



PEAK EXPERIENCES

November 2017 - May 2018

Speaking of the Weather

We are all affected by weather, which makes it a great topic for conversation. My wife and I discuss the weather to plan our weekends—bicycle ride or Sunday drive? We chat about it in park headquarters, guessing when the snow will arrive or the spring thaw will begin.

It is also interesting to talk about how we experience weather. The weather recorded by monitoring stations is objective, yet our experience of it is anything but. One visitor may see a summer storm at Lassen as a light rain, while another runs from the downpour.

We also compare weather to previous years or perhaps decades. To many, the 2016-2017 winter at Lassen was a particularly wet one. Many California residents noticed the dramatic shift from five years of drought to what—depending on whom you asked—was or was not normal.

Our perceptions of weather make great conversation, but they are not the best record. Fortunately, citizens and scientists alike have contributed to weather records for centuries. At Lassen Volcanic, precipitation and snowpack records help determine whether last winter really was wetter than normal. Data says: yes, the Lassen Peak snow survey reported the densest snowpack on record for the site.

Of course, having data doesn't mean we should stop talking about how we experience weather. Checking the weather forecast will help you plan your visit to the park this winter, however in the end—the weather will be what you make of it.



-Jim Richardson, Superintendent

Forecasting Water from Snow

Four times a year, hydrographer Ted Baker plunges a tube up to 35 feet long into the Lassen Peak snowpack. Baker is the latest in a long line of surveyors who have been measuring and recording snow depth and water content in Lassen Volcanic National Park since 1930.

Even in his first winter season, Baker noticed some interesting variations in his 16 survey sites, known as snow courses, located throughout the Upper Feather River Watershed. Just south of Lassen Volcanic, the Mount Dyer snow course (7,100') provides a good view of Lake Almanor and highlights the snow coverage contrast of higher and lower elevations. Further south, the Four Trees snow sensor site (5,150') receives significant amounts of precipitation. This relatively low elevation site often provides a visible marker of the transition from snow to rain on the landscape.

Lower Lassen Peak (8,250'), near Lake Helen, is Baker's most challenging snow course. Multiple ice layers make it difficult to push the sampling tube down to the ground. His deepest snow core in 2017, taken on April 1, was 25 feet deep. Even with a partner, completing the ten measurements spread across the 1,000-foot course can take anywhere from two to four hours to complete, while other snow courses average about 45 minutes.

The snow survey process and equipment used by Baker is similar to that designed by James E. Church in 1905. Known as the *Father of Snow Surveying*, this

unlikely liberal arts professor established the first weather observatory on nearby Mt. Rose. The station, perched between Reno and Lake Tahoe, served as an outdoor laboratory to study snow in all of its phases.

The resulting data exposed a link between water content of snow on Mt. Rose and the spring rise of Lake Tahoe. Church realized that by measuring the depth and the weight of a snow sample, he could determine the amount of water contained in the snow. This information was used to end a Lake Tahoe water battle between local land owners and downstream users by providing a forecast to inform water management practices.

Today, Church's methods are used at more than 300 snow courses throughout California. The multiple snow cores taken at each site tell a story of the storms that have come and gone. A light, powdery snow layer reflects a cold, drier storm; while a heavy, thick snow layer indicates a warmer, wetter storm.

In the winter of 2016-2017, visitors to Lassen Volcanic and nearby residents experienced more rain than in previous years. The wet weather was reflected in the density of Lassen Peak's snowpack, which on April 1 measured 55 percent, the highest on record for the site. More than half of the 253 inches of snow on Lassen Peak was water. If all that snow melted instantaneously, it would create a pool of water 134 inches, or about 11 feet, deep.

Continued on page 5



Lower Lassen Peak snow course marker, February 2017

Photos above by Ted Baker, PG&E



The same snow course marker, September 2017





GENERAL INFORMATION



Lassen Volcanic National Park
National Park Service
U.S. Department of the Interior

Visitors are encouraged to contact the park via email during the winter season. Recorded information is available by phone.

Email Address
lavo_information@nps.gov

Website
www.nps.gov/lavo

Information Line
Phone: (530) 595-4480
Fax: (530) 595-6139

Mailing Address
Lassen Volcanic National Park
P.O. Box 100
Mineral, CA 96063-0100

Social Media
www.facebook.com/LassenNPS
www.youtube.com/LassenNPS
www.twitter.com/LassenNPS
www.flickr.com/LassenNPS



Hydrothermal Areas

Sulphur Works is accessible to visitors year-round (snow travel required). For your safety, do not travel or camp near hydrothermal areas. The snow in these areas can look solid but may actually be a weak snow layer hiding pools of acidic boiling water. **Walking too close to these areas has resulted in severe injuries for previous visitors.**

Emergencies

If you have an emergency call 911. If phone service is not available, contact a park employee, go to the Loomis Ranger Station, or use the emergency phone in the 24-hour vestibule of the Kohm Yah-mah-nee Visitor Center.



Road Closures

Lassen Volcanic National Park Highway usually closes by mid-November for the winter season due to snow. Butte Lake, Warner Valley, and Juniper Lake roads close to vehicle traffic for the season due to snow around late October and usually reopen in late June or early July. Plowing on the park highway usually begins in early April and continues through late June. See more about spring road clearing on page 8.

Lost & Found

The park's lost and found is located in the Kohm Yah-mah-nee Visitor Center. Please call (530) 595-4480.

Gasoline

There is no fuel in the park during the winter season. The nearest gas station from the southwest entrance is in Chester, 30 miles east on SR-36. The nearest gas stations from the Manzanita Lake entrance are in Shingletown, 17 miles west on SR-44, or in Old Station, 13 miles east on SR-44.

Food

Lassen Café is open on limited hours on weekends and selected holidays only. See page 4 for more information. The nearest areas for food and supplies are Mineral, Chester, Shingletown, and Old Station (see above for distances).

Phones

Cell phone coverage in the park is spotty. An emergency phone is located in the 24-hour vestibule of the Kohm Yah-mah-nee Visitor Center (911 only).

Entrance Fees

Entrance fees are required year-round. The 1-7 day vehicle fee is \$10 between December 1 and April 15. This fee changes to \$25 between April 16 and Nov 30. Display your fee receipt, Lassen Annual pass, or Interagency Pass on your vehicle's dashboard.

Firearms

Visitors are responsible for understanding and complying with all applicable State of California, local, and federal firearms laws. Federal law prohibits firearms in certain facilities in this park identified by posted signs at public entrances. For more information, visit oag.ca.gov/firearms or contact the chief park ranger at (530) 595-6100.

Pets in the Park

Activities with pets are limited at Lassen. Pets must be restrained at all times and are not permitted in the park backcountry (including over snow), or inside visitor centers or other facilities. Vast public lands nearby offer outdoor opportunities with pets. Email us for more information.

Winter Safety

Winter adventure at Lassen involves risk. **Sled with caution; sledding is the number one cause of visitor injury in the winter season.** Learn more about how to prepare for a safe winter visit below.

Accessibility

The 24-hour vestibule in the Kohm Yah-mah-nee Visitor Center and its restrooms are wheelchair-accessible. The Loomis Ranger Station and restrooms in the Loomis Plaza are also wheelchair-accessible.

Weather

With elevations from 5,650 feet to 10,457 feet, a wide variety of weather conditions occur in Lassen Volcanic. Expect a 5° temperature decrease for every 1,000 foot increase in elevation. Prepare for your visit; bring layered clothing, snow boots, a hat and gloves.

Manzanita Lake Average Temperatures (5,850 ft)

Month	High/Low	Month	High/Low
November	56/21 °F	February	51/13 °F
December	50/14 °F	March	53/16 °F
January	50/13 °F	April	61/23 °F

Camping

The Southwest Campground is open year-round. Fires and fire pans are not permitted in the winter, however self-contained barbecues are allowed in the paved parking area. The fee for snow camping or camping in a vehicle is \$10 per night. Overnight vehicles must park between islands to allow for snow plowing operations. Please self-register at the entrance station. Wilderness permits are required for backcountry camping.

Snowmobiling

Snowmobiling is not permitted anywhere within the boundaries of Lassen Volcanic National Park. Email us about snowmobile areas/trails outside the park.

Explore Safely



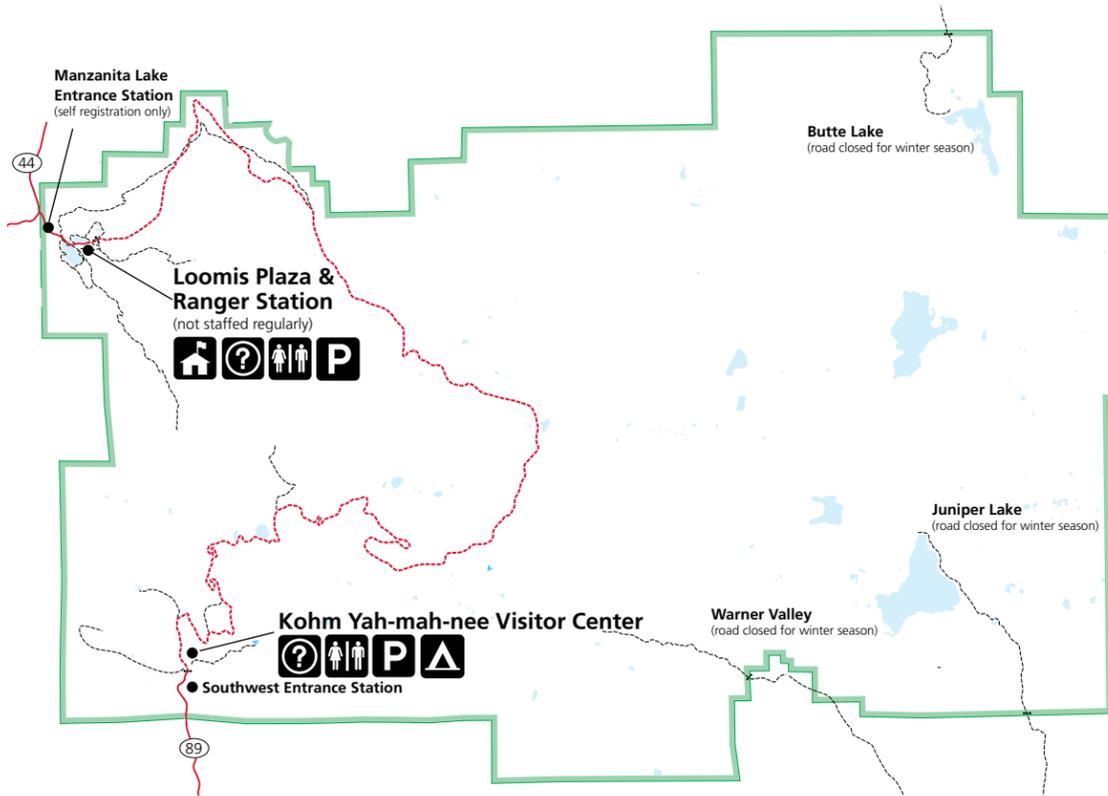
Safety is Your Responsibility

- Bring water
- Carry waterproof gear
- Pack layers for warmth
- Be avalanche aware
- Check the weather forecast
- Carry a map and compass
- Tell someone where you are going and when you will return





WINTER ADVENTURE



Winter Services

Manzanita Lake Area

The Loomis Plaza is accessible year-round and provides access to the Loomis Ranger Station and an accessible restroom facility. The Loomis Museum is closed during the winter. The ranger station is not staffed regularly and does not offer information services. Call 911 in case of an emergency.

Southwest Area

The Kohm Yah-mah-nee Visitor Center is accessible year-round. See page 4 for winter hours and dates. A vestibule is open 24-hours and provides accessible restrooms, drinking water, an emergency phone (911 only), and a backcountry permit station.

Sulphur Works

Follow the park highway route one mile north from the Kohm Yah-mah-nee Visitor Center to reach this steamy spot that is visible year-round. Snowshoes or skis are the easiest method of travel, although it is often possible to walk on a packed trail. *Please be courteous and do not walk in ski tracks.* For your safety, traveling or camping in or near hydrothermal areas is prohibited. Snow surrounding these areas can look solid but, may actually be a weak layer hiding pools of acidic boiling water. **Walking too close to these areas has resulted in severe injuries for previous visitors.**

Nordic Skiing

Nordic skiers delight in the sweeping views from the park highway route and the gentle climb along Manzanita Creek. Be sure to bring equipment; rentals are not available in the park.

Backcountry Skiing/Snowboarding

Backcountry skiers and snowboarders will agree that Lassen offers spectacular terrain with an uncommon solitude. The southwest area offers the most challenging routes. Lassen's backcountry is recommended only for experienced backcountry skiers and snowboarders.

Snowshoeing

If you are new to snowshoeing, consider joining a ranger-led snowshoe walk (see page 4). For those more familiar with walking on snow, opportunities abound at both the north and south entrances. The Manzanita Lake area and the park highway route offer gradual climbs. Numerous routes out of the southwest area offer trails of greater difficulty, many with spectacular views. See pages 6-7 for route information.

Sledding

Excellent sledding hills can be found in the southwest area. Smaller hills can be found in the Manzanita Lake area, however sledders often head to Eskimo Hill snow play area located 1.5 miles east on Highway 44. **Sled with caution; sledding is the number one cause of visitor injury in the winter season.**

Winter Backpacking

Experience the splendor of Lassen's winter by snow camping. Enjoy unimpaired night sky watching and a silence and peace only a snowy park can offer. Wilderness camping permits are required. Self-registration is available outside the Loomis Ranger Station and in the Kohm Yah-mah-nee Visitor Center 24-hour vestibule.

Additional Information

Be sure to bring snowshoes or skis; equipment rentals are not available in the park.

Snowshoes are provided for ranger-led snowshoe tours only.

There are no fuel services in the park during the winter season.

Avalanche Safety

Lassen is avalanche country. Each year avalanches claim more than 150 lives worldwide. Knowledge, information, and equipment are key to preventing and surviving avalanche accidents. Before you enter the winter wilderness, ensure that you have a solid understanding of avalanche awareness and carry avalanche gear including a shovel, probe, and transceiver (beacon). Be especially cautious during and after a snow storm. Spring road opening also warrants extra caution, as avalanches and rock slides can occur on plowed sections of the road at any time. A Lassen avalanche awareness guide is available at the Kohm Yah-mah-nee Visitor Center.

Thanks Partners!

Lassen Association is a non-profit partner that supports and assists Lassen Volcanic National Park in research, interpretation, and conservation programs. Lassen Association promotes the discovery of Lassen Volcanic, enriches the experience of visitors, and supports the preservation and protection of the park for future generations.

During the winter season, the Lassen Association bookstore, located within the Kohm Yah-mah-nee Visitor Center, offers books, maps, trail guides and videos about the natural and cultural history of the park. The bookstore also offers a large selection of educational gift merchandise to enhance your park experience and take home as memories. All profits go directly to the park.



Lassen Association
(530) 348-2670
lassenassociation@yahoo.com
www.lassenassociation.org

Lassen Park Foundation provides support to preserve and interpret the special natural and cultural resources of Lassen Volcanic National Park and its environs for future generations.

With the generosity and dedication of our supporters, the non-profit Park Foundation has provided funding for projects including the Youth Camping program for at-risk youth, Lassen Peak trail restoration, the Kohm Yah-mah-nee Visitor Center, the Lassen Crossroads interpretive area, and the winter snowshoe education program.

Please become a Friend of Lassen by contributing to the Lassen Park Foundation! Your donation is tax-deductible.



Lassen Park Foundation
(530) 378-2600
info@lassenparkfoundation.org
www.lassenparkfoundation.org



BASE CAMP

Kohm Yah-mah-nee Visitor Center

Make Lassen's year-round visitor center your base camp for your winter visit. Please note that the visitor center may close at any time due to inclement weather.

Winter Season November 1 through March 31

Hours 9 am to 5 pm

Closed Thanksgiving and Christmas Mondays and Tuesdays, exceptions: December 26, 2017 January 1, 2018 January 15, 2018 (MLK Day) February 19, 2018 (Presidents' Day)

Lassen Café & Gift

Shop the Gift Shop for souvenirs including art and crafts from local artists, or enjoy café offerings including self-serve frozen items, snacks, and hot and cold beverages on weekends and selected holidays listed below. **Lassen Café & Gift will be open 11 am to 2 pm on weekends and the following dates only:**

December 26-29, 2017
January 1, 2018
January 15, 2018
February 19, 2017

You are also welcome to bring your own meal to enjoy in the dining area; a microwave is available.

Lassen Association Bookstore

Browse books, maps, trail guides, and videos about the park's natural and cultural history at the Lassen Association bookstore. The bookstore also offers a large selection of educational gift merchandise to enhance your park experience and take home as memories. All profits go directly to the park. The bookstore is open during regular visitor center hours.

Delve into Lassen's Natural Wonders

Stroll through the exhibit hall and learn more about Lassen's volcanic nature. Make an earthquake or locate the ancient rim of eroded Brokeoff Volcano.

Ranger-led Snowshoe Walks

Dates

Saturdays and Sundays
January 6 through April 1, 2018

Time/Location

1:30 pm - 3:30 pm
Meet outside the Kohm Yah-mah-nee Visitor Center
Spaced limited

Cost

Suggested \$1 donation for snowshoe maintenance

Ages

8 years and older. Infants and children in carriers are not allowed for safety reasons

What to Bring

Boots, warm layers, water, lunch/snacks

There is something truly fantastic about walking on water—the frozen type that is. There is a simple joy in the feeling of floating on a surface that might otherwise engulf you and an unexpected sense of security when you dig your toes into a slippery slope. This man-made adaptation allows us to embrace a new form of freedom, enabling us to explore Lassen's vast winter landscape.

As it is easier to learn a new skill or activity if someone helps you take the first steps, Lassen offers ranger-led snowshoe walks to introduce you to the sport.

Ranger-led snowshoe walks are an excellent way to learn or practice snowshoeing techniques and explore Lassen in its winter form. As participant experience and fitness level may vary, so too does route and distance. At the beginning of each snowshoe walk, a ranger will demonstrate how to put on snowshoes and how to move around. Once the basic techniques are covered, the group heads out into the snow and the adventure begins.

Snowshoes provide a fun way to experience the wonder of walking on water. Snow creates a smooth surface that just beckons you to wander and explore wilderness in its purest form. Join us for a ranger-led walk and experience the feeling of floating for the first time or bring your own snowshoes and blaze a path all your own.

Entrance Fees

1-7 Day Winter Season

Vehicle Fee - \$10
December 1 - April 15
Valid for six days from date of purchase.

1-7 Day Vehicle Fee - \$25

April 16 - November 30
Valid for six days from date of purchase.

Annual passes can be obtained at park entrance stations, at the Kohm Yah-mah-nee Visitor Center, by phone, or online. To purchase a Lassen Annual Pass visit www.pay.gov or call (530) 595-6120. To purchase an interagency pass, visit store.usgs.gov/pass or call 888-ASK-USGS ext1.

Lassen Annual Pass - \$40

Beginning January 1, 2018 - \$50
Valid for one year from month of purchase. Also honored at Whiskeytown National Recreation Area.

Interagency Annual Pass - \$80

Covers all national park units and other federal recreation areas with entrance fees. Valid for one year from month of purchase.

Interagency Access Pass - Free

Free lifetime pass for U.S. citizens and permanent residents who are permanently disabled.

Interagency Senior Pass

\$20 (Annual) or \$80 (Lifetime)
Lifetime pass for U.S. citizens and permanent residents who are 62 years or older.

Military Annual Pass - Free

Free annual pass for active military members and their dependents.

Every Kid in a Park Pass

Voucher required to obtain pass
Free annual pass for fourth graders. Covers all national park units and other federal recreation areas with entrance fees. Valid through August 2018. Voucher itself is valid for entrance in lieu of the pass.

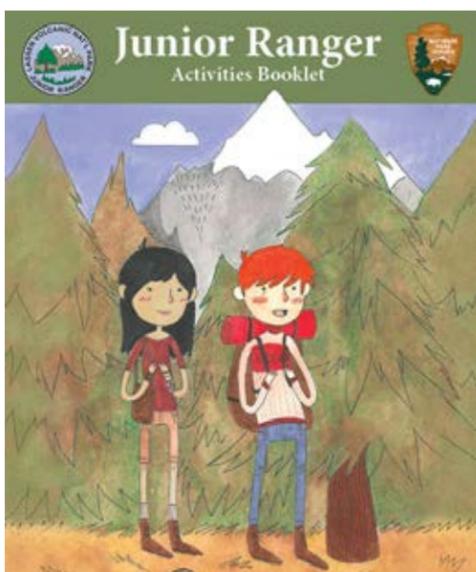
Join the Club!

Become a Junior Ranger

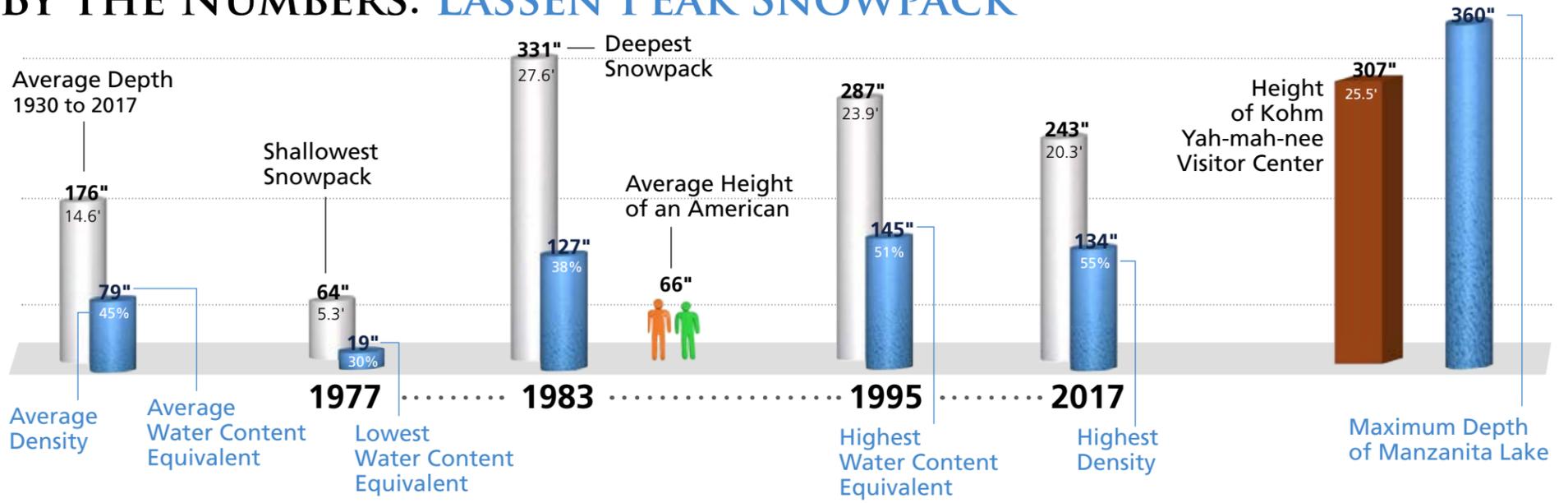
Kids between the ages of 7 and 12 are invited to participate in our Junior Park Ranger program. Choose from a variety of activities while learning more about Lassen Volcanic National Park. Kids who complete the Junior Ranger program can earn a patch.

Our younger explorers are welcome to participate in the Lassen Volcanic National Park Chipmunk Club. Kids can learn more about wildlife in the park and earn a Chipmunk Club sticker.

Pick up your Chipmunk Club card or Junior Ranger booklet at the Kohm Yah-mah-nee Visitor Center!



BY THE NUMBERS: LASSEN PEAK SNOWPACK



Forecasting Water from Snow, continued

Continued from the front page

Data from the Lower Lassen Peak snow course is used to produce monthly forecasts from January to May. Forecasters use average density and depth for each snowpack to estimate spring and summer snowmelt runoff into rivers and reservoirs. The April 1 measurements are generally the most significant as this is when the snowpack is normally at its greatest depth and density.

Snow water equivalent forecasts provide valuable information for recreation, agriculture, flood management, and hydroelectric power generation. Companies, like Pacific Gas and Electric Company (PG&E) in northern California, use the forecasts to determine what percentage of their electric energy generation will be hydro power. Water storage managers determine how much water can be safely stored in a reservoir while reserving space for predicted inflows, like snowmelt and rainfall.

Many of the organizations that use these monthly forecasts also contribute to them. Today in California, more than 50 state, national, and private agencies pool their efforts in collecting snow data. At Lassen Volcanic, park staff and partners work together to record data at Manzanita Lake and Lassen Peak. Visitors to the Lake Helen picnic area may have spotted the 36-foot-tall snow sensor that collects and transmits real-time data to specialists at the California Department of Water Resources. Data from this remote station is manually verified four times each winter by a surveyor, like PG&E hydrographer Ted Baker.

This winter Baker will return to the snow-covered slopes of Lassen Peak and collect snow measurements for the course. We will yet again anticipate the April 1 measurements, which will predict whether snowpack run-off levels will be high or low. Will a dense snowpack once again maintain normal reservoir levels restored last winter?

California's precipitation is the most variable in the nation, making forecasting a particular challenge. Numerous years of data across hundreds of sites provide a valuable record of weather and the longer-term pattern of climate. The 2011-2016 California drought highlighted the importance of our mountain snowpacks, just as the water-rich winter of 2016-2017 focused our attention on water storage systems.

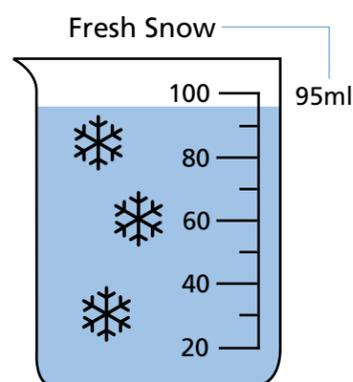
The data from the snowpack in Lassen Volcanic National Park may be almost as valuable as the water it contains. You can join the effort to collect and record data in the park or even in your own neighborhood. It may sound hard, but measuring precipitation in your backyard or calculating snow density is surprisingly easy. Although, just to make it a little easier, hydrographer Ted Baker recommends starting with a sample a tad smaller than a 25-foot-deep core.

Try It: How Much Water is in This Snow?

Snow depth and water density are used to determine the amount of water contained within snow. Scientists use this information to forecast spring and summer runoff from snowmelt on mountains like Lassen Peak. You can try this in the park or at home if it snows where you live.

1. Find a container with milliliter (ml) volume measurements such as a Nalgene bottle or measuring cup
2. Fill the container with snow to the highest measurement line
3. Place the container in hot water to melt the snow (try making a guess at the resulting water level for added fun)
4. Record the water level in milliliters in the container once it is melted
5. Divide the water level* by the volume of the container (the highest measurement line)
6. Multiply by 100 to find the percent of water (density) in the snow sample

*Density = mass/volume, but to figure out the mass of a snow sample without a scale we can use the volume of water as an equivalent to its mass. At room temperature, a milliliter (1 ml) of water has a mass of about 1 gram.



$$\frac{40g \text{ Water}}{95ml \text{ Snow}} = 42\% \text{ Density}$$

What makes up the remaining snow volume?

Measuring a Snow Course

California's 300-plus sample sites, known as snow courses, are visited at least once by a snow surveyor for data gathering. Two to six courses are measured in a day, depending upon how severe the weather is and how the snow surveyor travels to the site.

1. Assemble snow sampling set consisting of aluminum tubes about 1.5 inches in diameter and 30 inches long. The bottom tube has a sharpened steel cutter section to cut down through the ice layers within the snowpack.
2. Use a tape measure to locate the first of 10 measurement locations within the 1,000-foot snow course.
3. Plunge the snow tube through the snowpack. Use the graduations on the side of the tube to read the snow depth.
4. Place a single snow-filled tube containing a sample of the snow core on a scale. Record the weight of the tube and core and then the weight of the empty tube. These measurements are used to calculate how much water is in the snow.
5. Disassemble the tubes once all 10 measurements are complete.



Each end or leg of a snow course is marked by these distinctive signs



A surveyor assembles the sampling set



Surveyors weigh a snow-filled tube

You Can Be the Scientist!

People like you measure precipitation right in their own backyards and share the data. Each measurement contributes to the largest collection of daily precipitation in the United States, managed by the Community Collaborative Rain, Hail & Snow Network.

Learn more about how weather can effect and impact our lives and help provide an ever clearer picture of where and how much precipitation falls throughout our communities. Observations take just five minutes a day. Learn more: CoCoRaHS.org



Backyard rain and snow gauge



MANZANITA LAKE ROUTES

Chaos Crags

Northwest Route

Lassen Volcanic Highway opens to skiing and snowshoeing beyond the Loomis Plaza during the winter season highway closure. The route follows the snow-covered highway, with several destinations along the way.

Destinations beyond Lost Creek Campground area are recommended for overnight trips only. Above Kings Creek, the route enters an area that is subject to extreme avalanche danger. Heavy and deep snow and steep terrain require advanced skiing and mountaineering skills. This area is not recommended for the novice skier or snow camper. The summit of the park highway climbs to 8,512 feet in elevation and provides spectacular views of the region. Allow a minimum of three days to cross the park.

Lost Creek Campground

Distance: 4.6 miles one way
Elevation Gain: 200 feet
Estimated Time: 3-4 hours

Hot Rock

Distance: 7.7 miles one way
Elevation Gain: 400 feet
Estimated Time: Overnight

Summit Lake

Distance: 12.2 miles one way
Elevation Gain: 1,200 feet
Estimated Time: Overnight

Road Summit

Distance: 21.6 miles one way
Elevation Gain: 2,700 feet
Estimated Time: 2 days one way

Beginner Routes

Manzanita Lake Snowshoe Loop

This trail is not recommended for skiing

Distance: 1.5 mile loop
Elevation: 5,800 to 5,850 feet
Average Time: 1.5 hours

Begin near the Loomis Ranger Station and circle the lake in either direction. This route provides excellent views of Lassen Peak and Chaos Crags. Please stay off lake ice, it is unstable and shores may be difficult to recognize under snow.

Reflection Lake Snowshoe Route

This trail is not recommended for skiing

Distance: 0.5 mile loop
Elevation: 5,800 feet
Average Time: 30 minutes

Begin at the shore across the highway from the Loomis Museum and circle the lake in either direction. It may be necessary to follow the park highway for a short section of the lake edge closest to the road. Please stay off lake ice, it may be unstable and shores can be difficult to recognize under snow.

Manzanita Campground Loop

Distance: 1.5 mile loop
Elevation: 5,800 feet
Average Skiing Time: 1.5 hours

Cross the footbridge by the Loomis Ranger Station, turn right and follow the road to the campground for approximately a quarter mile to where it turns to the right through a set of large rocks. The trail covers a half-mile loop through several sections of the campground.

Intermediate Routes

Chaos Jumbles Area

Distance, elevation change and times vary
Head up the park highway for approximately a half-mile to an open area of stunted trees. Veer to the right up toward Chaos Crags. Here the undulating topography slopes up into the bowl of the Crags. The terrain is easy to moderately difficult with excellent views at the higher elevations.

Chaos Crags Trail

This trail is not recommended for skiing

Distance: 4 miles round-trip
Elevation Gain: 5,290 to 6,650 feet
Average Time: 3-4 hours

Cross the footbridge by the Loomis Ranger Station, turn left and follow the road to the Chaos Crags Trailhead sign. Follow yellow tree markers as the trail climbs steeply up to a ridge. If you decide to descend to Crags Lake, beware of potential rock falls and high winds.

Nobles Emigrant Trail

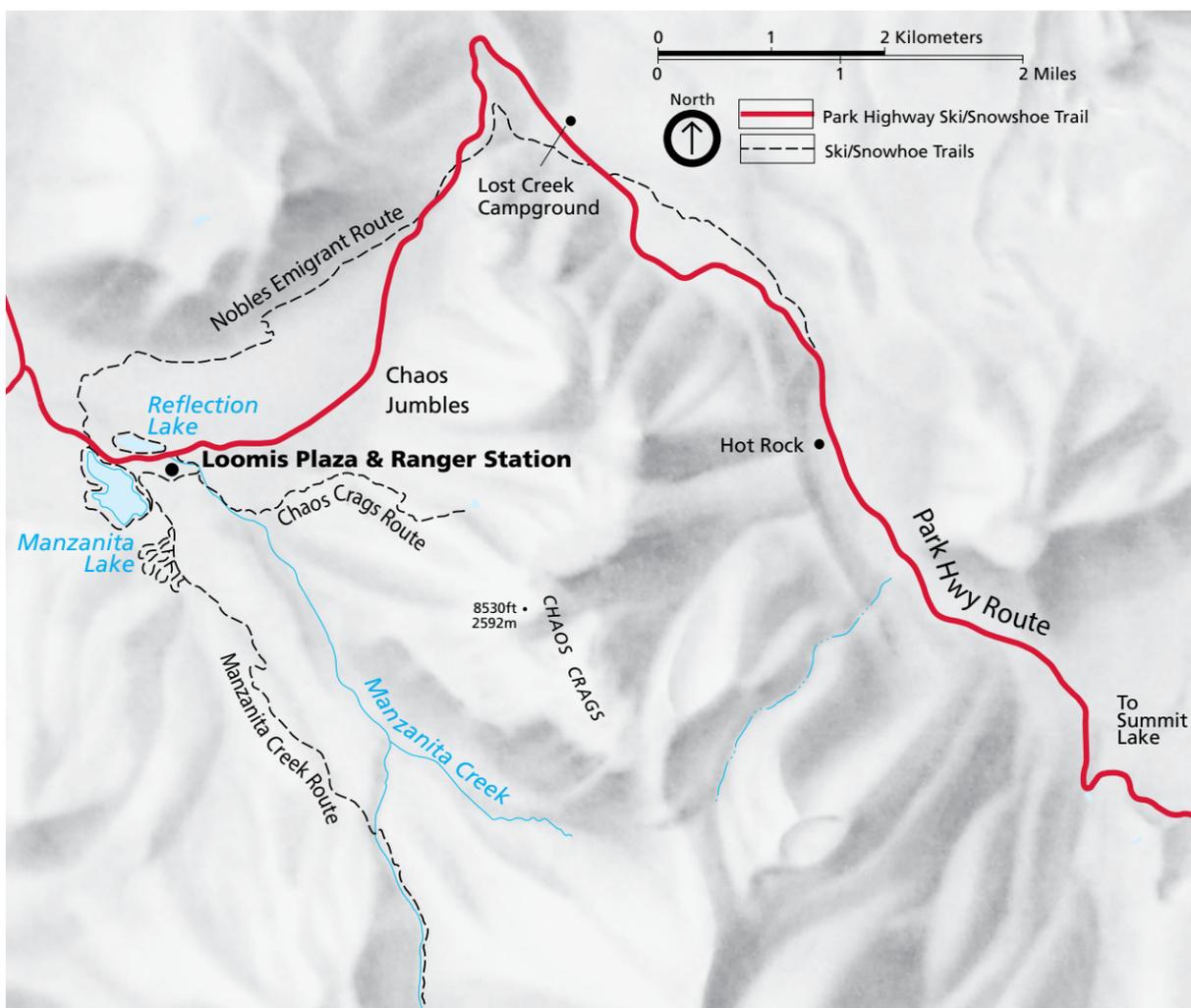
Distance: 7 miles round-trip
Elevation Gain: 5,875 to 6,275 feet
Average Skiing Time: 3-4 hours

Pick up the trail north of Reflection Lake or at the trailhead off a service road west of Reflection Lake. Follow the orange tree markers along the base of Table Mountain. The trail climbs over a flank of Table Mountain into a thick fir forest and rejoins the park highway three miles east of the Loomis Plaza at Sunflower Flat. Return the way you came or via the park highway to make a loop.

Manzanita Creek

Distance: 7.5 miles round-trip
Elevation: 5,850 to 7,400 feet
Average Skiing Time: 6 hours

From the Loomis Ranger Station, cross a footbridge, then turn right onto the Manzanita Lake Campground road. Travel through the campground to the Manzanita Creek trailhead sign. The route is mostly a gradual climb of approximately 1,000 feet. Beware of avalanche chutes off of Loomis Peak that may reach the upper end of the trail.



Manzanita Lake



SOUTHWEST ROUTES

Sulphur Works

Beginner Routes

Sulphur Works

Distance: 2 miles round-trip

Elevation: 6,700 to 7,000 feet

Average Skiing Time: 1 hour

The boiling mudpots and steam vents at Sulphur Works are active year-round. Follow the park highway route northwest from the southwest parking area. The left side of the route is bordered by steep side hills, be aware of avalanche danger. For your safety, do not travel or camp in or near hydrothermal areas. The snow surrounding these areas may look solid, but may actually be a weak snow layer hiding pools of acidic boiling water. Traveling too close to hydrothermal areas has resulted in severe injuries for previous visitors.

Nanny Creek via McGowan Ski Trail

Located in adjacent Lassen National Forest

Distance: 5 miles to Nanny Creek one-way

Elevation: 6,080 to 5,110 feet

Average Skiing Time: 4 hours

The McGowan ski trail is located in Lassen National Forest, 3.5 miles south of the southwest entrance. Marked routes travel across a flat and slightly descending landscape. Follow a loop to the north or ski through to Highway 36 at Nanny Creek. The trail does not go to McGowan Lake, which is on private property. This main route makes for a good one-way ski route if vehicles are available for shuttle.

Intermediate Routes

Ridge Lake

Distance: 4 miles round-trip

Elevation: 7,000 to 8,000 feet

Average Skiing Time: 4 hours

Follow the park highway route from the southwest parking area about ¼ mile and cross the bridge before Sulphur Works. The route begins at the north end of the flat area to the left. The route climbs rapidly along the east side of West Sulphur Creek to the Ridge Lakes basin. Several good camping spots can be found on the north shore of Ridge Lakes. If weather is severe, more protected camping can be found about ¼ mile below Ridge Lakes along its outlet creek. Avoid the area south of Ridge Lakes during periods of avalanche danger.

Diamond Peak

Distance: 4 miles round-trip

Elevation: 6,700 to 8,000 feet

Average Skiing Time: 4 hours

Follow the park highway route from the southwest parking area 1.5 miles to Windy Point. Veer left off the Park Highway Route at the sign for Ranger Cutoff, just beyond the point. The route climbs a gentle slope to a ridge with excellent views of Brokeoff Mountain and Sulphur Works. Stop here or continue along the ridge as it gradually narrows, providing views of Lassen Peak and eventually opening onto a steep slope at the western foot of Diamond Peak. Return using the same route; avoid descending the avalanche-prone slopes above the Sulphur Works area.

Advanced Routes

Brokeoff Mountain

Distance: 7 miles round-trip

Elevation: 6,650 to 9,250 feet

Average Skiing Time: 8 hours

Most skiers access the summit via the southwest ridge. Getting onto this ridge can be difficult as the various routes pass through hazardous canyons. Traditional routes use the Forest Lake route or the summer trail that begins near the park entrance. Numerous avalanche paths exist on all aspects of the mountain. Travelers should use extreme caution. Many skiers reserve travel on Brokeoff Mountain for spring when snow conditions traditionally stabilize. Summit conditions during inclement weather often include high winds with little or no visibility. Be cautious of overhanging cornices at the summit.

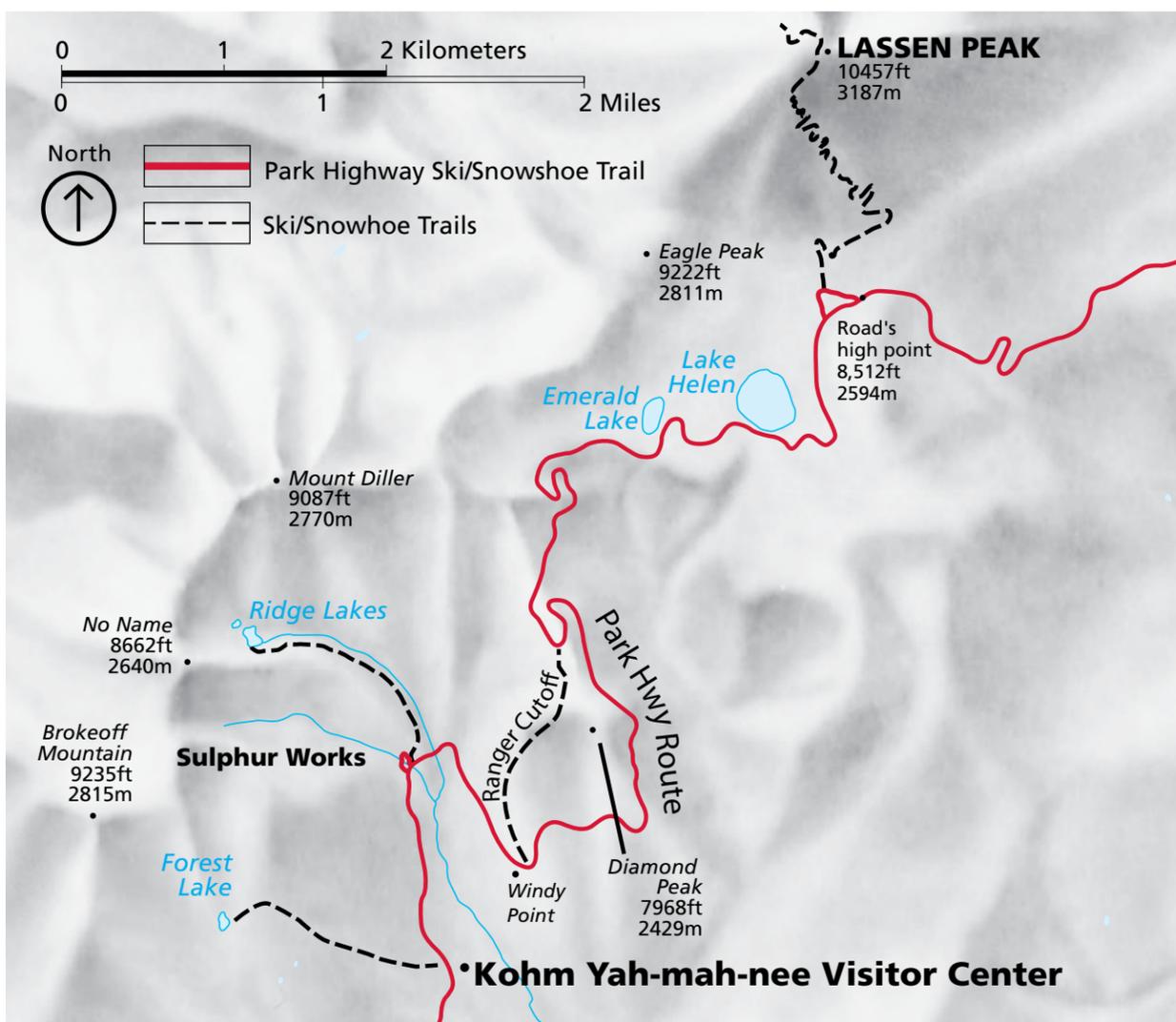
Lassen Peak

Distance: 20 miles round-trip

Elevation: 6,700 to 10,457 feet

Average Skiing Time: 3 days

Most skiers and snowshoers allow three days to summit Lassen Peak in the winter. A possible itinerary includes Lake Helen, summit Lassen, and return. Be prepared for high winds in the Lassen Peak and Lake Helen areas. Conditions on the mountain are most stable in early morning hours; afternoon travel is not recommended. The safest route up the mountain follows the summer trail through the forested section and continues on the southeast ridge to the summit. Weather conditions on Lassen Peak can deteriorate rapidly, creating white out conditions and high winds.



Southwest Route

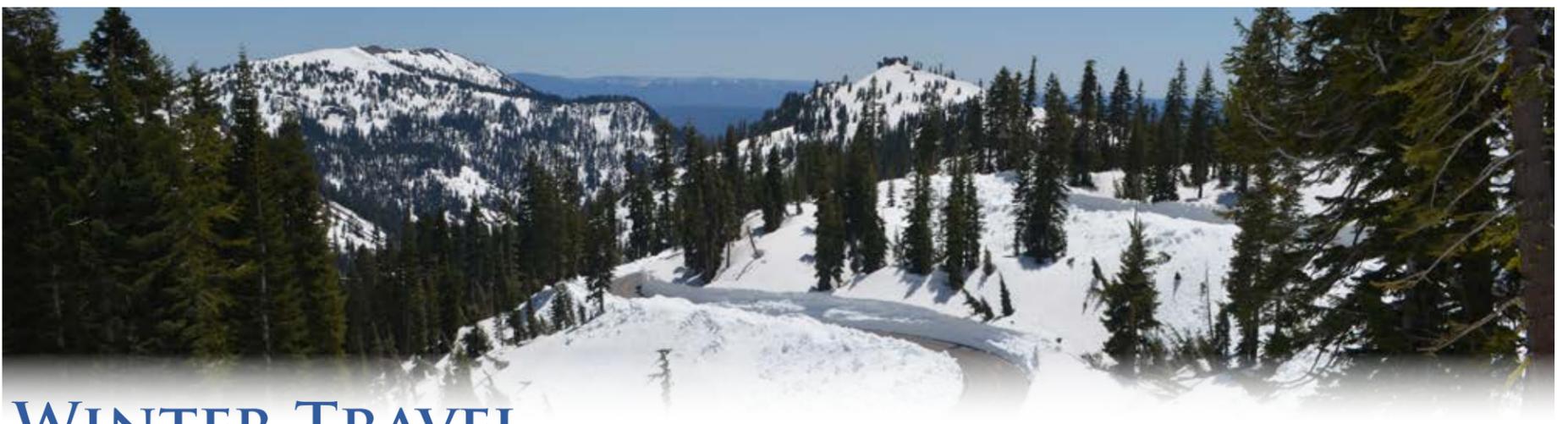
Lassen Volcanic Highway is open to skiing and snowshoeing beyond the Kohm Yah-mah-nee Visitor Center during the winter season highway closure. The route follows the snow-covered highway, with several destinations along the way.

The southwest area of the park is primarily composed of steep terrain and sections of the highway are prone to avalanche danger. Travel outside of the road corridor is recommended only for experienced winter travelers.

The Diamond Peak area (including the eastern slope above Sulphur Works) is extremely avalanche prone. This area should be avoided by using the marked "Ranger Cutoff" route just north of Windy Point.

By mid-winter it is difficult to find any trace of the road between the Little Hot Springs Valley and Reading Peak. High winds and white out conditions are common in this area during winter storms.

Destinations beyond Lake Helen are recommended for overnight trips only. Good overnight snow camping areas can be found a short distance from the highway north of Diamond Peak and near Emerald Lake and Lake Helen.



WINTER TRAVEL

Spring road clearing

Directions Around the Park

Lassen Volcanic National Park Highway is closed to vehicles in the winter and early spring. Follow the directions below for travel between the southwest and Manzanita Lake entrances. **RVs and trailers are advised to use I-5 via state routes (SR) SR-44 and SR-36, or travel around the east side of the park.** For directions from Manzanita Lake to the southwest entrance, follow the directions above in reverse—be sure to reverse left and right turns.

Travel Around the West Side of the Park

This route is the shortest route around the park. This windy road is not recommended for RVs and trailers. **Average travel time is one hour and 45 minutes.**

1. From the Kohm Yah-mah-nee Visitor Center, head south on Lassen National Park Highway/SR-89 for 4 miles.
2. Turn right (west) on SR-36. Continue for 23 miles.
3. Turn right (north) onto Lanes Valley Road. A large road sign on the north side of the highway marks the turnoff approximately one mile before the town of Paynes Creek. Continue for 7 miles.
4. Turn right onto Manton Road/Co Rd A6. Continue for 7 miles.
5. In Manton, turn left onto Wilson Hill Road. Continue for 1.5 miles.
6. Turn left to stay on Wilson Hill Road. Continue for 6 miles.
7. Turn right (east) onto SR-44. Continue for 17 miles.
8. Turn right (south) into the park. Continue 1 mile to the Manzanita Lake entrance.

Travel Around the East Side of the Park

This route is slightly longer than the west route, however it has fewer curves and is appropriate for RVs and trailers. **Average travel time is two hours.**

1. From the Kohm Yah-mah-nee Visitor Center, head south on Lassen National Park Highway/SR-89 for 4 miles.
2. Turn left (east) on SR-36. Continue 38 miles to CR A21/Mooney Road located in the town of Westwood. Continue for 18 miles. Please note that CR A21 may close during heavy snowfall. In the case of closure, follow SR-36 to the SR-44 junction just west of Susanville.
3. Turn left (west) onto SR-44. Continue for 28 miles.
4. Turn left (west) onto SR-44/89. Continue for 13.5 miles.
5. Turn left (south) into the park. Continue 1 mile to the Manzanita Lake entrance.

Winter Preparedness

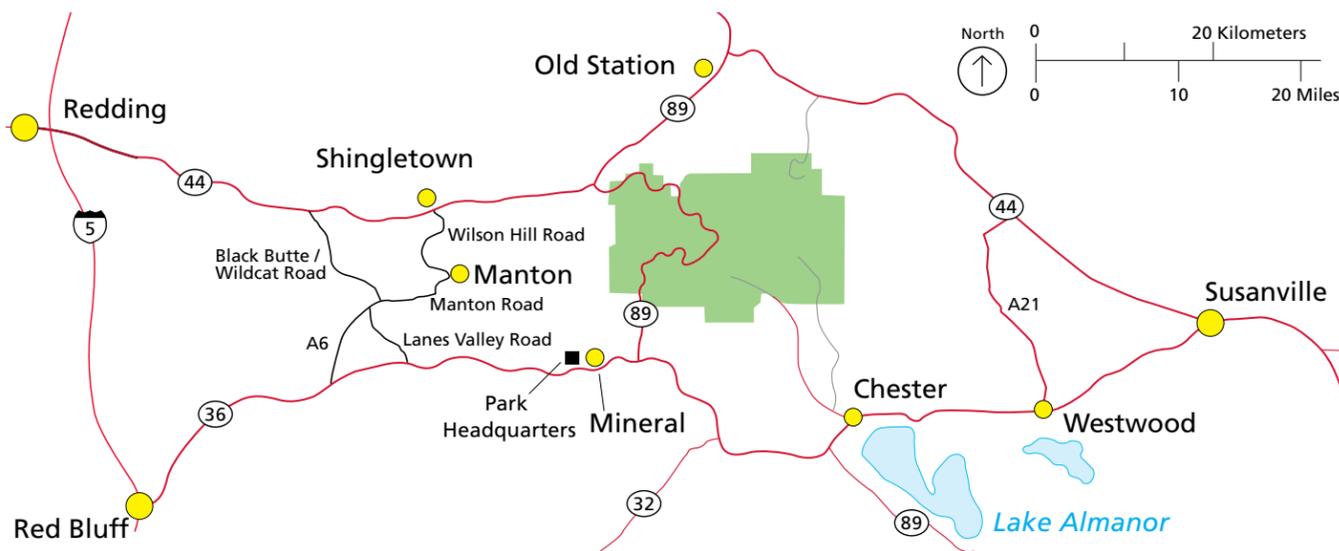
Lassen Volcanic National Park Highway between SR-44 and SR-36 is closed through winter and much of spring. The road is plowed to the Kohm Yah-mah-nee Visitor Center from SR-36 and to the Loomis Plaza from SR-44. Visit the website for road status at: go.nps.gov/lavo_current for up-to-date information.

Be prepared for icy or snowy conditions at high elevations during the fall and winter seasons. Conditions can be very hazardous, especially when temperatures drop during the evening and early morning hours. **Carry tire chains in your vehicle from October through May.**

Spring Highway Clearing

Clearing of the park highway usually begins in April and on average takes about two months before the highway opens to through traffic. Predicting when the highway will open is not possible, even in late spring, because weather in April and even May can affect plowing progress significantly. See the chart below for opening and closing dates for the last ten years.

Year	Date plowing began	Date road opened	Date road closed
2007	Apr 2	May 18	Dec 6
2008	Mar 31	May 18	Dec 12
2009	Apr 13	Jun 4	Nov 18
2010	Apr 19	Jul 8	Oct 23
2011	Apr 19	Jul 16	Nov 22
2012	Apr 21	June 1	Nov 19
2013	Mar 21	May 24	Dec 18
2014	Apr 2	May 19	Dec 1
2015	Mar 30	May 3	Nov 8
2016	Apr 18	Jun 12	Oct 30
2017	Apr 4	Jul 26	



National Park Service
U.S. Department of the Interior

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