



**national park service**

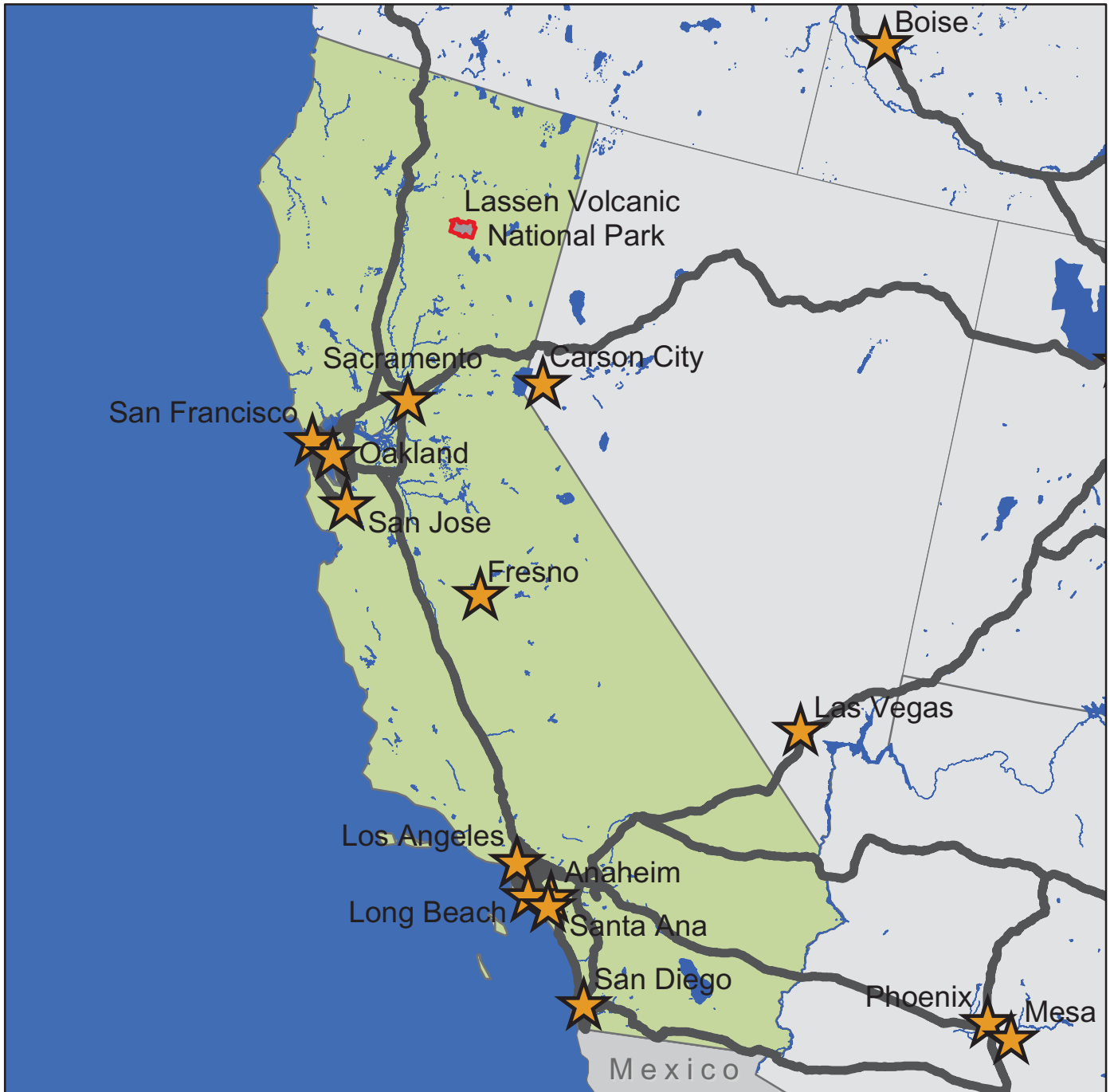
**The Road Inventory  
of  
Lassen Volcanic National Park  
LAVO – 8400  
Cycle 4**



**Prepared By:  
Federal Highway Administration  
Road Inventory Program  
Cycle 4**



# Lassen Volcanic National Park in California





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# Lassen Volcanic National Park



## **Section 1** **Introduction**

## INTRODUCTION

**Background:** In 1976, the National Park Service (NPS) and the Federal Highway Administration (FHWA) entered into a Memorandum of Agreement (MOA), establishing the Road Inventory Program (RIP). In 1980, the NPS and the FHWA terminated the 1976 MOA and entered into a new MOA that provided for the completion of the initial phase of the RIP. The purpose of the RIP, per the 1980 MOA was to maintain and update RIP data in order to develop long-range costs and programs to bring National Park Service (NPS) roads up to, or to maintain, designated standards, and establish a maintenance management program.

The FHWA's Federal Lands Highway (FLH) was assigned the task of identifying condition deficiencies and corrective priorities along with associated corrective costs, inventorying maintenance features (e.g., culverts, signs, guardrail, etc.), summarizing the data and findings in a report and providing a photographic record of the road system.

The FLH completed the initial phase of the RIP in the early 1980's. As a result of this effort, each park received a RIP book, also known as the "Brown Book," that included the information collected during this initial RIP phase.

In an effort to maintain and update the RIP data, a cyclical data collection and reporting process was reestablished in the 1990's. The FLH completed two cycles of RIP data collection between 1994 and 2001. Cycle 1 was collected in 44 large parks from 1994 to 1996. This data was found to be unusable for comparison to future cycles. Cycle 2 data was collected from March 1997 to January 2001 in 79 large parks and 5 small parks containing 4,874 route miles. Each park received a copy of a Cycle 2 RIP Report, also known as the "Blue Book". Cycle 3 was completed from 2001 through 2004, and included data collection in all parks that contain pavement.

Since 1984, the RIP Program has been funded through the Federal Lands Highway Program's Park Roads and Parkways (PRP) Program. Currently, the NPS Washington Headquarters' Park Facility Management Division is responsible for coordinating the RIP program with the FLH. The FLH Washington office coordinates policy and prepares national reports and needs assessment studies for congress.

In 1998, the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) amended Title 23 U.S.C., and inserted Section 204(a)(6) which requires the Federal Highway Administration and the National Park Service, to develop, by rule, a Pavement Management System (PMS) for the park roads and parkways serving the National Park System. As a result of the requirements in TEA-21, the NPS and FHWA are in the process of developing a PMS. The PMS will assist the decision-makers in effectively spending limited PRP Program funds. The PMS

will provide information for planning and programming road maintenance, rehabilitation, and reconstruction activities. RIP data will provide the basic information for this system.

Key information included in the RIP is the mileage inventory and condition assessments accomplished by the RIP Program. The mileage and condition data are used in the current allocation formula of PRP Program funds.

**RIP Cycle 4:** Cycle 4 data collection was initiated in spring 2006, where 86 large parks, consisting of 5,553 route miles and 6,232 paved parking areas, were selected as a representative sample of the entire NPS paved road network. Cycle 4 is scheduled for completion in spring 2009 and will serve the PMS in further development of its pavement preservation techniques.

In the Cycle 4 Reports, a general condition rating of excellent, good, fair and poor is ascribed to each one-mile section of paved roadway, and to each paved parking area. This condition rating system provides a realistic means of assessing the general funding needs for road improvements. Along with these descriptive condition ratings, a numerical rating between 0 and 100 is ascribed to each mile of road and to each parking area. This numerical rating is called a Pavement Condition Rating (PCR). The PCR rating system is described in Section 10 of this report.

All of the fieldwork required for obtaining inventory, condition, and maintenance feature information is coordinated with each park and the regional offices to ensure that the information in the RIP reports is accurate.

The FLH is responsible for all the data presented in this report. Anyone having questions or comments regarding the contents of this report is encouraged to contact the FHWA RIP Coordinator. It is our aim to provide exceptional customer satisfaction in our delivery of the RIP program.

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# Lassen Volcanic National Park



## **Section 2** **Park Summary Information**

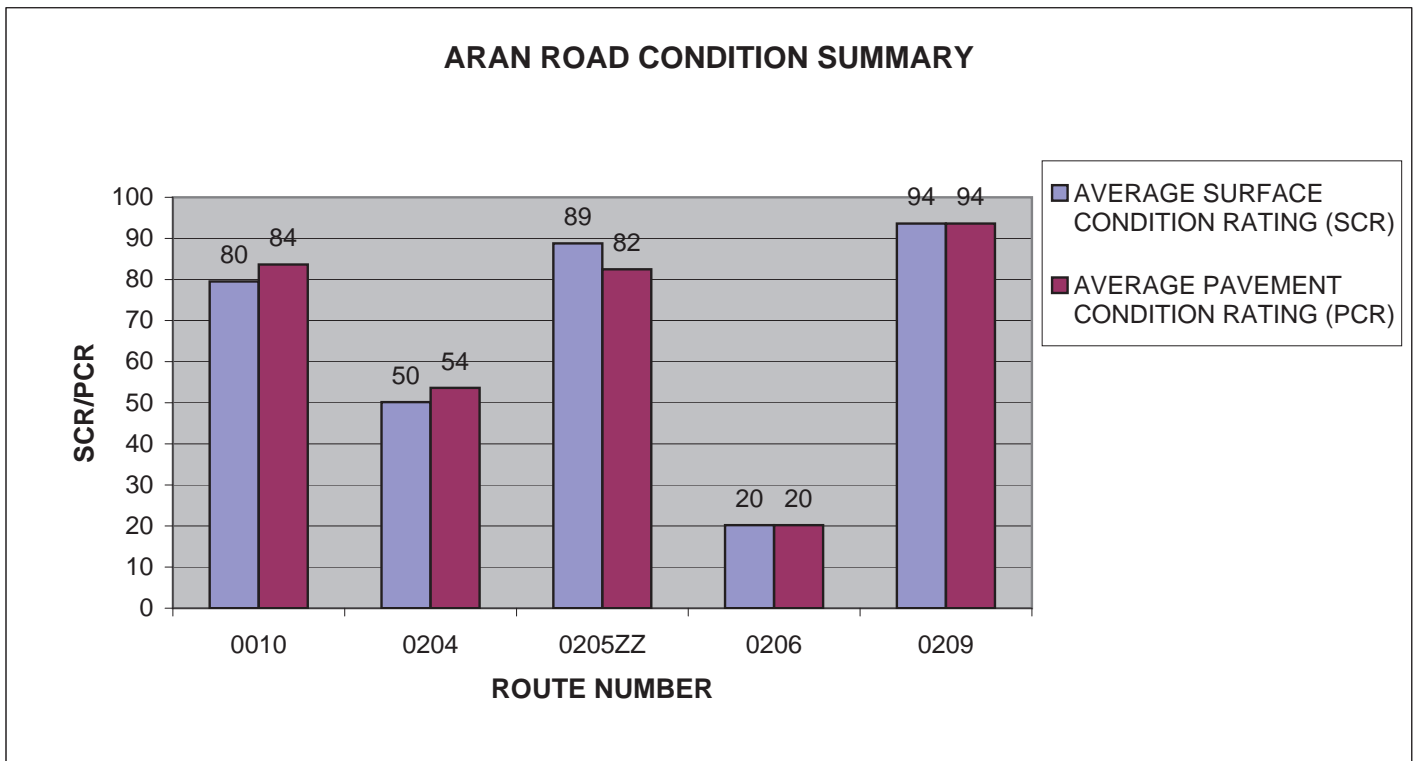
## LAVO: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

| F.C.          | Pavement Condition Rating (PCR) |               |              |               |              |               |                    |               | TOTAL<br>MILES |
|---------------|---------------------------------|---------------|--------------|---------------|--------------|---------------|--------------------|---------------|----------------|
|               | Poor (<=60)                     |               | Fair (61-84) |               | Good (85-94) |               | Excellent (95-100) |               |                |
|               | MILES                           | %             | MILES        | %             | MILES        | %             | MILES              | %             |                |
| 1             | 3.19                            | 8.75%         | 8.82         | 24.20%        | 8.07         | 22.15%        | 9.68               | 26.56%        | 29.76          |
| 2             | 0.75                            | 2.06%         | 1.15         | 3.16%         | 0.84         | 2.31%         | 0.36               | 0.99%         | 3.10           |
| 3             | 0.86                            | 2.36%         | 0.08         | 0.22%         |              |               | 0.01               | 0.03%         | 0.95           |
| 4             | 1.02                            | 2.80%         | 0.17         | 0.47%         | 0.04         | 0.11%         | 0.08               | 0.22%         | 1.31           |
| 5             |                                 |               |              |               |              |               |                    |               |                |
| 6             | 1.19                            | 3.27%         | 0.13         | 0.36%         |              |               |                    |               | 1.32           |
| 7             |                                 |               |              |               |              |               |                    |               |                |
| 8             |                                 |               |              |               |              |               |                    |               |                |
| <b>Totals</b> | <b>7.01</b>                     | <b>19.24%</b> | <b>10.35</b> | <b>28.40%</b> | <b>8.95</b>  | <b>24.56%</b> | <b>10.13</b>       | <b>27.80%</b> | <b>36.44</b>   |



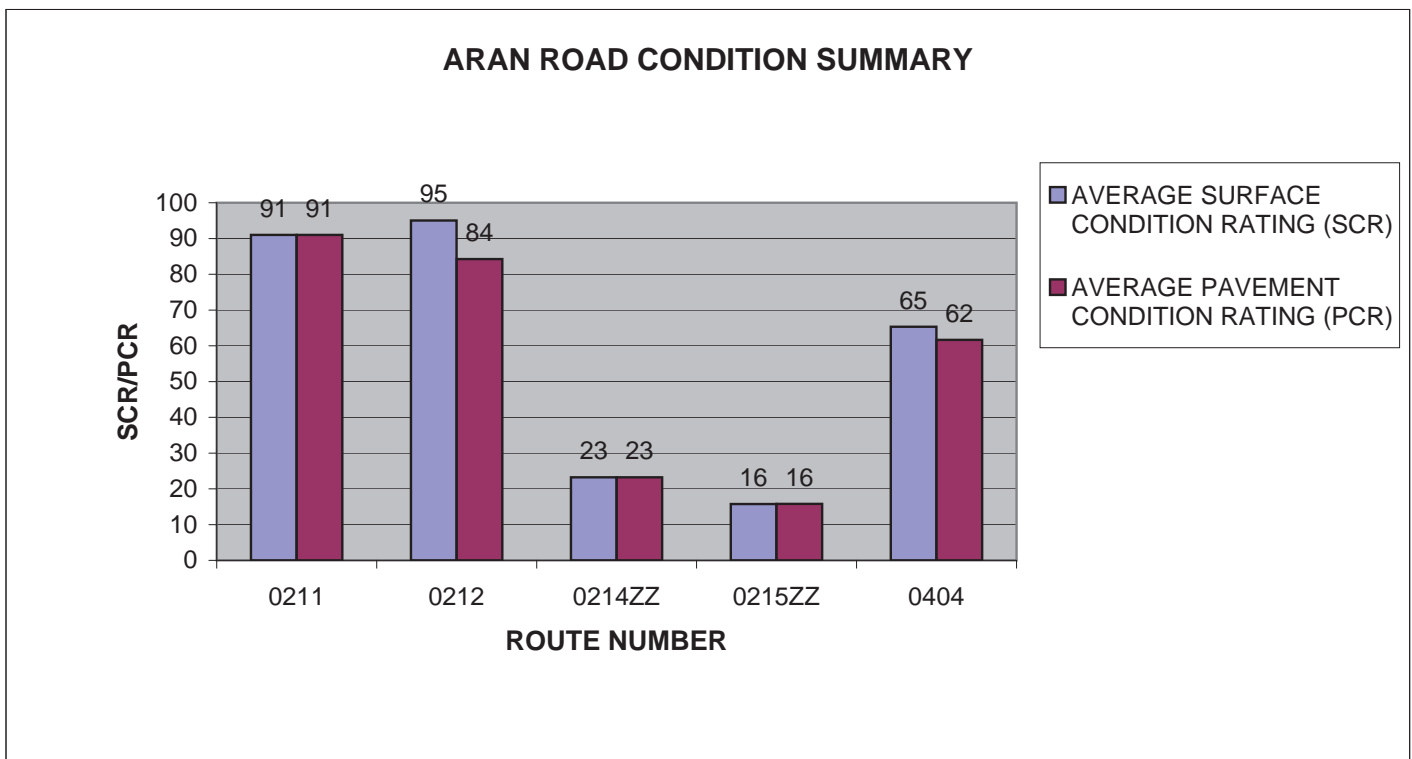
# LAVO: ARAN ROAD CONDITION SUMMARY

| ROUTE NUMBER | ROUTE NAME                                 | FUNCT CLASS | ROUTE LENGTH | SURFACE TYPE | AVERAGE SURFACE CONDITION RATING (SCR) | AVERAGE PAVEMENT CONDITION RATING (PCR) |
|--------------|--|-------------|--------------|--------------|--|---|
| 0010         | LASSEN PARK ROAD                           | 1           | 29.76        | ASPHALT      | 80                                     | 84                                      |
| 0204         | MANZANITA CAMPGROUND ACCESS ROAD           | 2           | 0.87         | ASPHALT      | 50                                     | 54                                      |
| 0205ZZ       | MANZANITA CAMPGROUND ROUTES                | 2           | 1.53         | ASPHALT      | 89                                     | 82                                      |
| 0206         | MANZANITA LAKE ACCESS ROAD                 | 2           | 0.15         | ASPHALT      | 20                                     | 20                                      |
| 0209         | SUMMIT LAKE NORTH CAMPGROUND ENTRANCE ROAD | 2           | 0.10         | ASPHALT      | 94                                     | 94                                      |



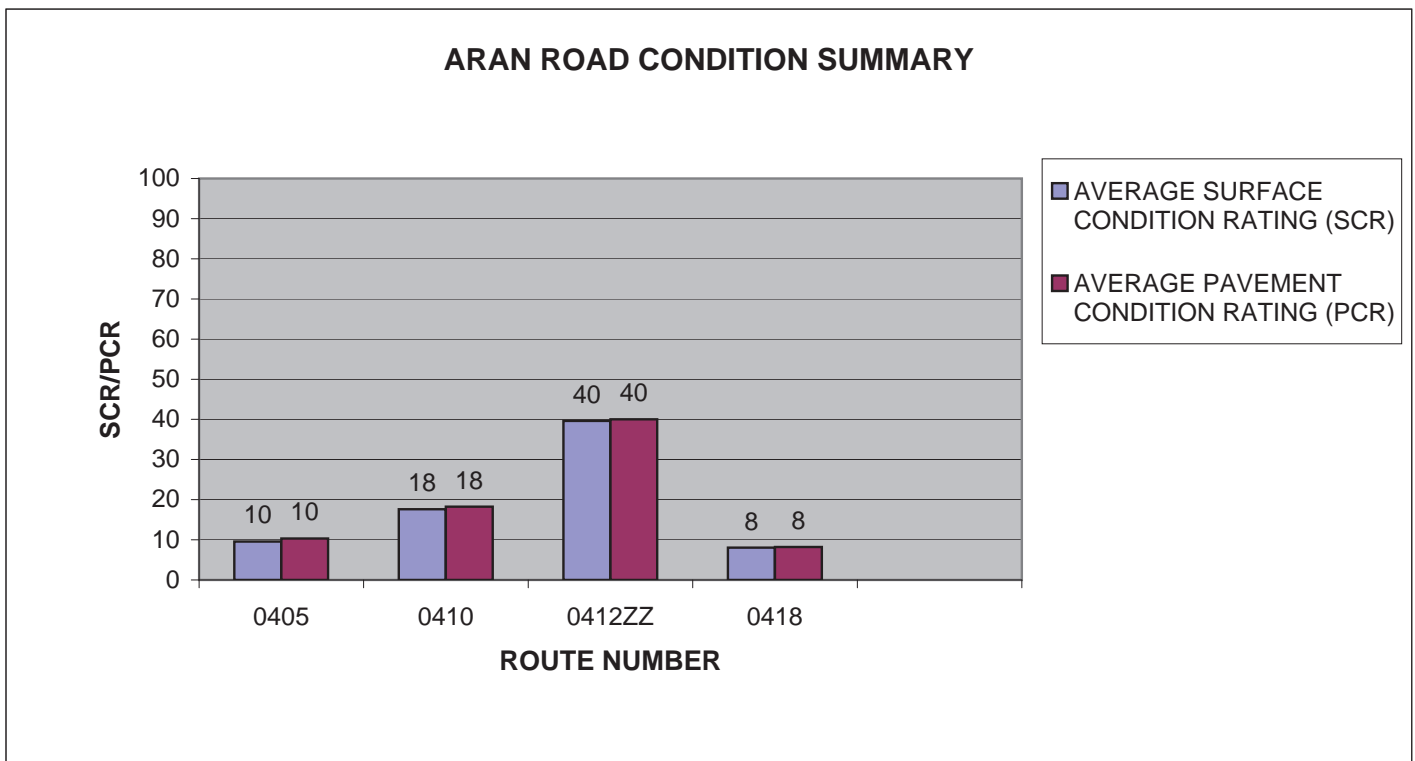
# LAVO: ARAN ROAD CONDITION SUMMARY

| ROUTE NUMBER | ROUTE NAME                                 | FUNCT CLASS | ROUTE LENGTH | SURFACE TYPE | AVERAGE SURFACE CONDITION RATING (SCR) | AVERAGE PAVEMENT CONDITION RATING (PCR) |
|--------------|--|-------------|--------------|--------------|--|---|
| 0211         | SUMMIT LAKE SOUTH CAMPGROUND ENTRANCE ROAD | 2           | 0.1          | ASPHALT      | 91                                     | 91                                      |
| 0212         | KINGS CREEK ROAD                           | 2           | 0.35         | ASPHALT      | 95                                     | 84                                      |
| 0214ZZ       | SUMMIT LAKE NORTH CAMPGROUND LOOPS         | 3           | 0.35         | ASPHALT      | 23                                     | 23                                      |
| 0215ZZ       | SUMMIT LAKE SOUTH CAMPGROUND LOOPS         | 3           | 0.6          | ASPHALT      | 16                                     | 16                                      |
| 0404         | MANZANITA EMPLOYEE RESIDENCE ROAD          | 4           | 0.18         | ASPHALT      | 65                                     | 62                                      |



# LAVO: ARAN ROAD CONDITION SUMMARY

| ROUTE NUMBER | ROUTE NAME                                 | FUNCT CLASS | ROUTE LENGTH | SURFACE TYPE | AVERAGE SURFACE CONDITION RATING (SCR) | AVERAGE PAVEMENT CONDITION RATING (PCR) |
|--------------|--|-------------|--------------|--------------|--|---|
| 0405         | MANZANITA WATER TANK ROAD                  | 6           | 0.09         | ASPHALT      | 10                                     | 10                                      |
| 0410         | SUMMERTOWN ROAD                            | 6           | 0.74         | ASPHALT      | 18                                     | 18                                      |
| 0412ZZ       | LASSEN HEADQUARTERS / RESIDENCE AREA ROADS | 4           | 1.36         | ASPHALT      | 40                                     | 40                                      |
| 0418         | REFLECTION LAKE ROAD                       | 6           | 0.37         | ASPHALT      | 8                                      | 8                                       |

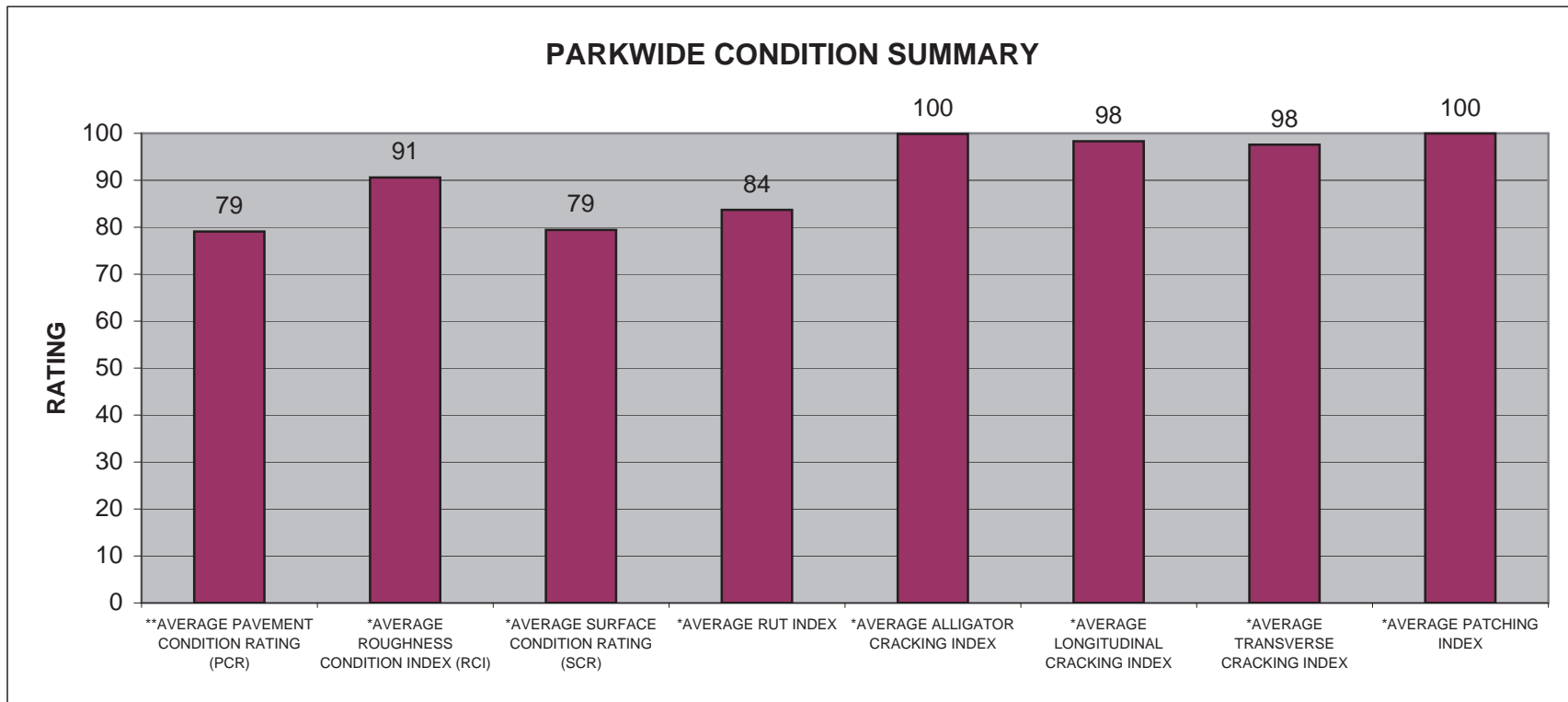


# LAVO: PARKWIDE CONDITION SUMMARY

| **AVERAGE PAVEMENT CONDITION RATING (PCR) | *AVERAGE ROUGHNESS CONDITION INDEX (RCI) | *AVERAGE SURFACE CONDITION RATING (SCR) | *AVERAGE RUT INDEX | *AVERAGE ALLIGATOR CRACKING INDEX | *AVERAGE LONGITUDINAL CRACKING INDEX | *AVERAGE TRANSVERSE CRACKING INDEX | *AVERAGE PATCHING INDEX |
|---|--|---|--------------------|-----------------------------------|--------------------------------------|------------------------------------|-------------------------|
| 79  | 91                                       | 79                                      | 84                 | 100                               | 98                                   | 98                                 | 100                     |

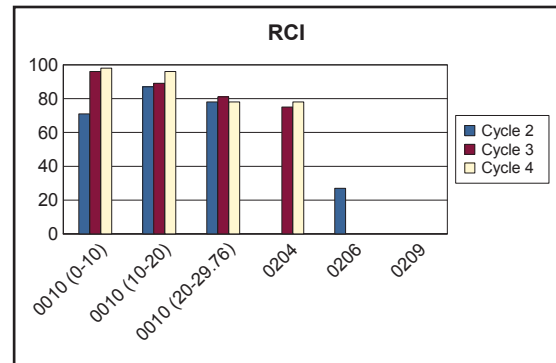
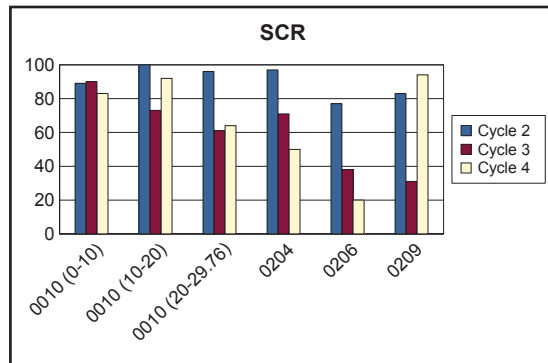
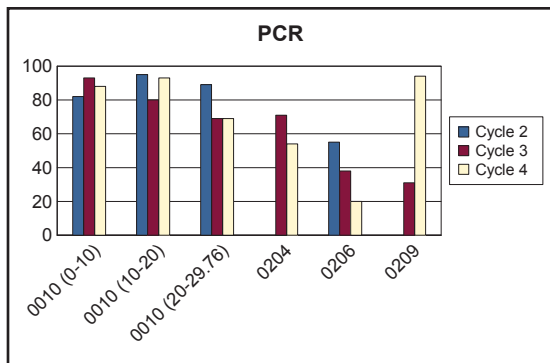
\*\* PCR Index is based on all ARAN-driven roads, parking areas, and manually rated routes.

\* Index values are based on ARAN-driven roads only.



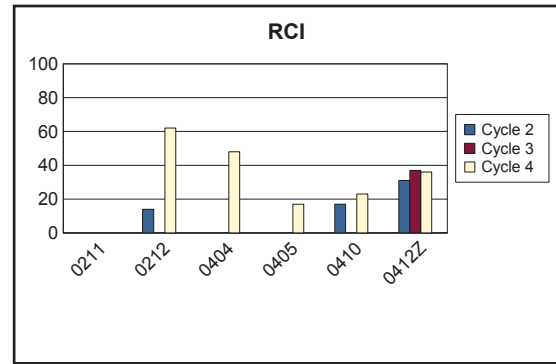
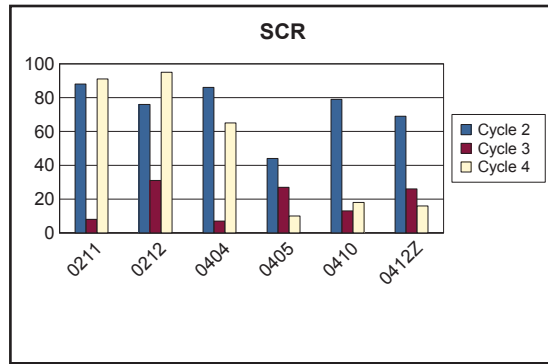
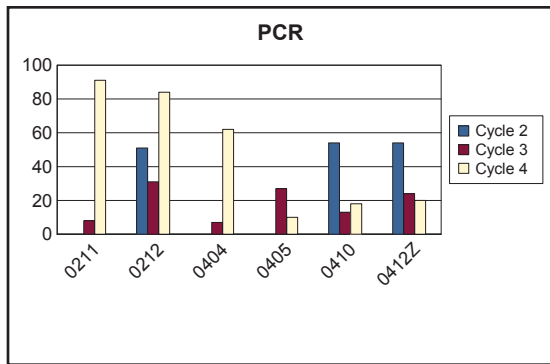
# LAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

| ROUTE NUMBER | PAVED MILES | FROM MILEPOST | TO MILEPOST | PAVEMENT CONDITION RATING (PCR) |         |         |                | SURFACE CONDITION RATING (SCR) |         |         |                | ROUGHNESS CONDITION INDEX (RCI) |         |         |                | COMMENT                                |
|--------------|-------------|---------------|-------------|---------------------------------|---------|---------|----------------|--------------------------------|---------|---------|----------------|---------------------------------|---------|---------|----------------|--|
|              |             |               |             | CYCLE 2                         | CYCLE 3 | CYCLE 4 | PERCENT CHANGE | CYCLE 2                        | CYCLE 3 | CYCLE 4 | PERCENT CHANGE | CYCLE 2                         | CYCLE 3 | CYCLE 4 | PERCENT CHANGE |  |
| 0010         | 10.00       | 0.00          | 10.00       | 82                              | 93      | 88      | -5%            | 89                             | 90      | 83      | -8%            | 71                              | 96      | 98      | +2%            |  |
| 0010         | 10.00       | 10.00         | 20.00       | 95                              | 80      | 93      | +16%           | 100                            | 73      | 92      | +26%           | 87                              | 89      | 96      | +8%            |  |
| 0010         | 9.76        | 20.00         | 29.76       | 89                              | 69      | 69      | 0%             | 96                             | 61      | 64      | +5%            | 78                              | 81      | 78      | -4%            |  |
| 0204         | 0.87        | 0.00          | 0.87        | N/A                             | 71      | 54      | -24%           | 97                             | 71      | 50      | -30%           | N/A                             | 75      | 78      | +4%            |  |
| 0206         | 0.15        | 0.00          | 0.15        | 55                              | 38      | 20      | -47%           | 77                             | 38      | 20      | -47%           | 27                              | N/A     | N/A     | N/A            | RCI was not collected in Cycle 3 or 4. |
| 0209         | 0.10        | 0.00          | 0.10        | N/A                             | 31      | 94      | +203%          | 83                             | 31      | 94      | +203%          | N/A                             | N/A     | N/A     | N/A            | RCI was not collected in Cycle 3 or 4. |



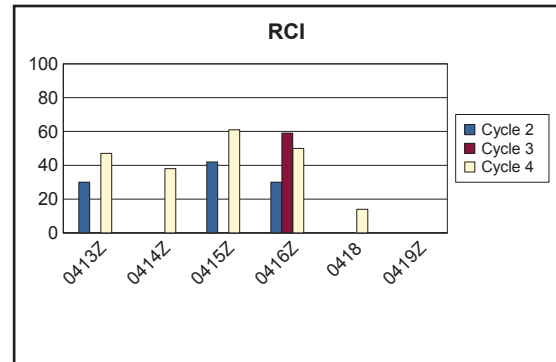
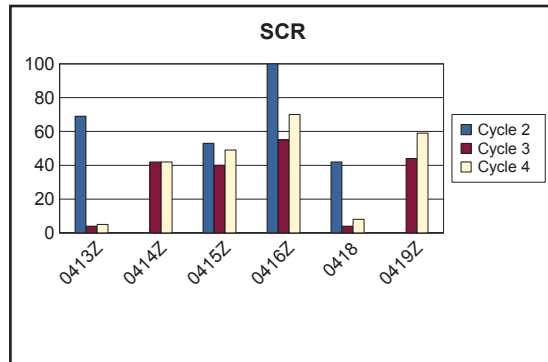
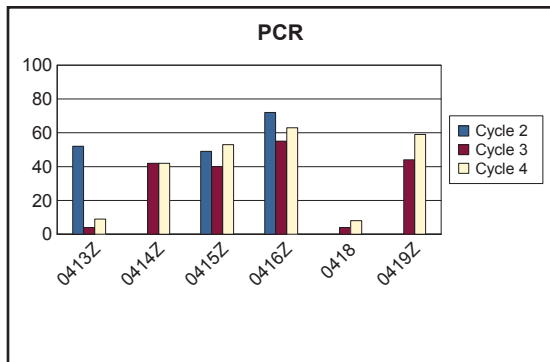
# LAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

| ROUTE NUMBER | PAVED MILES | FROM MILEPOST | TO MILEPOST | PAVEMENT CONDITION RATING (PCR) |         |         | PERCENT CHANGE | SURFACE CONDITION RATING (SCR) |         |         | PERCENT CHANGE | ROUGHNESS CONDITION INDEX (RCI) |         |         | COMMENT |  |
|--------------|-------------|---------------|-------------|---------------------------------|---------|---------|----------------|--------------------------------|---------|---------|----------------|---------------------------------|---------|---------|---------|--|
|              |             |               |             | CYCLE 2                         | CYCLE 3 | CYCLE 4 |                | CYCLE 2                        | CYCLE 3 | CYCLE 4 |                | CYCLE 2                         | CYCLE 3 | CYCLE 4 |         |  |
| 0211         | 0.25        | 0.00          | 0.25        | N/A                             | 8       | 91      | +1038%         | 88                             | 8       | 91      | +1038%         | N/A                             | N/A     | N/A     | N/A     | RCI was not collected in Cycle 3 or 4. |
| 0212         | 0.35        | 0.00          | 0.35        | 51                              | 31      | 84      | +171%          | 76                             | 31      | 95      | +206%          | 14                              | N/A     | 62      | N/A     | RCI was not collected in Cycle 3.      |
| 0404         | 0.18        | 0.00          | 0.18        | N/A                             | 7       | 62      | +786%          | 86                             | 7       | 65      | +829%          | N/A                             | N/A     | 48      | N/A     | RCI was not collected in Cycle 3.      |
| 0405         | 0.09        | 0.00          | 0.09        | N/A                             | 27      | 10      | -63%           | 44                             | 27      | 10      | -63%           | N/A                             | N/A     | 17      | N/A     | RCI was not collected in Cycle 3.      |
| 0410         | 0.64        | 0.00          | 0.64        | 54                              | 13      | 18      | +38%           | 79                             | 13      | 18      | +38%           | 17                              | N/A     | 23      | N/A     | RCI was not collected in Cycle 3.      |
| 0412Z        | 0.35        | 0.00          | 0.35        | 54                              | 24      | 20      | -17%           | 69                             | 26      | 16      | -38%           | 31                              | 37      | 36      | -3%     | Route 0412Z was 0412 in Cycle 3.       |



# LAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

| ROUTE NUMBER | PAVED MILES | FROM MILEPOST | TO MILEPOST | PAVEMENT CONDITION RATING (PCR) |         |         | PERCENT CHANGE | SURFACE CONDITION RATING (SCR) |         |         | PERCENT CHANGE | ROUGHNESS CONDITION INDEX (RCI) |         |         | PERCENT CHANGE | COMMENT  |
|--------------|-------------|---------------|-------------|---------------------------------|---------|---------|----------------|--------------------------------|---------|---------|----------------|---------------------------------|---------|---------|----------------|--|
|              |             |               |             | CYCLE 2                         | CYCLE 3 | CYCLE 4 |                | CYCLE 2                        | CYCLE 3 | CYCLE 4 |                | CYCLE 2                         | CYCLE 3 | CYCLE 4 |                |  |
| 0413Z        | 0.17        | 0.00          | 0.17        | 52                              | 4       | 9       | +125%          | 69                             | 4       | 5       | +25%           | 30                              | N/A     | 47      | N/A            | Route 0413Z was 0413 in Cycle 3. No RCI collected in Cycle 3.      |
| 0414Z        | 0.35        | 0.00          | 0.35        | N/A                             | 42      | 42      | 0%             | N/A                            | 42      | 42      | 0%             | N/A                             | N/A     | 38      | N/A            | Route 0414Z was 0414 in Cycle 3. No RCI collected in Cycle 3.      |
| 0415Z        | 0.18        | 0.00          | 0.18        | 49                              | 40      | 53      | +33%           | 53                             | 40      | 49      | +23%           | 42                              | N/A     | 61      | N/A            | Route 0415Z was 0415 in Cycle 3. No RCI collected in Cycle 3.      |
| 0416Z        | 0.23        | 0.00          | 0.23        | 72                              | 55      | 63      | +15%           | 100                            | 55      | 70      | +27%           | 30                              | 59      | 50      | -15%           | Route 0416Z was 0416 in Cycle 3.                                   |
| 0418         | 0.37        | 0.00          | 0.37        | N/A                             | 4       | 8       | +100%          | 42                             | 4       | 8       | +100%          | N/A                             | N/A     | 14      | N/A            | RCI was not collected in Cycle 3.                                  |
| 0419Z        | 0.08        | 0.00          | 0.08        | N/A                             | 44      | 59      | +34%           | N/A                            | 44      | 59      | +34%           | N/A                             | N/A     | N/A     | N/A            | Route 0419Z was 0419 in Cycle 3. No RCI collected in Cycle 3 or 4. |



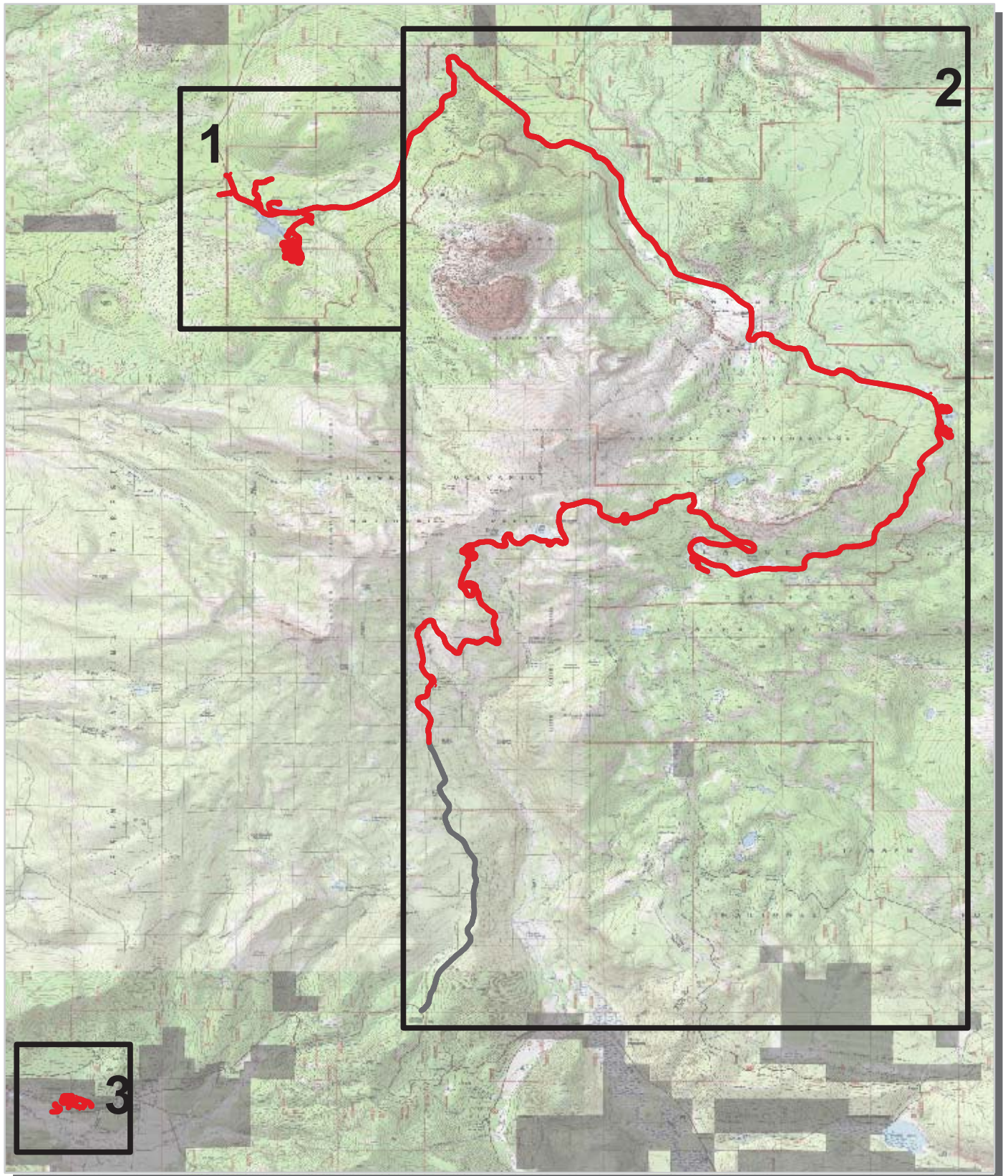
# Lassen Volcanic National Park



## **Section 3** **Park Route Location / Condition** **Maps**



Lassen Volcanic National Park  
Route Location Map  
Key Map

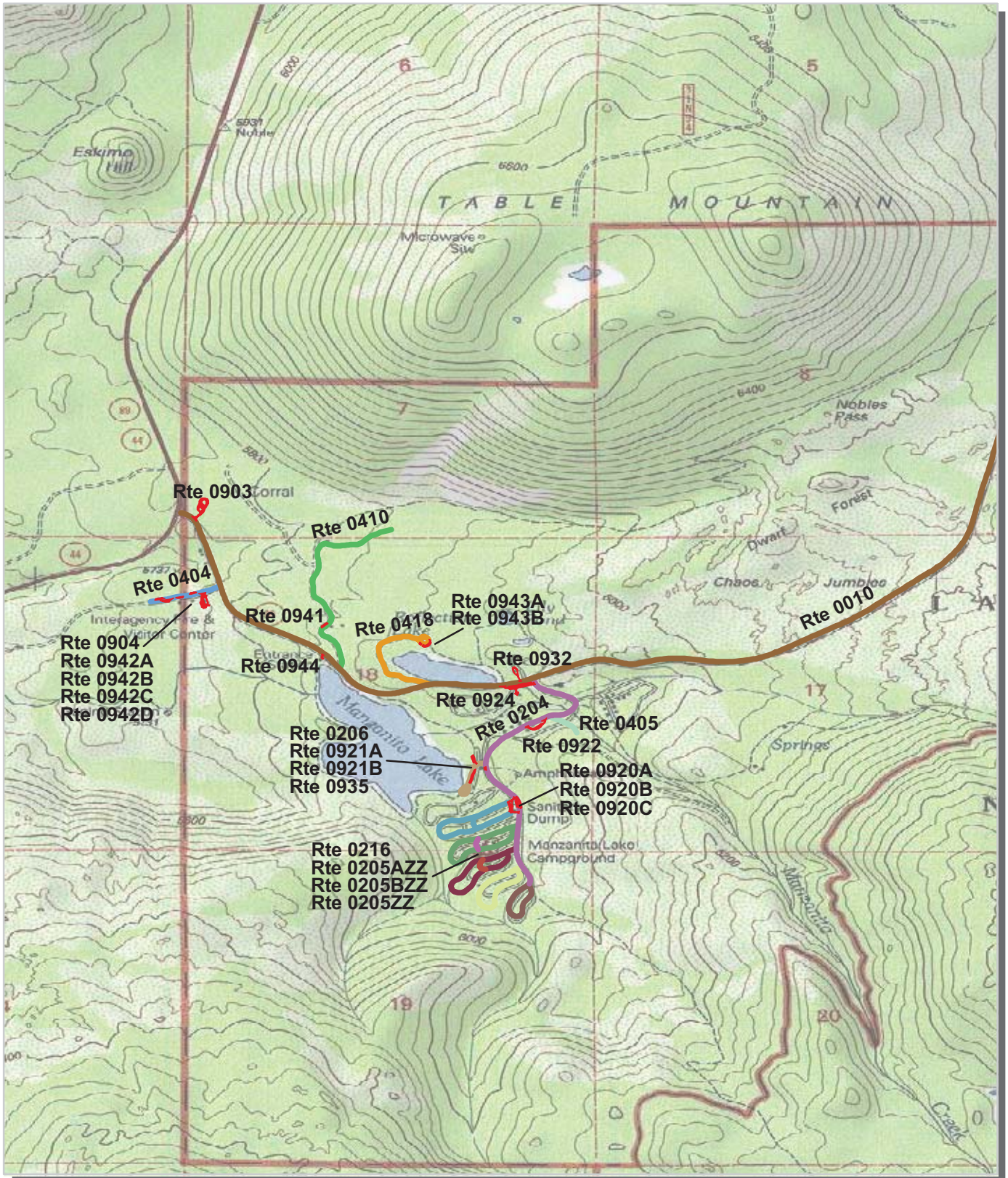


— Park Owned Routes

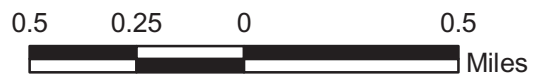




# Lassen Volcanic National Park Route Location Map Area 1

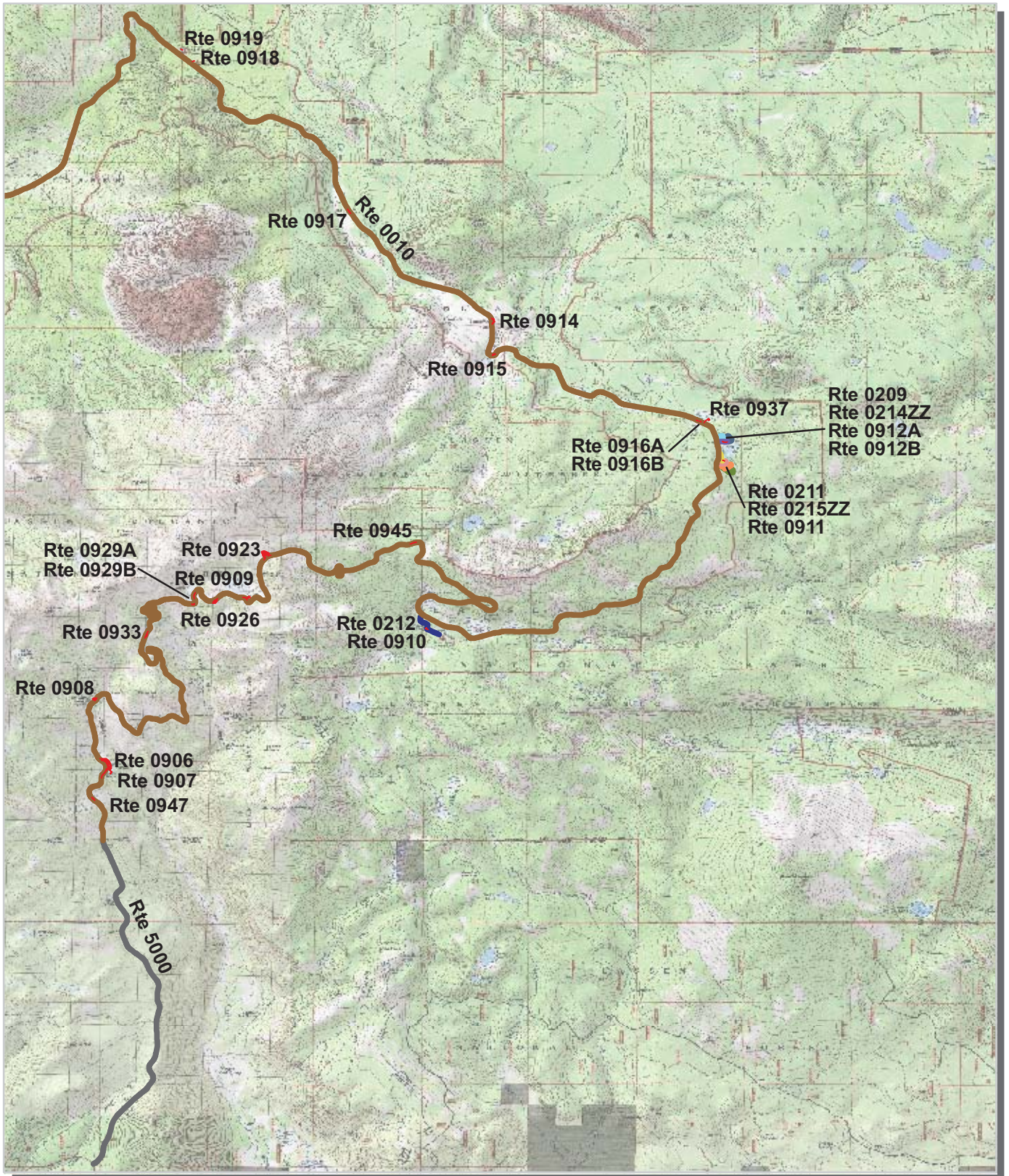


Unique colors used to differentiate routes

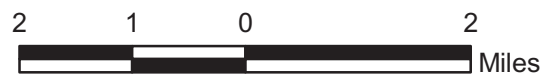




# Lassen Volcanic National Park Route Location Map Area 2

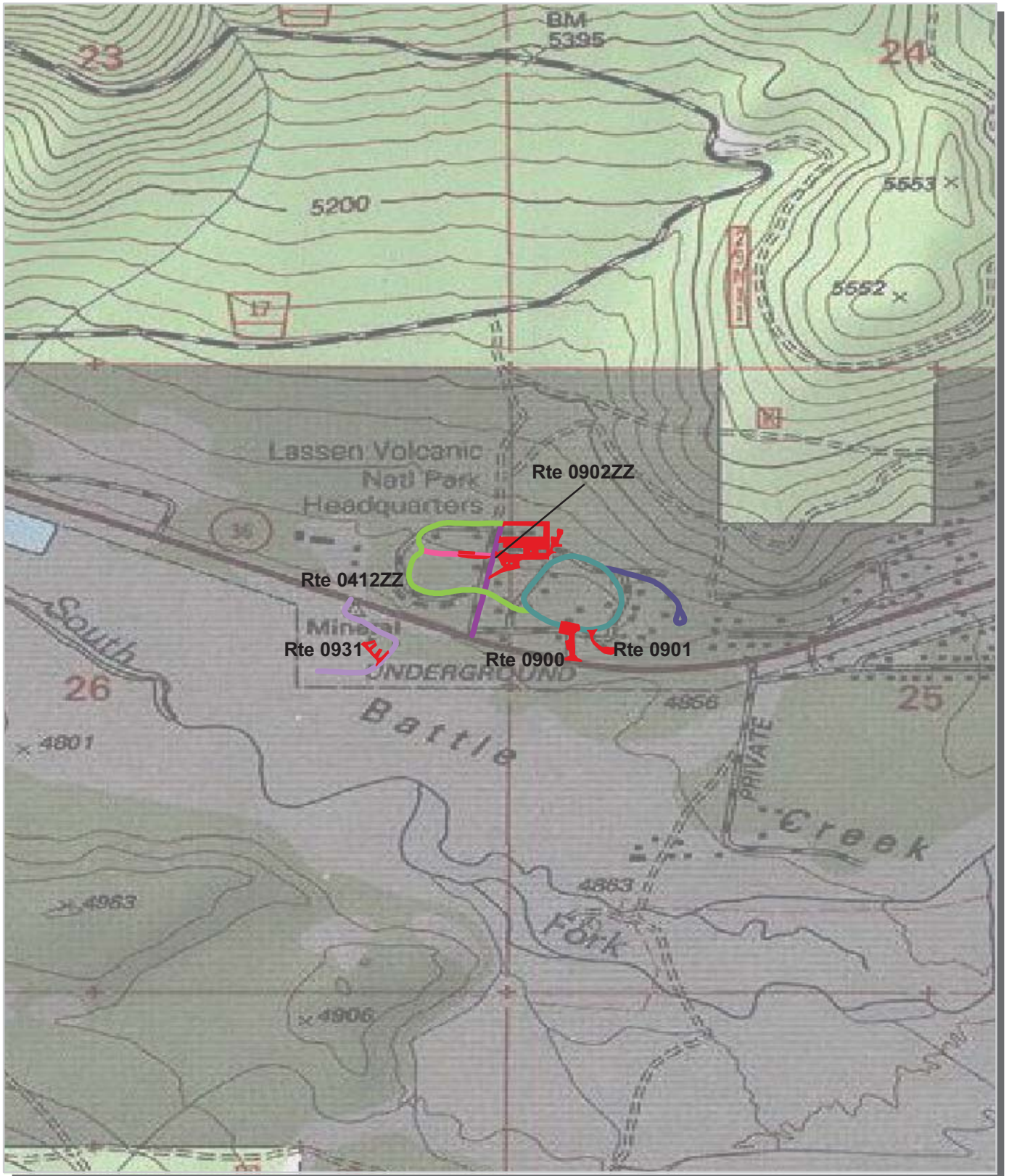


Unique colors used to differentiate routes

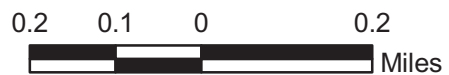




Lassen Volcanic National Park  
Route Location Map  
Area 3



Unique colors used to differentiate routes

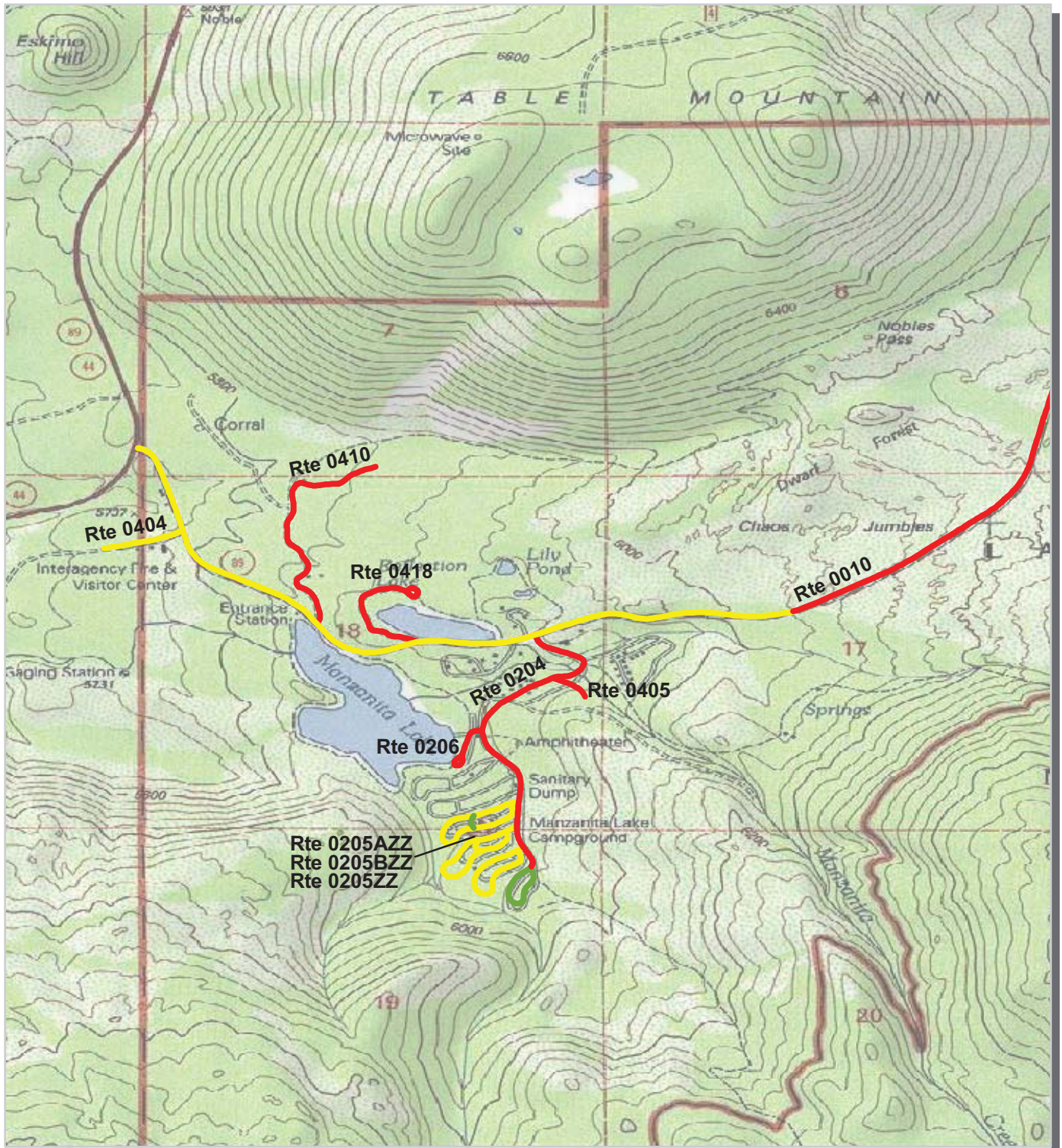








# Lassen Volcanic National Park Route Condition Map PCR - Mile by Mile Area 1



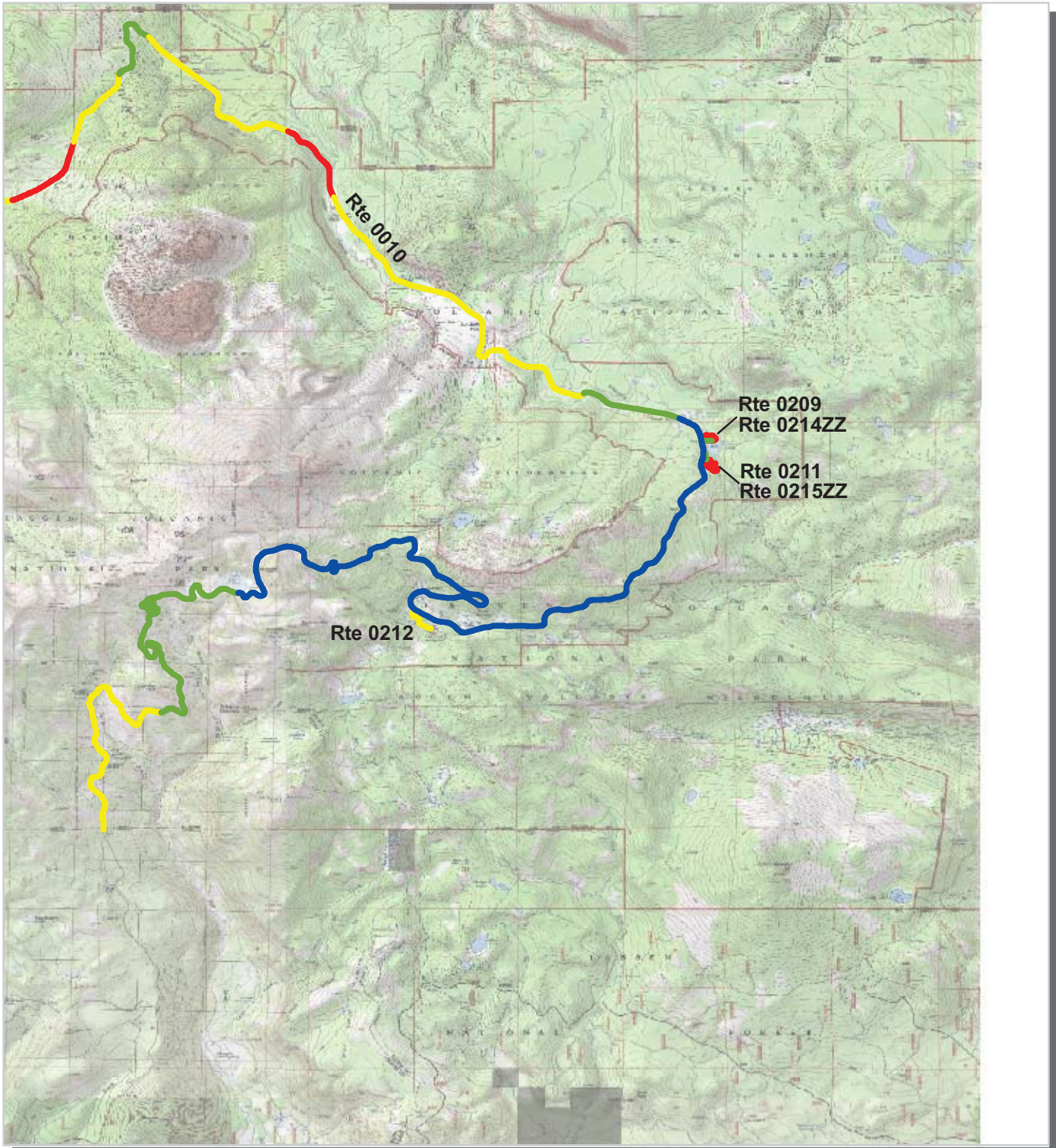
|     |       |           |           |            |         |
|-----|-------|-----------|-----------|------------|---------|
| PCR | Poor  | Fair      | Good      | Excellent  | No Data |
|     | (≤60) | (61 - 84) | (85 - 94) | (95 - 100) |         |

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





# Lassen Volcanic National Park Route Condition Map PCR - Mile by Mile Area 2



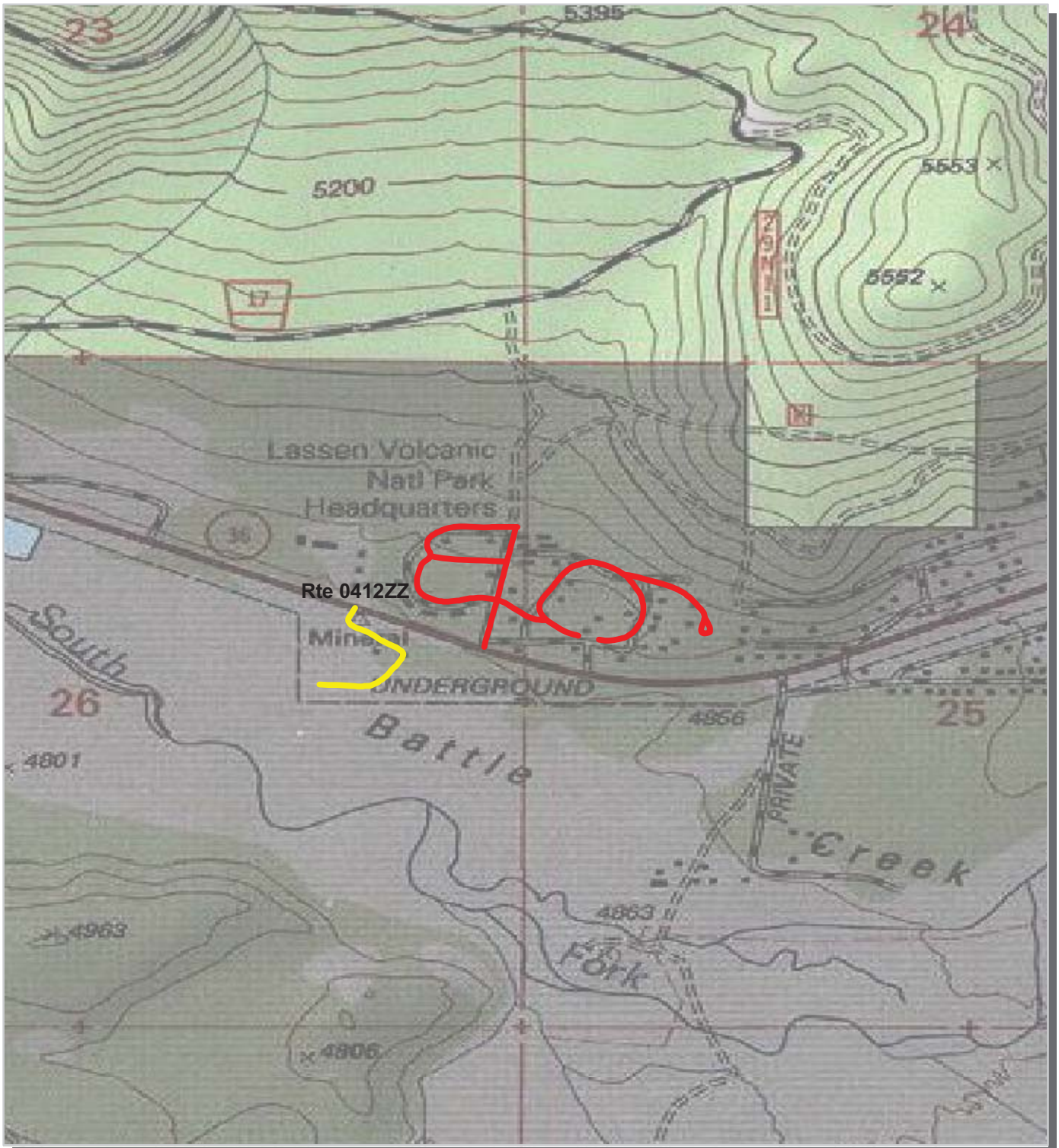
|     |   |  |   |  |  |
|-----|---|--|---|--|--|
| PCR | Poor<br><span style="color: red;">■</span><br>(≤60) | Fair<br><span style="color: yellow;">■</span><br>(61 - 84) | Good<br><span style="color: green;">■</span><br>(85 - 94) | Excellent<br><span style="color: blue;">■</span><br>(95 - 100) | No Data<br><span style="background-color: black; color: black;">■</span> |
|-----|---|--|---|--|--|

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



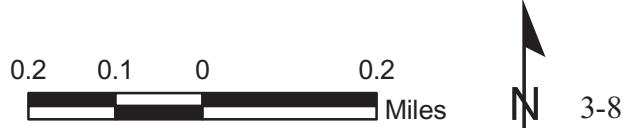


**Lassen Volcanic National Park  
Route Condition Map  
PCR - Mile by Mile  
Area 3**



|     |       |           |           |            |         |
|-----|-------|-----------|-----------|------------|---------|
| PCR | Poor  | Fair      | Good      | Excellent  | No Data |
|     | (≤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.





# Lassen Volcanic National Park



## **Section 4** **Park Route Inventory**