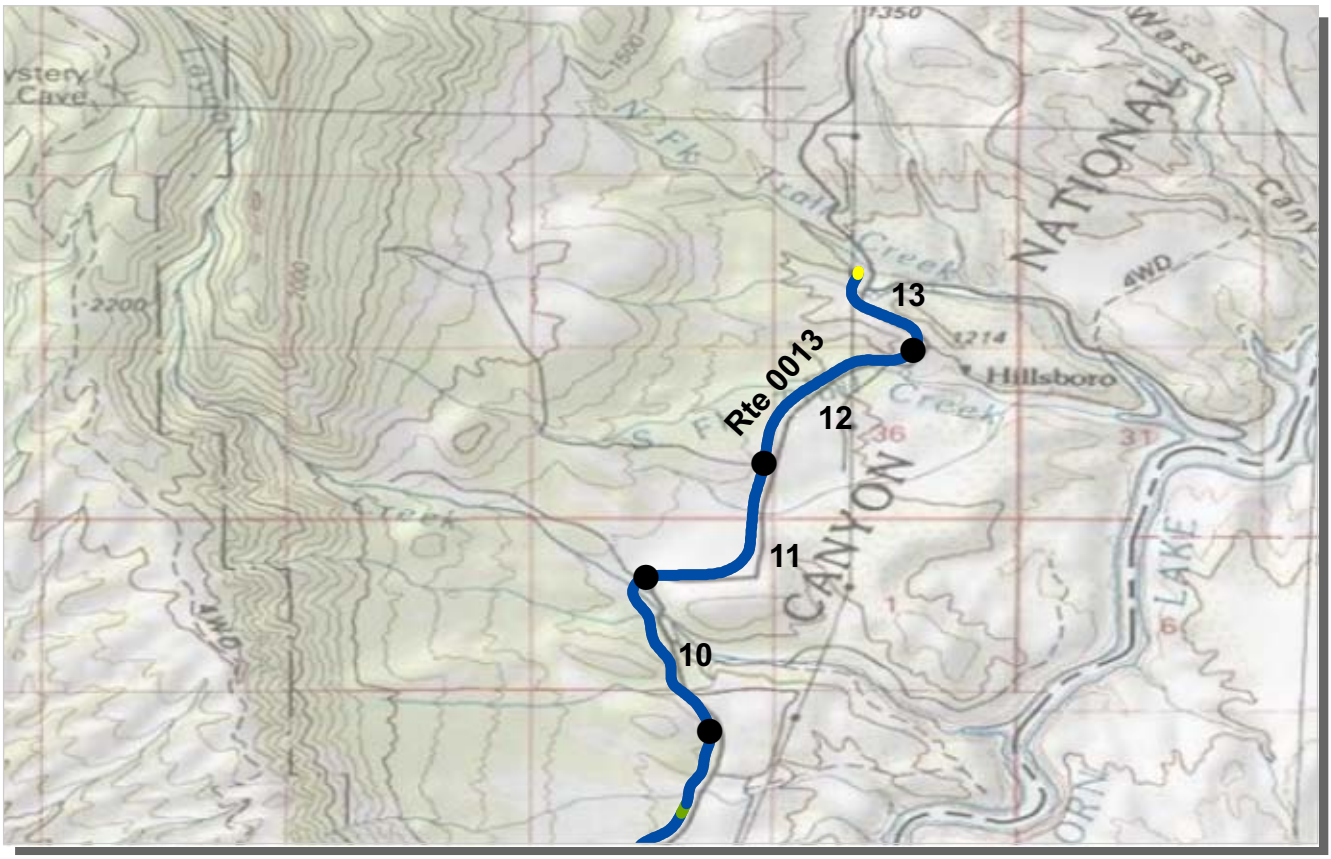
Section Number	5	6	7	8	9
Section Length (mi)	1.00	1.00	1.00	1.00	1.00
Cross Section Information					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	31	37	36	34	32
Lane Width (ft)	12	13	12	11	11
Roadway Condition Information					
SCR (Surface Condition Rating)	100	100	96	100	98
PCR (Pavement Condition Rating)	100	100	98	100	99
Distress Index Values					
Structural Crack Index	100	100	100	100	98
Transverse Cracking Index	100	100	100	100	100
Patching Index	100	100	100	100	100
Rutting Index	100	100	96	100	99
Roughness Condition Index (RCI)	100	100	100	100	100

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0013 BAD PASS ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/9/2011

INTERMOUNTAIN REGION **TOTAL LENGTH: 13.60 Miles**

Section Number	10	11	12	13	
Section Length (mi)	1.00	1.00	1.00	0.60	
Cross Section Information					
Number of Lanes	2	2	2	2	
Paved Width (ft)	33	32	33	38	
Lane Width (ft)	11	11	11	12	
Roadway Condition Information					
SCR (Surface Condition Rating)	99	99	99	98	
PCR (Pavement Condition Rating)	99	99	99	99	
Distress Index Values					
Structural Crack Index	99	99	99	100	
Transverse Cracking Index	100	100	100	100	
Patching Index	100	100	100	100	
Rutting Index	99	100	99	98	
Roughness Condition Index (RCI)	100	100	100	100	

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

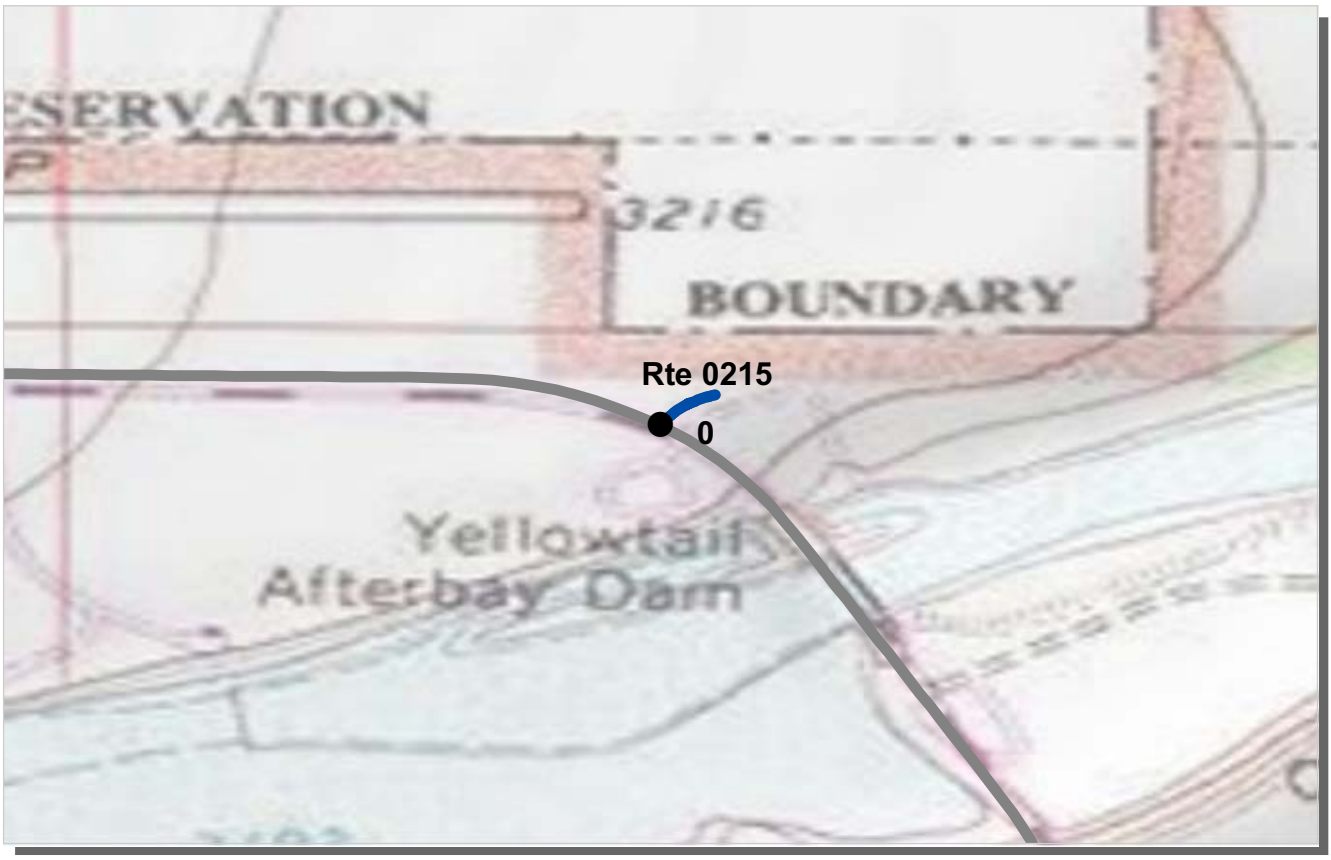
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0209 M. L. RANCH ROAD SOUTH UNIT
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/9/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 0.03 Miles**

Section Number	0				
Section Length (mi)	0.03				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	18				
Lane Width (ft)	9				
Roadway Condition Information					
SCR (Surface Condition Rating)	60				
PCR (Pavement Condition Rating)	60				
Distress Index Values					
Structural Crack Index	81				
Transverse Cracking Index	60				
Patching Index	100				
Rutting Index	94				
Roughness Condition Index (RCI)	NC				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

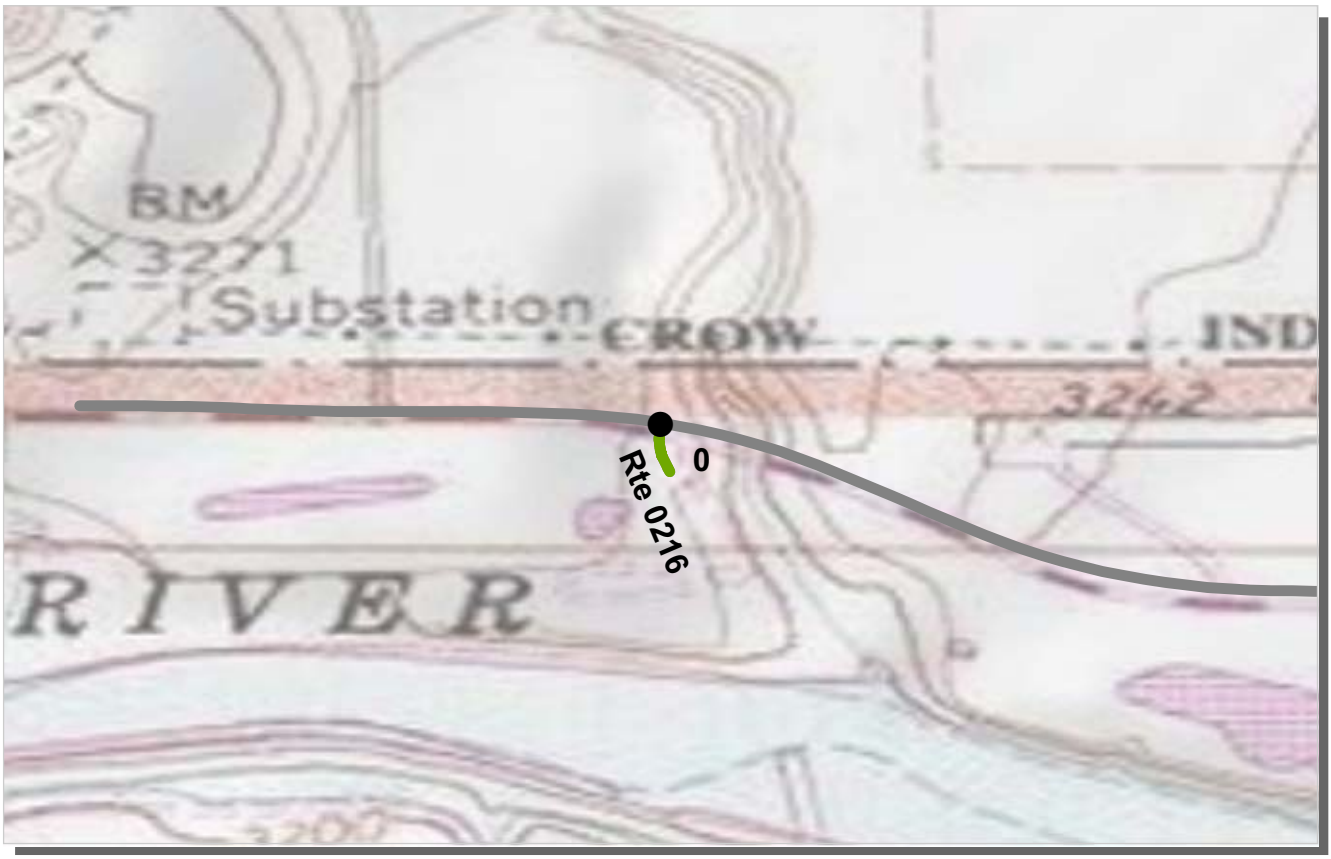
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0215 AFTERBAY RIVER LAUNCH ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 0.03 Miles**

Section Number	0				
Section Length (mi)	0.03				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	20				
Lane Width (ft)	9				
Roadway Condition Information					
SCR (Surface Condition Rating)	98				
PCR (Pavement Condition Rating)	98				
Distress Index Values					
Structural Crack Index	99				
Transverse Cracking Index	98				
Patching Index	100				
Rutting Index	98				
Roughness Condition Index (RCI)	NC				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

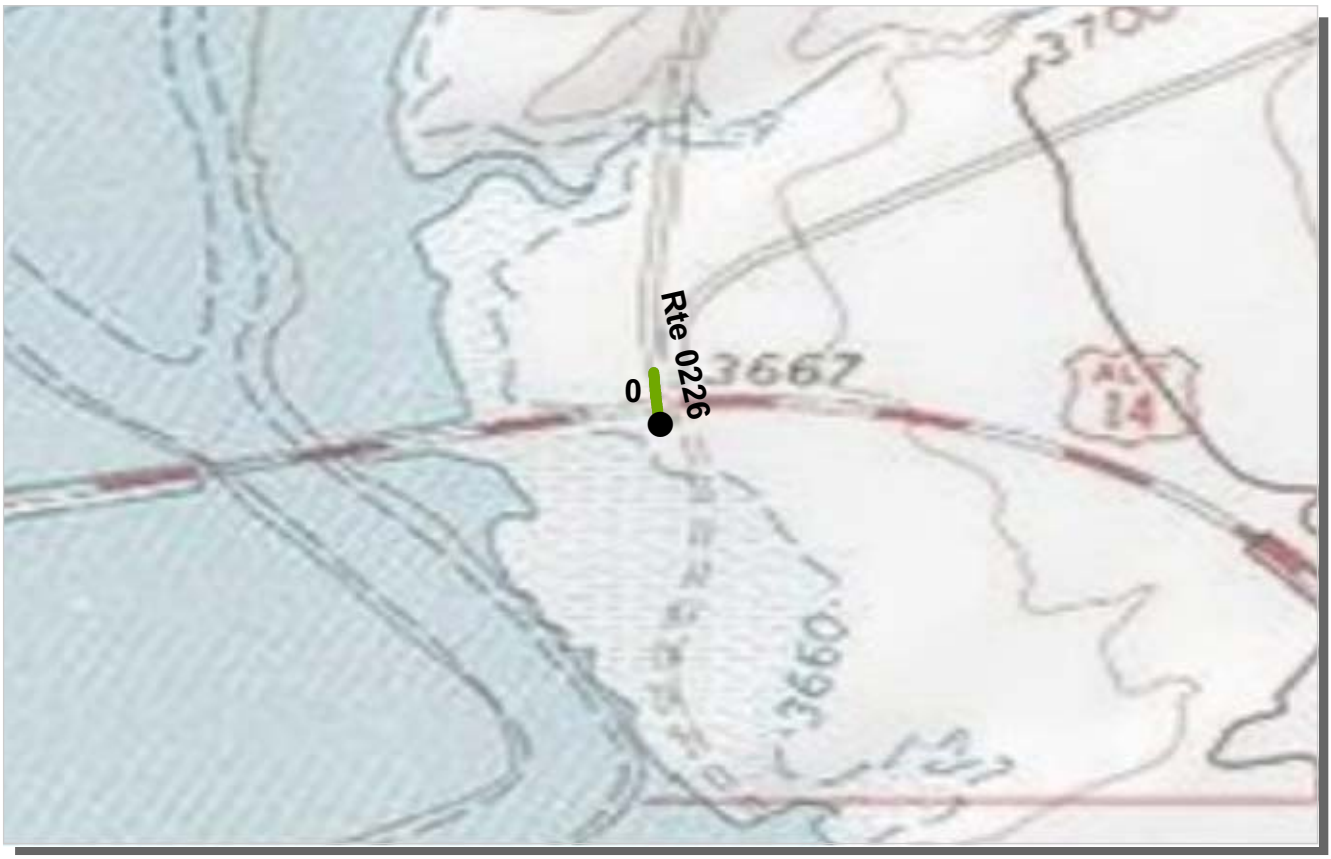
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0216 GRAPEVINE CAMPGROUND ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/8/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 0.03 Miles**

Section Number	0				
Section Length (mi)	0.03				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	21				
Lane Width (ft)	13				
Roadway Condition Information					
SCR (Surface Condition Rating)	89				
PCR (Pavement Condition Rating)	89				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	89				
Roughness Condition Index (RCI)	NC				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0226 JOHN BLUE CANYON ROAD
BICA : BIGHORN CANYON NATIONAL RECREATION AREA

COLLECTED: 8/9/2011
INTERMOUNTAIN REGION **TOTAL LENGTH: 0.04 Miles**

Section Number	0				
Section Length (mi)	0.04				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	25				
Lane Width (ft)	13				
Roadway Condition Information					
SCR (Surface Condition Rating)	91				
PCR (Pavement Condition Rating)	91				
Distress Index Values					
Structural Crack Index	98				
Transverse Cracking Index	99				
Patching Index	100				
Rutting Index	91				
Roughness Condition Index (RCI)	NC				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Non Applicable

Section 6
Manually Rated Paved Route Condition Rating Sheets

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

MANUALLY RATED ROUTE CONDITION RATING SHEETS

This park is classified as a Large Park. Therefore, in Cycle 5, no manually rated routes were collected unless the route was modified or previously uncollected by RIP.

Section 7
Parking Area
Condition Rating Sheets

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

PARKING AREA CONDITION RATING SHEETS

This park is classified as a Large Park. Therefore, in Cycle 5, no parking area routes were collected unless the route was modified or previously uncollected by RIP.

Section 8
Route Maintenance Features Summaries

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

BICA: DCV ROUTE MAINTENANCE FEATURES SUMMARY

FEATURE	ROUTE 0209 M. L. RANCH ROAD SOUTH UNIT	ROUTE 0215 AFTERBAY RIVER LAUNCH ROAD	ROUTE 0216 GRAPEVINE CAMPGROUND ROAD	ROUTE 0226 JOHN BLUE CANYON ROAD		UNIT
BRIDGE	0	0	0	0		EACH
CATTLE GUARD	1	0	0	1		EACH
CULVERT	0	0	0	0		EACH
CURB	0	0	0	0		LINEAR FEET
DROP INLET	0	0	0	0		EACH
GATE	0	0	0	0		EACH
GUARD/GUIDE RAIL	0	0	0	0		LINEAR FEET
CABLE	0	0	0	0		LINEAR FEET
NON-CABLE	0	0	0	0		LINEAR FEET
GUARD/GUIDE WALL	0	0	0	0		LINEAR FEET
BOLLARD	0	0	0	0		LINEAR FEET
TEMPORARY BARRIER	0	0	0	0		LINEAR FEET
NON TEMP/BOLLARD	0	0	0	0		LINEAR FEET
INTERSECTION	3	3	3	3		EACH
LOW WATER CROSSING	0	0	0	0		EACH
LOW WATER CROSSING	0	0	0	0		LINEAR FEET
MILE MARKER	0	0	0	0		EACH
OVERPASS	0	0	0	0		EACH
PARK BOUNDARY	0	0	0	0		EACH
PAVED DITCH	0	0	127	0		LINEAR FEET
PULLOUT	0	0	0	0		EACH
PULLOUT	0	0	0	0		LINEAR FEET
RAILROAD CROSSING	0	0	0	0		EACH
RETAINING WALL	0	0	0	0		EACH
RETAINING WALL	0	0	0	0		LINEAR FEET
SIGN	1	1	1	1		EACH
STATE BOUNDARY	0	0	0	0		EACH
TRAFFIC LIGHT	0	0	0	0		EACH
TUNNEL	0	0	0	0		EACH
TUNNEL	0	0	0	0		LINEAR FEET

Notice: Culverts and drop inlets were NOT marked by NPS in Cycle 5 along new or re-aligned DCV driven routes.

STRUCTURE LIST

No data available for this section.

Section 9
Route Maintenance Features
Road Logs

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

BICA: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0209: M. L. RANCH ROAD SOUTH UNIT

Notice: Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM U.S. HIGHWAY 14A
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (U.S. HIGHWAY 14A (STATE MAINTAINED/NON NPS))
0.000	0.000	INTERSECTION	LEFT	PAVED ROUTE (U.S. HIGHWAY 14A (STATE MAINTAINED/NON NPS))
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.028	0.028	CATTLE GUARD	N/A	N/A
0.029	0.029	INTERSECTION	N/A	ROUTE 0209 (M. L. RANCH ROAD SOUTH UNIT) UNPAVED SECTION
0.029	0.029	ROUTE END	N/A	TO RANCH AT MP 0.53 END OF UNPAVED SECTION

BICA: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0215: AFTERBAY RIVER LAUNCH ROAD

Notice: Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 0.70 (ON RIGHT)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0012 (AFTERBAY ROAD)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0012 (AFTERBAY ROAD)
0.008	0.008	SIGN	LEFT	REGULATORY, STOP
0.034	0.034	INTERSECTION	N/A	ROUTE 0215 (AFTERBAY RIVER LAUNCH ROAD) UNPAVED SECTION
0.034	0.034	ROUTE END	N/A	TO ROUTE 0908 (BIGHORN RIVER LAUNCH NORTH PARKING) AT MP 0.06 END OF UNPAVED SECTION

BICA: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0216: GRAPEVINE CAMPGROUND ROAD

Notice: Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0012 (AFTERBAY ROAD) AT MP 1.63 (ON LEFT)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0012 (AFTERBAY ROAD)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0012 (AFTERBAY ROAD)
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.007	0.031	PAVED DITCH	RIGHT	N/A
0.032	0.032	INTERSECTION	N/A	ROUTE 0012 (AFTERBAY ROAD) UNPAVED SECTION
0.032	0.032	ROUTE END	N/A	TO END AT MP 0.06 END OF UNPAVED SECTION

BICA: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0226: JOHN BLUE CANYON ROAD

Notice: Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM U.S. HIGHWAY 14A
0.000	0.000	INTERSECTION	LEFT	PAVED ROUTE (U.S. HIGHWAY 14A (STATE MAINTAINED/NON NPS))
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (U.S. HIGHWAY 14A (STATE MAINTAINED/NON NPS))
0.010	0.010	SIGN	LEFT	REGULATORY, STOP
0.034	0.034	CATTLE GUARD	N/A	N/A
0.035	0.035	INTERSECTION	N/A	ROUTE 0226 (JOHN BLUE CANYON ROAD) UNPAVED SECTION
0.035	0.035	ROUTE END	N/A	TO PARK BOUNDARY AT MP 2.27, END OF UNPAVED SECTION

Section 10
Appendix

Bighorn Canyon
National Recreation Area

Federal Lands Highway
Road Inventory Program

Explanation of Changes to the RIP Index Equations and Determination of PCR

In 2005, the FHWA began implementing the use of a Pavement Management System to assist the National Park Service in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Region, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA as well.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions vis a vis the distresses and indexes that comprise the Pavement Condition Rating (PCR), an extensive study was completed throughout 2010 that has resulted in changes to the Road Inventory Program condition reporting method and specifically, the calculation of PCR. It was determined that a better representation of PCR could be achieved by modifying the relative impact certain distresses would have on the overall rating.

Through the use of HPMA data, it was noted that false failure indicators existed with the existing PCR model, and that it would be necessary to reduce their impact. The distresses affected in this way were Rutting and Roughness. Conversely, experience showed that roadways with extensive cracking present were often shown to have a high PCR. Therefore, the crack index models were adjusted to be more sensitive to changes in crack severity or quantity. It was also determined that these issues were not due to a problem with data acquisition (i.e. the RIP "van"), but with the way the collected data was processed. The final change was to provide guidance on when to use the Roughness Condition Index (RCI) in the PCR calculation. Roughness data is of little value to determining overall condition on routes that, due to their length or geometrics, have lower vehicle operating speeds. Therefore, in Cycle 5, only routes that have lengths of one half mile or greater and posted speed limits of 25 mph or greater will have RCI reported and included in the PCR calculations.

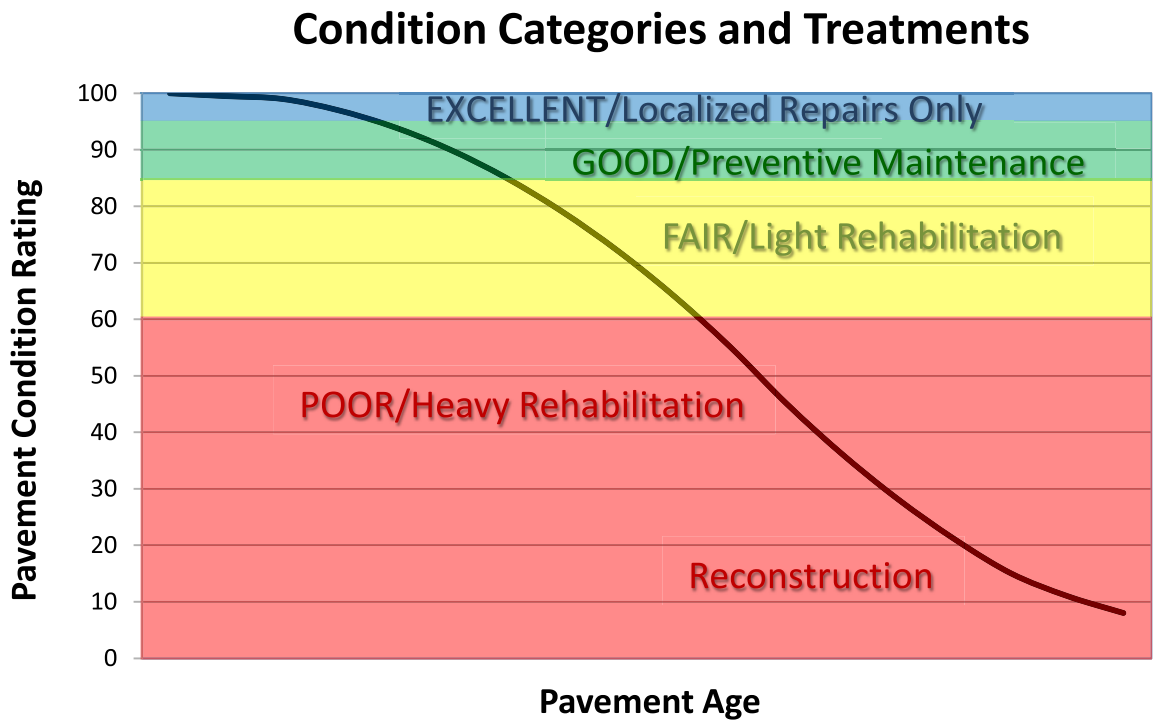
The changes that were implemented were endorsed by management at both the FHWA and NPS. In order to show the effectiveness of these changes, several sites were ground truth tested to ensure that an improvement was achieved between the relationship of PCR and the actual Maintenance and Rehabilitation needs that were represented. The changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection.

Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that will be implemented in Cycle 5, we will also aim to provide greater assistance in translating good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 60 or below. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

At this time, specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.



DESCRIPTION OF RATING SYSTEM

The Federal Highway Administration (FHWA), Road Inventory Program (RIP) for the National Park Service (NPS), collects roadway condition data on paved surfaces (asphalt, concrete, brick, and cobblestone) on roads, parkways, and parking areas in national parks nationwide. The road surface condition data is collected using an automated Data Collection Vehicle (DCV). Roads having brick or cobblestone surfacing are not normally surveyed with the DCV, but are manually rated for condition rating.

The FHWA RIP is implemented based on the premise that an accurate pavement surface condition assessment can be accomplished using automated crack detection technology as applied to digital images. Various methods of pavement condition assessment have been developed over the years with varying degrees of accuracy and acceptance. The use of digital photography to record pavement images and subsequent crack detection and classification has undergone continuous improvements over the past decade. Digital cameras with increasingly superior resolution and high definition have become more affordable, and the proprietary programming code and algorithms have been improved in crack detection software.

With the use of quality digital photography and automated crack detection software, FHWA RIP is tasked with executing a pavement condition assessment on about 5000 miles of National Park Service roads and parkways. Foremost in setting up the basis of pavement distress identification is employing the distress identification protocols used by FHWA. There is no single distress identification system that is universal among entities conducting a program of distress identification. For the purpose of the NPS RIP, FHWA employs distress identification protocols that are specific to this program.

FHWA has referenced the "*Distress Identification Manual for the Long-Term Pavement Performance Program", Publication No. FHWA-RD 03-031, June 2003,* as the point-of-reference for distress types on NPS pavement. In truth, the FHWA RIP distress types are similar to those described in the LTPP manual with some modifications. This document, "*Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013"* was developed using the "*Distress Identification Manual for the Long-Term Pavement Performance Program"* as a guideline. Definitions of severity levels based on crack width contained in this document adhere to the LTPP Distress ID Manual. Modifications have been made to the definition of Alligator and Longitudinal Cracking and determination of Alligator Cracking severity. This manual also addresses Rutting and Roughness and its application to RIP.

In 2010, FHWA RIP began the fifth cycle of data collection in national parks. For Cycle 5, data will be collected in approximately 81 large parks (10 or more paved route miles) on Functional Class 1, 2, and 7 routes plus any new routes or parking areas previously not collected, totaling an estimated 4,459 paved route miles. Additionally, 168 small parks will be collected comprising approximately 529 paved route miles and associated paved parking areas. The data is used to support the National Park Service road maintenance program and Pavement Management System (PMS) developed and maintained by FHWA.

This **"*Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013"*** will be used as a reference resource in crack detection and classification, determination of distress severity and extent, and in the calculation of distress index values for the FHWA RIP Cycle 5.

SURFACE DISTRESSES

Surface Condition Rating - SCR

Surface distresses are measured in the primary lane only. In the classification and measurement of all paved surface condition data, results will be reported in the database in record intervals of 0.02 miles (105.6 feet) (smallest granularity) along the route.

Surface distresses determined from digital images

- Transverse Cracks
- Longitudinal Cracks
- Alligator Cracks
- Patching/Potholes

Surface distress measured by DCV (Data Collection Vehicle) LRMS (Laser Rut Measuring System)

- Rutting

Each of the five surface distresses is assigned a computed surface distress index

- Transverse Crack Index
- Longitudinal Crack Index
- Alligator Crack Index
- Patching/Pothole Index
- Rutting Index

Surface distress data are classified as listed above, measured for severity, and quantified for extent. Classification, severity, and extent of these five surface distresses comprise the three main elements for calculation of SCR (Surface Condition Rating).

In addition to the five surface distresses, a **Structural Crack Index** is computed, which is a combination of the Longitudinal Crack Index and the Alligator Crack Index. The Structural Crack Index is then used in lieu of the LC and AC indices to compute SCR.

Roughness Condition Index - RCI

Additional condition data measured by DCV (lasers and accelerometers)

- Roughness (IRI)

Roughness is measured by FHWA's DCV and reported as International Roughness Index (IRI) in inches/mile. Using IRI, the Roughness Condition Index (RCI) is computed.

Pavement Condition Rating - PCR

Using the SCR (computed from the five surface distresses) and the RCI, an overall Pavement Condition Rating (PCR) is computed. The formula for PCR is:

Asphalt PCR = (0.60 * SCR) + (0.40 * RCI)
Concrete PCR = RCI

A detailed description of each distress index formula, roughness index formula, SCR and PCR is provided in this document beginning on page 23.

Each classified surface distress will fall into one or more s*everity*…LOW, MEDIUM, or HIGH based on criteria listed. For each severity, an e*xtent* is established based on the measured quantity of the distress within that severity. Within each *severity* individual distresses are assigned a *Maximum Allowable Extent* (MAE). For example, LOW severity transverse cracking may be allowed up to 21.1 cracks within a 0.02 interval before it reaches MAE and fails.

The index formulas are based on a scale of 0-100. A PCR index value of 100 would indicate a "new" road with no measurable distresses or rough ride. A PCR value of 60 is determined to be *terminable serviceability* and the road is considered failed. The range of index values with condition descriptors is:

POOR (<=60), FAIR (61 - 84), GOOD (85 - 94), EXCELLENT (95 - 100)

Index values are generally computed based on cumulative deducts of the measured severities. As shown in the index formulas below, as any single severity reaches or exceeds MAE, the index computes to a value of 60 or less, and the road fails for that 0.02 interval.

> **Note:** As a result of a unique combination of measured surface distresses and IRI, index values occasionally compute to less than 0 or greater than 100. In this instance, an index value < 0 defaults to 0. Index values > 100 default to 100. For all indices, a higher value indicates a better road condition, and a lower value indicates a poorer road condition.

On the following page, Table 1 summarizes the different types of distresses measured.

TABLE 1: Distress Summary

ASPHALT-SURFACED PAVEMENT DISTRESS TYPES with RUTTING and ROUGHNESS				
DISTRESS TYPE	**UNIT OF MEASURE…**	**…CONVERTED TO**	**DEFINED SEVERITY LEVELS?**	**MEASURED BY**
Alligator Cracking	**Square Feet**	**Percent of Lane Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Transverse Cracking	**Linear Feet**	**Number of Cracks Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Longitudinal Cracking	**Linear feet**	**Percent of Lane Length Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Patching/Potholes	**Square Feet**	**Percent of Lane Per 0.02 Mile**	**No**	**Digital Image Crack Detection Software**
Rutting	**Inches**	**Rut Depth Per 0.02 Mile**	**Yes**	**DCV – Laser Rut Measuring System (LRMS)**
Roughness	**IRI**	***RCI Per 0.02 Mile**	**No**	**DCV – Lasers /Accelerometers**

***Note: Roughness is measured on concrete roadways, but surface distresses and rutting are not measured. For concrete, PCR = RCI**

ALLIGATOR CRACKING

Description

Alligator cracking is considered a combination of fatigue and block cracking. It is a series of interconnected cracks in various stages of development. Alligator cracking develops into a many-sided pattern that resembles chicken wire or alligator skin. It can occur anywhere in the road lane. Alligator cracking must have a quantifiable area.

Severity Levels

LOW
An area of cracks with no or very few interconnecting cracks and the cracks are not spalled. Cracks are <= 0.25 in (6mm) in mean width. Cracks in the pattern are no further apart than 1 foot (0.328 m). May be sealed cracks with sealant in good condition and a crack width that cannot be determined.

MEDIUM
An area of interconnected cracks that form a complete pattern. Cracks may be slightly spalled. Cracks are >0.25 in. (6 mm) and <= 0.75 in. (19 mm) or any crack with a mean width <= 19 mm and adjacent low severity cracking. Cracks in the pattern are no further apart than 6 in. (150 mm).

HIGH
An area of interconnected cracks forming a complete pattern. Cracks are moderately or severely spalled. Cracks are >0.75 in (19mm) or any crack with a mean width <= 0.75 in (19mm) and adjacent medium to high severity random cracking.

A combination of observed crack width and crack pattern is used to determine overall severity of alligator cracking. Based on above description of each severity, the highest level of crack width and crack pattern determines overall severity. Table 2 illustrates this.

TABLE 2: Alligator Crack Severity Levels

ALLIGATOR CRACKING SEVERITY LEVELS		Crack Pattern		
		LOW	**MED**	**HIGH**
Crack Width	**LOW**	L	M	H
	MED	M	M	H
	HI	H	H	H

LONGITUDINAL CRACKING

Description

Longitudinal cracking occurs predominantly parallel to the pavement centerline. It can occur anywhere within the lane. Longitudinal cracks occurring in the wheelpath may be noteworthy.

Severity Levels

LOW
Cracks with a mean width of < 0.25 in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

MED
Cracks with a mean width > 0.25 in. (6 mm) and <= 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random low severity cracking.

HIGH
Cracks with a mean width > 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random medium to high severity cracking.

TRANSVERSE CRACKING

Description

Transverse cracking occurs predominantly perpendicular to the pavement centerline. It can occur anywhere within the lane.

Severity Levels

LOW
Cracks with a mean width of < 0.25 in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

MED
Cracks with a mean width > 0.25 in. (6 mm) and <= 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random low severity cracking.

HIGH
Cracks with a mean width > 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random medium to high severity cracking.

PATCHING AND POTHOLES

Description

Patching is an area of pavement surface that has been removed and replaced with patching material or an area of pavement surface that has had additional patching material applied. Patching may encompass partial lane or full lane width On full lane width patching; the total, contiguous length of patch may not exceed 0.30 mi. (0.48 km). (Any full-lane patch exceeding 0.30 mi. in length is considered a pavement change). Patching must have a quantifiable area.

Potholes are bowl-shaped holes of various sizes occurring in the pavement surface.

Severity Levels

There are no stratified severities for Patching/Potholes. They either are present or they are not.

RUTTING

Description

Rutting is a longitudinal surface depression in the wheelpath.

Severity Levels

LOW
Ruts with a measured depth ≥ 0.20" and ≤ 0.49"

MED
Ruts with a measured depth ≥ 0.50" and ≤ 0.99"

HIGH
Ruts with a measured depth ≥ 1.00"

Ruts < 0.20" are not included in the distress calculations.

ROUGHNESS

Description

Roughness is the measurement of the unevenness of the pavement in the direction of travel. It is measured in units of IRI (International Roughness Index), inches per mile, and is indicative of ride comfort.

Severity Levels

There are no stratified severity levels for roughness. The roughness (or smoothness) of a road surface can be defined by IRI in the following table.

TABLE 3: IRI

IRI Descriptions	
Type of Road	**Typical IRI (in/mile)**
New Road, no noticeable roughness	<90
Small level of roughness	90 – 126
Road of average roughness	126 – 190
Road with above average roughness	190 – 253
Road with severe roughness	253 – 380
Nearly impassable	>380

INDEX FORMULAS

Note**:** All index formulas listed below contain MAE applicable to 0.02 mile (105.6 feet) interval.

Alligator Crack Index

AC_INDEX = 100 – 40 * [(%LOW / 35) + (%MED / 15) + (%HI / 5)]

Where:

The values *%LOW*, *%MED* and *%HI* report the percentage of the observed pavement (0.02 mile, primary lane) that contains alligator cracking within the respective severities. These values range from 0 to 100.

%LOW = Percent of total area (primary lane, 0.02 in length), low severity
%MED = Percent of total area (primary lane, 0.02 in length), medium severity
%HI = Percent of total area (primary lane, 0.02 in length), high severity

Percent of total area is computed as:

$$\frac{\text{square foot area of alligator crack severity}}{\text{0.02 mile * lane width}}$$

In AC_INDEX, the denominators 35, 15, and 5 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 35% of low severity alligator cracking for a 0.02 interval before failure, 15% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Longitudinal Crack Index

LC_INDEX = 100 – 40 * [(%LOW / 175) + (%MED / 75) + (%HI / 25)]

Where:

The values *%LOW*, *%MED*, and *%HI* report the length of longitudinal cracking within each severity as a percent of the section length (0.02 mile, primary lane).
These values are ≥ 0 and can exceed 100.

%LOW = Percent of interval length (primary lane, 0.02 in length), low severity
%MED = Percent of interval length (primary lane, 0.02 in length), medium severity
%HI = Percent of interval length (primary lane, 0.02 in length), high severity

Percent of interval length is computed as:

$$\frac{\text{length of respective longitudinal cracking}}{\text{0.02 mile (105.6 feet)}}$$

In LC_INDEX, the denominators 175, 75, and 25 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 175% of low severity alligator cracking for a 0.02 interval before failure, 75% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Structural Crack Index

SC_INDEX = [100 - ((100 - AC_INDEX) + (100 - LC_INDEX))]

Structural Crack Index is a combination of Alligator Cracking and Longitudinal Cracking, and is used in the SCR formula in lieu of AC and LC separately.

Transverse Crack Index

TC_INDEX = 100 – 40 ***** [(LOW / 21.1) + (MED / 4.4) + (HI / 2.6)]

Where:

The values *LOW*, *MED* and *HI* report a count of the total number of transverse cracks (reported to three decimals) within each severity level, where one transverse crack is equal to the lane width. These values are ≥ 0.

LOW = Number of cracks in interval (primary lane, 0.02 in length), low severity
MED = Number of cracks in interval (primary lane, 0.02 in length), medium severity
HI = Number of cracks in interval (primary lane, 0.02 in length), high severity

Number of cracks is computed as:

$$\frac{\text{Total length of transverse cracks}}{\text{Lane width}}$$

In TC_INDEX, the denominators 21.1, 4.4, and 2.6 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 21.1 low severity transverse cracks for a 0.02 interval before failure, 4.4 cracks for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Patching Index

PATCH_INDEX = 100 – 40 * (%PATCHING / 80)

Where:

The value *%PATCHING* reports the percentage of the observed pavement (0.02 mile, primary lane) that contains patching/potholes. This value ranges from 0 to 100.

%PATCHING = Percent of total area (primary lane, 0.02 in length)

Percent of total area is computed as:

$$\frac{\text{square foot area of patching/potholes}}{\text{0.02 mile * lane width}}$$

There are no severity levels for patching. It either exists or does not.

In PATCH_INDEX, the denominator 80 is the Maximum Allowable Extent (MAE) for each severity. In other words, we will allow up to 80% patching for a 0.02 interval before failure. As you can see, if patching/potholes reaches MAE the resulting index value is 60, or failure.

Rutting Index

RUT_INDEX = 100 – 40 * [(%LOW / 535) + (%MED / 205) + (%HI / 40)]

Where:

20 rut depth measurements are taken per 0.02 interval for each of 2 wheel paths (left and right), resulting in a total of 40 measurements taken for both wheel paths. *Each wheelpath is analyzed independently for rut severities.* The values *%LOW*, *%MED* and *%HI* are a *total percentage* of left wheelpath percentage and right wheelpath percentage added together for the respective severity. These values range from 0 to 200.

%LOW = Percent of LOW ruts in left wheelpath based on 20 ruts, plus percent of LOW ruts in right wheelpath based on 20 ruts.
%MED = Percent of MED ruts in left wheelpath based on 20 ruts, plus percent of MED ruts in right wheelpath based on 20 ruts.
%HI = Percent of HI ruts in left wheelpath based on 20 ruts, plus percent of HI ruts in right wheelpath based on 20 ruts.

Percent of rut measurements within each severity can also be computed as:

$$\frac{\text{total number of ruts within each severity in both wheelpaths}}{20} * 100$$

In RUT_INDEX, the denominators 535, 205, and 40 are the Maximum Allowable Extents for each severity. In other words, the formula allows up to 535% low severity

ruts for a 0.02 interval before. However, since 200 is the highest measurable percentage allowed, 535% is unattainable and therefore, no amount of LOW severity rutting will cause the RUT_INDEX to fail a road. Similarly, since the MAE for MED severity rutting is 205, no amount of MED severity rutting will cause the RUT_INDEX to reach 60 and fail the road. As you can see, LOW severity rutting reaches MAE the resulting index value is 60, or failure. This formula was intentionally designed to minimize the impact of LOW and MED severity rutting on RUT_INDEX.

Roughness Condition Index (Asphalt)

RCI = 32 * [5 * (2.718282 ^ $^{(-0.0041 * \text{AVG IRI})}$))]

Where:

The value *AVG IRI* reports the average value of the Left IRI and Right IRI measurements for the interval (0.02 mile, primary lane). This value can range from approximately 40 to 999.0.

Average IRI is computed as:

$$\frac{\text{Left wheelpath IRI + Right wheelpath IRI}}{2}$$

There is no applicable threshold for failure for this index.

Roughness Condition Index (Concrete)

RCI = $-0.0012(\text{IRI}^2) + 0.0499(\text{IRI}) + 99.542$

For concrete, PCR = RCI

Surface Condition Rating Index

SCR = *Lowest* Index Value Of: [SC_INDEX, TC_INDEX, PATCH_INDEX, RUT_INDEX]

Note: *The modified SCR equation above combines AC_INDEX and LC_INDEX, and considers that a single AC/LC index value of the Structural Crack Index (SC_INDEX). The lowest of the four computed index values (SC_INDEX, TC_INDEX, PATCH_INDEX, or RUT_INDEX) becomes the SCR.*

Where:

See above for determinations of SC_INDEX, TC_INDEX, PATCH_INDEX and RUT_INDEX.

The threshold for failure for this index is SCR = 60.

Data Collection Vehicle Subsystems

Data on paved roads in Cycle 5 is collected by FHWA using a Pathway Services Inc. Data Collection Vehicle (DCV), called PathRunner. The DCV is driven in the primary-direction lane at posted speed limits and less.

CAMERAS

Forward-facing and rear-facing video is collected as .jpg digital imagery at a frequency of 26.4 feet.

Two forward-facing cameras are mounted above the vehicle cab, one pointed straight ahead and the other to the right shoulder providing seamless 120 degree viewing.

CAMERA SPECIFICATIONS **Two Forward/ One Rear Facing**	
Camera lens/type	FUJINON CCTV LENS H16x10B-Y41
Focal length	10 mm – 160 mm
Image size	8.8 mm x 6.6mm
Image format	*.jpg
Image resolution	HD 2000 X 1200
Image pixel size	depends on distance
Zoom ratio	16x
Max Relative Aperture	1:2.5
Iris range	F25-T800 (Equivalent to F800)

Pavement images are created using a Laser Scan Imaging System. This system is composed of a single high resolution line-scan camera and two lasers configured to image an approximate 11-foot wide lane with 1 mm resolution.

CAMERA SPECIFICATIONS **Pavement Line Scan**	
Image size	4280 pixels/line
Image width	4 meters (3950 mm nominal)
Laser class	3B
Power	250W
Vehicle speed limitations	62 mph
Environment	Dry pavement, day or night
Sensor size (approx)	300 mm(H) x 375 mm(L) x 200 mm(D)
Image frame length	26.4 feet

DMI (Distance Measuring Instrument)

The DMI (Distance Measuring Instrument) obtains road length measurements that are accurate to 0.1% for speeds up to 60 mph. The DMI is connected to the hub of the rear wheel on the driver's side, and is calibrated to the revolutions of the rear vehicle axle on a regular basis.

ROUGHNESS (IRI)

The collection system includes a South Dakota type laser profiler manufactured based on active Class 1 ASTM E950 standards. The dynamic profile of the pavement surface is collected from which the IRI roughness data is computed. The sensors include one accelerometer on each wheelpath, one height sensor (laser) on each wheelpath, and a distance transducer.

IRI SPECIFICATIONS	
Reported IRI units	Inches/mile
Vehicle speed limitations	12-62 mph
IRI equipment certification	Texas Transportation Institute (TTI)
Wavelengths accommodated	6 in. – 300 feet
IRI computed & reported	World Bank Technical Paper Number 46
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E950-98 (2004), ASTM E 1926-08, AASHTO MP 11-08, AASHTO PP 49-08

RUTTING

Rutting depths are measured using an INO Laser Rut Measurement System (LRMS). This system is a transverse profiling device that detects and characterizes pavement rutting. The LRMS can acquire full 4 meter width profiles of a pavement lane at normal traffic speeds and uses two laser profilers that digitize transverse sections of the pavement.

RUTTING SPECIFICATIONS	
Reported rut depth units	Inches
Vehicle speed limitations	Up to 62 mph
Sampling rate	30-150 profiles/second
Transverse resolution	1280 points/profile
Transverse field-of-view	4 m
Depth accuracy (nominal)	+/- 1 mm
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E1703M-95 (reapproved 2005)

GPS & INERTIAL SYSTEMS

GPS is collected by an onboard system employing Omnistar real time correction and a gyroscope Inertial Measuring Unit (IMU) to provide accurate positioning data in instances of satellite obstruction. All GPS coordinates are tied to image and linear distance measurements.

GPS SPECIFICATIONS	
Static accuracy	Sub-meter
Dynamic accuracy	2-3 meters
Receiver	12 satellite tracking
Coordinate system	Lat Lon WGS 84
Environment	Day or night
Cross-slope	+- 0.1 degrees
Grade	+- 0.1 degrees

GPS on Manually Rated Roads (MRR)

Parking areas, some roads, and other paved areas that are not fully drivable with the DCV are collected manually by field technicians. GPS is collected for these routes using portable Trimble GPS backpack units.

Geodatabase – Background and Metadata

In addition to this park report, a ***geodatabase*** containing both tabular and spatial data specific to this park has been provided. All data disseminated in the preceding report has been obtained from the tables and fields within said geodatabase. The geodatabase can be referenced for tabular data via Microsoft Access or for both tabular and spatial data via ESRI's ArcGIS Suite of software which consists of; ArcMap, ArcCatalog and ArcExplorer. Consolidating the RIP data into one database creates a seamless relationship of tables and geographic data. It will allow RIP to facilitate easier updates and enhancements in the future.

A geodatabase can be thought of as simply a database containing spatial data. Many different tables are contained with the park's geodatabase. A complete and thorough description of the tables and fields contained within this geodatabase can be found in the ***metadata***. The metadata is attached directly within the geodatabase and can be accessed via ESRI's ArcCatalog.

GLOSSARY OF TERMS AND ABBREVIATIONS

TERM OR ABBREVIATION	DESCRIPTION OR DEFINITION
AC	Alligator Cracking
CRS	Condition Rating Sheets (Section 5)
DCV	Data Collection Vehicle
Excellent	Excellent rating with an index value of 95 to 100
Fair	Fair rating with an index value from 61 to 84
FUNCT_CLASS	Functional Classification (see Route ID, Section 2)
Good	Good rating with an index value from 85 to 94
IRI	International Roughness Index
Lane Width	Width from road centerline to fogline, or from centerline to edge-of-pavement when no fogline exists
LC	Longitudinal Cracking
MRR	Manually Rated Route
MRL	Manually Rated Line
MRP	Manually Rated Polygon
N/A	Not Applicable
NC	Not Collected
PATCH	Patching and Potholes
Paved Width	Width from edge-of-pavement to edge-of-pavement
PCR	Pavement Condition Rating
PKG	Parking Area
Poor	Poor rating with an index value of 0 to 60
RCI	Roughness Condition Index
SC	Structural Cracking
SCR	Surface Condition Rating
TC	Transverse Cracking