

The museum building at Uwekahuna was built in 1927 by a private organization and has served as the educational center for the park ever since. The parking lot, with a capacity of 150 cars, was planned and constructed in conjunction with the Uwekahuna-Bird Park road in the early 1930s. From here, the road circles around the west side of the Caldera, passes through the Southwest Rift Zone, and then descends into the caldera floor to Halemaumau. Long, paved turnouts along the Southwest Rift section were constructed after the historic period to accommodate visitors viewing the fissures. Numerous stone features in this section date to the 1930s, including stone culverts and embankment facing and stone drainage ditches. Toward the bottom of the slope into the caldera, a large stone drainage ditch and stone wall constructed by the CCC in 1934 directs storm runoff along the side of the road.

Section 6: Halemaumau to Chain of Craters Road, 1908-1931
Mile 5.4-7.5

This section of road has survived from the first road from Volcano House to Halemaumau in 1908 with few realignments. The large parking lot was constructed around 1932 in response to large volumes of visitors during Halemaumau eruptions in the 1920s. Other portions of the road were realigned in the 1920s to eliminate sharp curves or steep grades. The road here has long open vistas and gently curves through lava flows, some from the nineteenth and early twentieth centuries and some as recent as 1974.

Past the Halemaumau parking lot, the road begins to climb the gradual slope of the caldera's south wall. There are two non-historic paved turnouts on the caldera side that offer views back toward Halemaumau and Uwekahuna, and a third turnout that notes the 1982 lava flow nearby. The road then passes Keanakakoi, one of the smaller craters on Kilauea's summit, where turnouts on either side allows motorists to stop and view the caldera. A stone parapet guard wall constructed in 1933 was destroyed during volcanic activity in the 1980s and replaced with a new stone guard wall.

Beyond Keanakakoi, Crater Rim Drive passes through an area that was buried in pumice cinder in the 1959-1960 eruption of Kilauea Iki. While part of the original Crater Road was buried and/or destroyed beyond repair, the portion just east of Keanakakoi was excavated and repaired in its original alignment. The sides of the road here are mounds of cinder, slowly recovering with a regenerating ohia forest.

Segment 7: Devastation Bypass, 1961
Mile 7.5-7.9

This section was constructed in the early 1960s to bypass the part of the road destroyed in the 1959 Kilauea Iki eruption. The character here is similar to the previous portion, characterized by roadside cinder embankments and dry ohia forest. The intersection with Chain of Craters Road was reconfigured when the new section was constructed, replacing the original wye intersection with a simple four-leg intersection. Opposite the Chain of Craters Road is part of the original road, which is today the parking area for the Devastation Trail interpretive area. The other end of the destroyed road is also a parking area now, providing access to Puu Puai, the spatter cone formed in the eruption. These parking areas were configured in the 1960s.

Section 8: Puu Puai to Headquarters Connector, 1908-1931
Mile 7.9-10.1

This section was also part of the original 1908 road from Volcano House to Halemaumau. The route was chosen, over one that would have approached Halemaumau from the west, in part because of the scenic

value of the fern forest, the Twin Craters (Thurston Lava Tube), Kilauea Iki, and Keanakakoi. The early road, which wound through the dense fern jungle as it skirted the craters contained a number of sharp curves. After Hawaii National Park was formed in 1916, the park made efforts to bring the road to NPS standards, without undue intrusion on the native fern forest. The result was incremental changes to the grade and alignment of the road throughout the 1920s to widen sharp curves and reduce grades. Evidence of these realignments is still present in the form of topography and stone retaining walls now hidden in the dense roadside forest.

By the early 1930s, the road met NPS standards as a pleasant and scenic route around the caldera. In 1933, rustic stone parapet guard walls were built along Thurston Lava Tube and Kilauea Iki to improve driver safety, as well as the scenic value of the road. The long parapet wall at Thurston Lava Tube was built over an earlier 12-foot dry-stacked stone retaining wall.

This section of Crater Rim Drive contains two parking areas, both of which have been reconfigured some since the historic period. The Thurston Lava Tube parking area was most recently expanded in the early 1960s, adding parking for cars and busses. The new parking was carefully designed to retain existing lava rock walls and rock cuts. At Kilauea Iki, the original road alignment became the parking area, while the travel lane was realigned to the inside of the curve. This increased parking for the overlook and separated it from the road, while also reducing the curve for motorists. The parapet guard walls built in 1933 were retained in both overlook redesigns.

Section 9: Headquarters Connector, 1961 Mile 10.1-10.3

This short section was constructed in the 1961 Mamalahoa bypass project, connecting the original entrance road to the loop road, creating a bypass of Waldron Ledge. This was used as an alternate route around Waldron Ledge until the 1980s, when earthquake damage closed the Waldron Ledge section of Crater Rim Drive and making the connector and bypass route the main road.

Section 10: Original Entrance Road, 1894 Mile 10.3-10.5

Originally part of the road from Hilo to the Volcano House, the original entrance road dates to the early pre-park years. The alignment appears to have changed little since the 1894 government road, and probably dates well before that to the early foot trail to the volcano. In 1961, this section of road was bypassed with the new Mamalahoa Highway and a new park entrance was constructed. The original entrance road became an alternate route around Waldron Ledge until the earthquakes in the 1980s closed Waldron Ledge.

Other Roads

Research Center Road LCS ID: 461598

Between park headquarters and Kilauea Iki, Crater Rim Drive comes to a tee intersection with a stop sign. Crater Rim Drive continues to the left, while the right road leads to the park research center. The research center was originally the second CCC camp, built in 1938. Today it consists of a number of offices and labs for natural and cultural resources in the park.

The road, beginning at the stop sign, was part of Crater Rim Drive until 1981 when earthquakes diverted traffic from Waldron Ledge to the headquarters connector. After a quarter mile, the road turns left off of the old Crater Rim Drive alignment and onto the access road to the research center. A traffic barrier blocks access to the closed portion of Crater Rim Drive. The research center access road continues for another quarter mile to the buildings at the research center.

Because the research center road has not had the same upgrades as other portions of Crater Rim Drive since at least the 1970s, it retains a character closer to that of the historic period.

Waldron Ledge Road (Ruin)

LCS ID: 501686

This segment of Crater Rim Drive from the entrance to the employee residential area to the research center was closed due to earthquake damage in the 1980s. Originally part of the road from the Volcano House to Halemaumau built in 1908, it wound along the edge of Waldron Ledge, providing some of the best views of the caldera from the road. Vegetation was cleared along the ledge in 1918 to improve the views, and an overlook was built to allow motorists to stop. In 1933, a stone parapet guard wall was built along the overlook to improve safety and scenic quality. In the 1970s, the road along Waldron Ledge was realigned to move it further away from the caldera rim. The original overlook was retained and enlarged as a parking area. In 1981, large earth cracks undermined the road and caused its closure between the overlook and the research center and traffic was diverted to the headquarters connector bypass. Traffic was still allowed to reach the Waldron Ledge overlook from the headquarters area. Then, in 1983, more earthquakes shook large portions of the road into the caldera below. A 450-foot section of the road between the overlook and the research center was lost, and portions near the residential area were severely damaged. This permanently closed the Waldron Ledge section of the road to vehicles, making the bypass permanent.

Today, portions of the road, as well as the overlook at Waldron Ledge, are accessible by foot. Part of the Crater Rim Trail, the damaged road dramatically demonstrates how volcanic activity continues to change the landscape.

Parking Areas

Steam Vents

The parking area for the Steam Vents, located on the Steaming Bluff just west of the Volcano House, was paved in the 1960s, but was probably an informal gravel area well before that. The parking area consists of a short loop access road and a small parking area accommodating about a dozen cars. There are no significant stone curbs or walls associated with this parking area. The parking area provides access to large steam vents that emit near-constant billows of steam directly adjacent to the access loop, as well as to the Steaming Bluff overlook.

Jaggar Museum and Volcano Observatory

The parking lot for the museum on Uwekahuna Bluff was built in 1933-1934 with the construction of the Uwekahuna-Bird Park Road. The parking lot features a symmetrical design with raised medians edged with 8 inch by 12 inch stone curbs. The lot has changed little since its construction, aside from bus parking, sidewalk, and retaining wall along the southwest side. At the lot's east end is a drainage ditch, landscaped with boulders and native shrubs, that delivers water into the roadside drainage through a small

single iron pipe culvert with a lava rock headwall. At the lot's west end is a crosswalk, double iron pipe culvert, and a wide paved gutter that drains into a slightly recessed area of pavement. The culverts appear to have been built at the same time as the parking lot.

The stone curb has been damaged in places, with some of the large curbstones misplaced. Successive paving of the parking lot has also reduced the height of the curbs from their original 9 inches above the parking surface.

Halemaumau

The large parking lot at Halemaumau was built around 1932 in response to large volumes of visitors during Halemaumau eruptions in the 1920s. Like the parking lot at Uwekahuna, the Halemaumau lot is symmetrical with curbed medians. The curbstones are the same type as those at Uwekahuna: 9 inch by 12 inch cut stone. On the eastern end of the parking lot, stone edging reveals a road alignment that predates the construction of the current lot. The lot has not changed significantly since it was constructed the 1930s.

Thurston Lava Tube

The parking lot at Thurston Lava Tube was configured in 1962, but still retains features from earlier configuration. The new design of the parking area was careful to preserve the existing stone walls and rock cuts that helped define the character of the road through the fern jungle area. Parking is currently on both sides of the road, with perpendicular auto parking on the west side of the road and parallel bus parking on the east side of the road.

Volcano House

When the Volcano House relocated to the south side of Crater Rim Drive after it burned in 1940, the roads and parking around it and the park headquarters were reconfigured. Where there had been a wye intersection with the headquarters building (today the Ohia Wing) at the apex, a new loop access road was constructed, circling behind the headquarters building. This access road brought traffic to a drop-off area and porte-cochere in front of the Volcano House. Limited parking for the Volcano House was provide along this access road. In the 1950s, the parking was expanded along the access road, adding angled spaces on either side of the hotel's porte-cochere. The porte-cochere was also enlarged to accommodate tour busses.

Trails

Halemaumau Trail

LCS ID: 58432

One of the earliest trails at Kilauea was a footpath that descended from the Volcano House and struck out directly across the lava beds to Halemaumau Crater. Before the roads were built, this was the primary access to the "fire pit." Early Volcano House register entries refer to the trail as "The Worlds Weirdest Walk," in reference to the bizarre landscape created by the various lava flows. The alignment of the trail across the floor of the caldera has changed from time to time in response to new lava flows, but the trail is essentially the same as it was in the earliest years of tourist travel to the volcano.

Kilauea Iki Trail

LCS ID: 501695

In 1922, Superintendent Boles directed the construction of a trail from Byron Ledge down the west wall of Kilauea Iki. With access by a second trail into Kilauea Iki from the road opposite Thurston Lava Tube, this loop trail became one of the most popular in the park. In 1934, the trail from the road down to Kilauea Iki was rebuilt by the CCC, who relocated and regraded the trail and built stone retaining walls in many places along the upper portion. In the 1959 Kilauea Iki eruption, the upper portions of the trail and all of the CCC stone work were spared. After the eruption, the path across the caldera floor and out of the western end were rebuilt. Today, this path continues to be a popular hiking route in the caldera, showcasing prime examples of CCC stone work.

Crater Rim Trail

LCS ID: 58431

Crater Rim Trail developed over the years from a variety of historic and non-historic trail segments. One of the first segments of it was built in 1922, when Superintendent Boles directed the construction of the Waldron Ledge Trail between Kilauea Iki and the Volcano House. Today, this portion of the trail follows the old Crater Rim Road section along Waldron Ledge that was damaged in earthquakes in the 1980s. Portions of the road that fell into the caldera are bypassed by new trail segments.

The trail along Steaming Bluff from the Volcano House to Kilauea Military Camp was developed in 1930, and connected to an older trail from Kilauea Military Camp to Uwekahuna. The rather treacherous Uwekahuna Bluff trail down the face of the north bluff to Halemaumau was discontinued not long after the road to Halemaumau was built in 1931. The current segment of Crater Rim Trail from Kilauea Military Camp to Halemaumau follows the alignment of this precursor to the Uwekahuna-Bird Park Road and retains much of the old road's topographic features and several rock retaining walls.

The southern portion of Crater Rim Trail, from the western caldera wall, past Keanakakoi, to the old Keauhou Road appears to have originated after the historic period in an attempt to complete the loop trail.

Byron Ledge Trail

LCS ID: 501705

In 1927, a trail was built from the summer camp at Byron Ledge down the caldera wall and across the lava flows to connect with the Halemaumau Trail. In 1930, the summer camp trail was extended north along Byron Ledge, along the rim of Kilauea Iki to the talus slopes at the foot of Waldron Ledge to connect with the existing trail from the Volcano House. The current trail from Byron Ledge into the caldera follows the historic alignment.

Thurston Lava Tube Trail

LCS ID: 501706

The trail from Crater Rim Drive down to and through the Thurston Lava Tube has long been a popular attraction at the park. The trail itself, which dates from before the land was acquired by the NPS in 1933, began as a small footpath from the road to the tube opening. The bridge over a fissure at the tube entrance provided access to the tube itself in 1924. After the park acquired the lava tube, they paved the trail and made improvements to the stairs and other structures.

The short length and accessibility of the trail at Thurston Lava Tube made it one of the most popular attractions in the park. As the numbers of people using the trail increased, it assumed more the character and needs of a walkway for people in street clothing rather than a trail for those equipped to hike. In

1955, the trail was re-surfaced, all steps re-laid with hand rails and a blacktop trail laid through the tube itself with warning lights at low spots, etc. Through the end of the 1950s, improvements continued to be made to the trail to increase accessibility and safety. These included guardrails at steep drops, protective cables on the bridge, lights throughout the tube, stair improvement, and better surfacing. The stairs at the tube's exit were improved, and the return trail was improved and surfaced. The result was a half-mile pathway that most park visitors could negotiate with little trouble.

Turnouts

Several turnouts along Crater Rim Drive allow drivers to stop and view the many sites around the caldera. This is consistent with roads developed in national parks around the country in the early twentieth century, where turnouts were used to provide places for drivers to pull over without damaging the road shoulders or natural features often located very close to the road. Turnouts on early roads were typically short areas, large enough for one or two cars to pull safely out of the lane of travel. Usually gravel, although sometimes surfaced with asphalt, the turnouts were generally between 20 and 50 feet long and lens shaped, with short, curved exit and reentry points. Large boulders were often used to delineate the turnout and contain the cars.

As travel speed and traffic volumes increased over the years, turnouts became longer, with more space for exiting and reentering traffic. The turnouts were usually paved and edged to contain the cars and prevent shoulder damage on either end of the turnout. Today, turnouts are often from 60 feet to more than 100 feet in length and have a more trapezoidal shape with straight sides and angled returns.

Turnouts along Crater Rim Drive represent both of these categories. Some are short and lens shaped, with lava boulders delineating their extent. Others are long and paved, with straight, angled sides. While it is unknown which specific turnouts date from the historic period, it is possible to describe a character that is consistent with historic turnout design. Many of the turnouts along the north and northwest sections of Crater Rim Drive, in the area of the steam vents and Uwekahuna Bluff, exhibit the characteristics of historic turnouts. By contrast, many of the turnouts along the Southwest Rift Zone and near Keanakakoi were built in the 1950s and 1960s and are clearly of a more modern design.

Summary

Today, the systems of vehicular and pedestrian circulation around Kilauea Caldera comprise mix of historic and non-historic elements as complex as the story of their development. The overall structure of the circulation, consisting of a loop road that provided access to the sites around the caldera together with a system of trails, was laid out by the park's master planning process and was in place by the early 1930s. The current circulation, including Crater Rim Drive, parking lots at the developed areas, turnouts, and trails, reflects the designs of the first master plans, effectively moving visitors around the Kilauea summit area. While Crater Rim Drive was periodically realigned in response to design improvements or volcanic events, it retains the majority of its historic alignment, with four short segments dating from after 1942, and three segments of the historic alignment lost. Parking areas at Uwekahuna Bluff and Halemaumau Crater are essentially unchanged from 1934 and demonstrate the rustic design principles that guided road construction in the period. This is true, too, of the Kilauea Iki Trail, which showcases stone work characteristic of the CCC era. Overall, the circulation in Crater Rim Historic District helps convey the significance of the district and contributes to its integrity.



Circulation #1. Contemporary photo of the mortared-stone embankment facing and raised roadbed with culvert, located in the Southwest Rift Zone. Asphalt covers the top of the embankment from successive road paving. (PWRO 2005)



Circulation #2. Road traces and remnant retaining walls, most likely from Leavitt's Road from Uwekahuna to Halemaumau built in 1931, are today part of the Crater Rim Trail in the northwest corner of the caldera. (PWRO 2005)



Circulation #3. Several remnants of retaining walls mark former road alignments of Crater Rim Drive. The wall remnants, which date to before the 1920s, are mostly hidden in the dense vegetation near the current road south of Thurston Lava Tube. (PWRO 2005)

Characteristic Feature	ID LCS Number	Type of Contribution
Crater Rim Drive	444159	Contributing
Research Center Road	461598	Contributing
Waldron Ledge Road Ruin	501686	Contributing
Halemaumau Trail	58432	Contributing
Kilauea Iki Trail	501695	Contributing
Crater Rim Trail	58431	Contributing
Byron Ledge Trail	501705	Contributing
Thurston Lava Tube Trail	501706	Contributing
Steam Vents Parking Area		Contributing

Jaggar Museum and Volcano Observatory Parking Area	Contributing
Halemaumau Parking Area	Contributing
Thurston Lava Tube Parking Area	Contributing
Volcano House Parking Area	Contributing
Crater Rim Drive Turnouts	Contributing

Buildings and Structures

The buildings and structures in the Crater Rim Historic District are important manifestations of the rustic design style that guided national park development in the 1920s and 1930s and help tell the story of the development of the Kilauea Caldera area. These include classic examples of Park Service Rustic style buildings, such as the Volcano Observatory and Jaggar Museum and the comfort station at Thurston Lava Tube; the two Volcano House structures, which reveal a continuity of use from one of the caldera's earliest hotels built in 1877 to the latest incarnation built in 1941; the Whitney Seismograph Vault, which brings to light the significant role scientific research has played in the development of Kilauea; and numerous stone retaining walls and other stone features that blend infrastructure with a naturalistic design philosophy. In aggregate, the buildings and structures of the Crater Rim Historic District are essential character-defining elements that contribute strongly to the historic scene and help convey the district's significance.

See Appendix for a map of contributing buildings and structures.

1877 Volcano House

LCS ID:05842

This one-story building with ten rooms is approximately 110 feet long and 35 feet wide with a long porch on the caldera side. The building is of frame-on-wooden-post construction with shingle exterior walls and a galvanized metal roof.

This substantial wooden building, which replaced the grass-thatch Volcano House built in 1866, greatly improved visitor comfort and helped increase tourism to the volcano. In 1891, a large, Victorian-style two-story frame addition was built on the west end of the structure, greatly increasing the capacity of the hotel. In 1921, the hotel was updated once again, but this time, the original 1877 structure was moved roughly 90 feet away to make room for two new wings. This would be the structure's saving grace when the Volcano House burned in 1940.

The 1877 Volcano House was listed on the National Register of Historic Places in 1972. Today the building houses the Volcano Art Center. By virtue of its association with the current Volcano House and its role in the development of the area, the 1877 Volcano House contributes to the Crater Rim Historic District.

Volcano Observatory and Jaggar Museum

LCS ID: 58270

This one-story lava stone and wood clapboard building on the rim of the caldera is rectangular in plan with a modern metal-clad, hipped roof. The front elevation features a projecting entry canopy with lava stone piers and a pair of glazed wood doors. To the north of the entry are six louvered vent panels above a lava stone base. The south side elevation is composed of three bays separated by lava stone piers with rows of fixed wood sash windows, while the east elevation facing the caldera is stone-clad with three windows. A rather long asphalt walkway leads from the parking area to the main entry and to large asphalt viewing areas on the building's south and east sides. These platforms have lava stone retaining walls. The building includes a large addition constructed by the USGS in the 1980s.

The museum, originally referred to as the Uwekahuna Museum, was constructed by the Hawaii Volcano Research Association in 1927 and transferred over to the NPS as a museum and lecture hall to accommodate the growing numbers of visitors. It was later renamed the Jaggar Museum in honor of Dr. Thomas A. Jaggar, the renowned volcanologist who first introduced the notion of having a permanent geologic observatory and laboratory on the island. Dr. Jaggar managed the research program in the park for decades. Located nearby, the Uwekahuna seismograph was constructed by the USGS in 1948. In 1986, the USGS attached a large, new facility to the Volcano Observatory/Jaggar Museum building.

Despite the large addition, the Volcano Observatory/Jaggar Museum retains the architectural details, spatial layout, use, and relationship to the rest of the district's resources, and contributes to the district's integrity.

Volcano House
LCS ID: 58274

The split-level, wood frame Volcano House features a low-sloped, gabled roof with unenclosed eaves and 12-inch horizontal clapboard cladding. The windows are either fixed or double-hung sash. The western portion is two stories with a glass hyphen connecting a two-story addition at the far west end; the eastern portion is one level with a gable-front projection and a battered, exterior lava stone chimney near the main entry. The east end of the one story section features a large shed dormer with six double-hung windows. At the two-story section the roof is corrugated metal, while the one-story section roof has concrete asbestos tile. The front entry at the center of the north elevation features a pair of glazed wood doors and a projecting entry chamber; a large porte-cochere in front of this entry features battered lava stone piers and a pyramidal, corrugated metal-clad roof. The long, south elevation facing Kilauea Caldera features a row of large picture windows in sets of two or three, with louvered window panels with un-hewn timber posts between. (See photo Buildings and Structures #1.)

The building was built in 1941 after the previous Volcano House burned. The original building was located on the north side of Crater Rim Drive, but after it was destroyed, the owners chose to build the new building closer to the caldera on land they had long leased from the NPS. This site had been home to the volcano observatory and volcanologist's residence before those functions moved to Uwekahuna Bluff. The eight-room addition on the western end, connected to the rest of the hotel by a glass-walled hyphen, was built in 1948. Since then, the interior of the Volcano House has been modified extensively, although the original lobby, sitting room, and bar remain largely intact. On the exterior of the building, the porte-cochere was enlarged after the period of significance to accommodate large vehicles, significantly altering the character of the building's facade. Despite the changes to the building, however, the Volcano House represents an important element of the history of the Kilauea area and of Hawaii Volcanoes National Park, reflecting one of the earliest uses of the area by tourists. The hotel retains its historic associations and contributes to the rustic aesthetic of the headquarters village.

Thurston Lava Tube Comfort Station

LCS ID: 58272

This one-story restroom structure is rectangular in plan with corrugated metal cladding, a concrete foundation, and a corrugated metal-clad, gable-on-hip roof. Each corner features a large, battered lava stone pier. The structure is divided into two equal restroom sections with a small water storage/janitor's closet between. Each restroom section has a row of three nine-lite hopper windows on each side.

Constructed in 1933-1934, the comfort station was part of a Public Works Administration-funded project to improve the lava tube developed area shortly after it was acquired by the NPS. The detailed plans, received from the Branch of Plans and Design in late 1933, were of a design that blended standard Park Service Rustic design elements of the 1920s and 1930s with local Hawaiian design features. The project was begun in late 1933 and completed the following August.

The Thurston Lava Tube comfort station has changed little since it was constructed. Its design is characteristic of the style favored in Hawaii National Park in its early decades, revealing elements of both Park Service Rustic style and Hawaiian vernacular design. The comfort station retains its design elements, spatial layout, and relationship to other resources, and contributes to the district's integrity. (See photo Buildings and Structures #2.)

Whitney Seismograph Vault

LCS ID: 05841

The Whitney seismograph vault, located adjacent to the Volcano House on the caldera side, is an underground room of reinforced concrete walls, concrete floor, and concrete slab roof, measuring 18 feet by 17.5 feet on the inside. A number of concrete pillars protruding from the floor originally held instruments, and a wooden partition with glass panels separates the room into an instrument area and a viewing corridor. The structure is not visible from the outside, except for a large earth mound that was used to cover the structure in 1941 and a free-standing concrete pier.

The seismograph vault was originally constructed in 1912 and marked the beginning of the continuous and resident study by American scientists of the earth's volcanic and seismic activity at Kilauea and Mauna Loa volcanoes. The Hawaiian Volcano Observatory, a U.S. Government facility since 1917, used the vault from 1912 through 1961, when more sophisticated instrumentation made the seismometers and tilt meters it was designed to house obsolete.

The 1912 structure was only partially underground, with the concrete floor resting on a solid ledge of basalt 5 ½ feet below the original ground level. Concrete walls extended from the floor to the ground level, with the upper portion of the walls made of wood with windows. The free-standing, reinforced concrete pier above the vault was about 7 feet above the 1912 ground level and was used for triangulation and camera stations. This pier originally protruded up through the porch of the volcano observatory building, also built in 1912.

The seismograph vault underwent substantial alterations in 1941, when the current Volcano House structure was built. The wooden walls and ceiling were replaced with concrete and the whole structure buried beneath an earth mound. The volcano observatory building was razed, but the concrete pier was retained. Today this pier functions as a visual marker for the vault, with a small interpretive sign explaining its function and significance.

The Whitney Seismograph Vault is an important connection to the tradition of scientific inquiry that is historically and currently such a significant part of the development of Kilauea. The structure was listed on the National Register of Historic Places in 1974, and continues to contribute to the Crater Rim Historic District. (See Buildings and Structures #3.)

1887 Marker (Marker with Benchmark)
LCS ID: 58399

Adjacent to Crater Rim Drive directly across from the original site of the Volcano House is a concrete monument consisting of a base approximately 5 feet wide, 8 feet long, and 3 feet high with a small concrete marker on top. Inscribed in the marker is "AUG 1887", and a USGS bench mark, dated 1912, is installed in the top of the monument.

The purpose of the monument is undocumented, but speculation can be made based on the monument's date and location. In the 1880s, an enterprising hotelier named Peter Lee constructed a road from Pahala west of Kilauea to the Volcano House, where it met the old road from Hilo. The best estimate for the date of completion of Peter Lee's Road comes from a Volcano House register entry dated October 1888 by a guest who claimed to be the first visitor to travel by means of a wheeled conveyance the entire way from an ocean port to the volcano. The register entry included a description of Peter Lee's new road. While the October 1888 date of the entry does not match the August 1887 date on the monument, it is possible that the road was finished earlier, or that the segment that finally connected the two roads was completed before the entire road was fit for travel. Either way, it is conceivable that the monument was installed to commemorate the completion of the Peter Lee's road at the point where it met the road from Hilo.

Today the monument is cracked and worn from exposure to the elements. Vegetation, including a substantial ohia lehua tree, is growing in the cracks and exacerbating the damage. Graffiti from visitors has been scratched into the monument as well. Despite this damage, the monument is an important link to the earliest development of Kilauea summit and one of the first completed segments of Crater Rim Drive. (See photo Buildings and Structures #4.)

Crater Rim Drive Guard Walls
LCS ID: 58395

Six segments of crenellated parapet guard walls were constructed by the park along Crater Rim Drive in 1933-1934; of these, five are intact. Guard walls can be found along current segments of Crater Rim Drive just east of the Volcano House and at Thurston Lava Tube. There are also guard walls on discontinued sections of the historic road at the Kilauea Iki overlook, Waldron Ledge overlook, and the Puu Puai overlook. The section constructed at Keanakakoi was destroyed and rebuilt with a different style of guard wall in the 1980s. All of these walls are of "Type 2" as designated in the 1928 standard detail sheet for guard rails produced by the NPS landscape division. These walls were originally 18 inches wide and 18 inches high in their crenels (low part of the wall). The crenels are 12 feet long and the merlons (high parts) are 6 inches above the crenels and 5 feet long with angled returns. Since their construction, the height of the walls has been reduced in places by the buildup of road surfacing material. The walls are roughly coursed with smooth, semi-hewn faces and recessed mortar joints.

The stone guard walls represent an important element of the NPS strategy for creating a unified aesthetic in its parks based on rustic architecture and naturalistic landscape design principles. Not only do they reflect the use of natural materials, skilled craftsmen, and rustic design characteristic of park design of the time, they also represent the effort to standardize park designs. The philosophy of unified aesthetic

design was developed together with the implementation of park master planning. The stone guard walls in Crater Rim Historic District reflect the larger movements of Park Service rustic style and park master planning.

Today the five remaining walls are largely intact. Some of the walls are lower than they were historically, either from settling into the soft organic soil, as is the case for portions of the Thurston Lava Tube parapet wall, or from successive buildup of road surfacing material. Along the guard wall near the Volcano House, the road surface has nearly reached the top of the wall, and some of the crenels have been filled in to raise the height above the road surface. Guard rails were installed in the walls at the overlooks at Kilauea Iki, Waldron Ledge, and Puu Puai. At Kilauea Iki and Waldron Ledge, these are metal rails with recycled plastic posts, and at Puu Puai the rail is all metal. These rails are mortared directly to the top of the guard wall. Despite these changes, the walls still display the design, materials, and workmanship that reveal their significance and their contribution to the historic district. (See photos Buildings and Structures #5 and #6.)

Thurston Lava Tube Guard Walls

LCS ID: 101790

Roughly-coursed lava stone curbing and walls were constructed along the pathways leading to the Thurston Lava Tube. Guard walls at Thurston Lava Tube occur in three places. Although little is known about the history of the walls around Thurston Lava Tube, estimates on the dates of construction can be surmised by the wall styles.

At the top of the trail near the parking lot, a low parapet wall with straight segments in an angled alignment lines the edge of the caldera. The crenellated wall has long, low crenels (the low part of the wall) and short, cubical merlons (the raised part) with vertical returns. Mounted to the top of this wall is a metal guard rail with recycled plastic posts. This wall at the top of the trail is not of Type 2, nor does it match any other standard wall type developed by the NPS. It is likely that this wall predates the acquisition of the property by the NPS in 1933. The wall is in fact very similar in style and materials to the guard wall built at Uwekahuna Bluff in 1927 when the museum was built, and so may date from that time as well. The metal rail with recycled plastic posts on the guard wall is a recent addition that changes the character of the wall, but the design, materials, and workmanship of the wall are still evident.

Halfway down the trail to the lava tube is a short section of parapet guard wall that matches the Type 2 guard walls built along Crater Rim Drive in 1933-1934. The wall is 44 feet long with 5-foot-long merlons with angled returns. Although park reports from the historic period do not mention the section of wall on the Thurston Lava Tube Trail, because it conforms to the Type 2 walls being built on the road, it is likely that it was constructed at the same time, i.e. 1934. This section of parapet wall was repaired and placed on a concrete foundation recently to correct damage from settling. While the overall workmanship of the repair is compatible with the historic feature, the wall was rebuilt on the concrete foundation higher than it had originally been constructed. This has resulted in a modest change in character, as the proportions of the wall have are different than they were historically. Nonetheless, the design and materials of the wall are intact and continue to reveal the historic character of the feature.

Finally, stone retaining walls line the trail at the entrance to the lava tube. These are low stone walls, roughly coursed, without crenellations. At one end of this wall, stone steps lead a short way up the hill against a stone cliff. The purpose of these steps is unknown. These wall may have been built before the NPS acquired the property in 1933, but it may also have been part of the area's improvements in the 1950s.

Both the upper section of wall, built in the 1920s, and the middle section, built in 1934, contribute to the historic district. Until the construction date of the lower section of wall at the lava tube entrance can be determined, its contribution to the historic district is unknown.

Volcano House Guard Wall

LCS ID: 58394

Extending approximately 200 feet along the south elevation of the Volcano House at the edge of the caldera is a lava rock retaining wall with black mortar. The rocks are roughly coursed with smooth faces. The wall is approximately 3 feet high on the caldera side and about 18 inches high on the walkway side.

This stone retaining wall was built about three years before the current Volcano House was built in 1941. It was meant to protect visitors from the caldera edge and to help aesthetically unify the Volcano House area with the rest of the park village.

Old Volcano House Site Retaining Wall

LCS ID: 461594

A mortared stone wall along Crater Rim Drive retains the terrace on which the Volcano House stood from 1877 to 1940. This retaining wall, which begins shortly after the intersection at the old hotel site and continues for approximately 120 feet, may date as far back as the late nineteenth century when the road was first constructed. The wall is indicated as “existing” in a plan drawing dated 1938.

Old Volcano House Site Overlook Walls

LCS ID: 568346

In 1938, stone walls were added to the front of the Volcano House, at its original site on the north side of Crater Rim Drive. The project included a stone retaining wall that extended from the existing retaining wall (noted above) for another 250 feet along the road in front of the Volcano House. In the center of this section of retaining wall, an overlook was built with a stairway that descended the face of the terrace to the road.

Several segments of this stone wall project remain today. At the top of the cut bank, directly opposite the Crater Rim Trail trailhead, is a short section of free-standing mortared stone wall with a gap in the middle. This was originally the overlook platform for the Volcano House. The gap in the wall once led to the stairway that descended the cut bank to the road and a crosswalk. At the road level are more remnants of this overlook and stairway structure. On the south side of the road is a short free-standing wall that matches the one at the top of the cut bank. This was likely related to the overlook and stairway structure.

The stone walls related to the old Volcano House site exhibit some wear and deterioration. Stones are loose or missing in places, and the mortar is cracked. Damage is particularly evident on the wall segment south of Crater Rim Drive. These wall segments reveal the spatial relationship between the old Volcano House site and the rest of the headquarters village. They also display the design, materials, and workmanship that characterized early development at Kilauea Caldera. As such, the wall remnants contribute to the historic district.

Rubble Retaining Walls in Fern Jungle

LCS ID: 568371

Along the section of Crater Rim Drive that passes through the fern jungle between Thurston Lava Tube and Puu Puai are a number of stone retaining walls. These are typically on the fill slope of the road bed and are largely obscured by moss, debris, and the dense vegetation that lines the roadway. The retaining walls most likely dated to between the beginning of the twentieth century to the 1920s, when incremental changes were made to the road's grade and alignment. Many of these walls are offset from the current road bed by several feet, reflecting former road alignments.

The walls range in size from 1 to 4 feet in height and are typically composed of roughly coursed rubble lava rocks. Most of the walls are mortared, although some are either dry-laid, or the mortar has decomposed to the point that they appear dry-laid.

The walls are decomposing with age and with intrusion from vegetation. While this does not appear to threaten the structural integrity of the road, it does threaten the historical integrity of the walls and their ability to help convey the significance of the district.

Mortared Lava Rock Embankment Facing

LCS ID: 568433

Along the Southwest Rift area of Crater Rim Drive west of Halemaumau, two sections of mortared stone embankments retain the road fill. These embankments are between 3 and 8 feet in height and sloped. The stone embankments were constructed in 1934 by the CCC to stabilize the new road and prevent erosion damage. One of the embankments is on the caldera side of the road, and the other is on the non-caldera side. The embankment on the non-caldera side – the larger of the two – has a culvert built into it to carry water from one side of the road to the other. The culvert is concrete with mortared stone headwalls on both the inlet and outlet.

A large, mortared rock-lined drainage ditch and embankment wall lines the non-caldera side of Crater Rim Drive just west of Halemaumau. The road here begins to climb back out of the caldera floor from Halemaumau to the Southwest Rift Zone, and is one of the steeper sections of the road. Like the stone embankments, the ditch was installed in 1934 by the CCC to mitigate damage to the new road segment from the heavy rains. The ditch is approximately 450 feet long. The ditch has several lined side chutes with 2-foot-high sidewalls on the uphill side of the main ditch. Asphalt covers some of the rock lining, and the chute outlet is beginning to crumble down the steep slope.

Stone-lined Ditches along Crater Rim Drive

LCS ID: 568377

The loose soils and frequent heavy rains around Kilauea Caldera created constant drainage and erosion problems. To mitigate erosion damage to Crater Rim Drive, several stone structures were constructed along the road to reinforce the roadway and channel rain runoff. The majority of these structures, which included stone-lined drainage ditches and stone drainage chutes near the headwalls of culverts, were built in conjunction with the Uwekahuna-Bird Park Road in 1933-1934. These structures can be found today along the north and west sides of the caldera from the Steaming Bluffs area to Keanakakoi.

Long discontinuous sections of mortared stone-lined drainage ditches extend on both sides of the road for about 4,000 feet beginning south of the Jaggar Museum parking lot. These were likely built in 1933-1934

when the Uwekahuna-Bird Park Road was constructed. The ditches include chute inlets and drainage chutes to channel water to culverts.

Stone Shoulders on Crater Rim Drive

LCS ID: 568389

Stone road shoulders were originally built on both sides of the road with flat, mortared lava flagstones. As the roadway was repaved and widened over the years, the stone shoulders were covered over on one side of the road or the other, so that today, the shoulder is discontinuous and is typically only visible on one side of the road at a time. Sections of stone road shoulders are visible along Crater Rim Drive for roughly 1,500 feet in the vicinity of the Steaming Bluffs parking area.

Cut Lava Rock Curbing

LCS ID: 568408

The parking lots at Halemaumau and the Jaggar Museum are edged with cut stone curbing. The curbing, installed around 1933 or 1934, is similar in style and construction to curbs used by the NPS in other parks at that time. The stones are rectangular, 8 inches wide, 12 inches high, and of varying lengths. As originally specified, the curb stones would have been buried 3 inches in the parking surface, with 9 inches showing above the parking lot. The stones were mortared end-to-end to create a continuous curb.

Today, some of the stones, especially in the Jaggar Museum parking lot, have come loose or have been displaced. In other places, successive paving, possibly in combination with settling, has obscured most of the lower portions of the stones, leaving only a few inches above the parking lot surface. This changes the character of the curb, reducing the massing and visual impact of the large curb stones.

Culverts

A number of culverts were built during the period of significance along Crater Rim Drive to convey water from one side of the road to the other. These vary somewhat in size, style, and materials, but all conform to the principles of rustic and naturalistic design, using native lava stone and remaining inconspicuous in the landscape. For the purposes of this CLI, the 16 extant contributing culverts along the road have been grouped together based on size, style, and period of construction.

Volcano Observatory Parking Lot Culverts

LCS ID: 568412

There are two culverts that span the entrances to the parking lot at the Jaggar Museum and Volcano Observatory. One collects runoff from a landscaped swale at the east end of the parking lot and runs it through a single iron pipe in a low arched rock headwall. The pipe runs under a wide gravel path at the intersection and empties into a swale on the same side of the road. The second culvert is at the southwest end of the parking lot and collects water through two side-by-side 12-inch iron pipes held in place by a low rock wall. These were likely built in conjunction with the construction of the parking lot in 1933 and contribute to the historic district.

Jaggar Museum Culvert

LCS ID: 568414

A single culvert outlet is located at the edge of the caldera rim just east of the Jaggar Museum near the observation platform. This is of the same style as the culverts along Crater Rim Drive, with a mortared stone headwall and corrugated metal pipe. The inlet of the culvert was not located. It is unknown when this culvert was constructed, but it is likely it was built either in conjunction with the museum in 1927 or with the road and parking lot in 1933.

Concrete Pipe Culverts

LCS ID: 568422

Several culverts of similar size and style occur along the section of Crater Rim Drive that was built as part of the Uwekahuna-Bird Park Road in 1933-1934. These medium-size culverts with lava stone headwalls on the inlet and outlet sides convey water across the road. The headwalls are typically 5 to 8 feet across and 2 to 3 feet high with 24-inch diameter culvert pipes. Eight of the culverts have octagonal concrete pipes as specified in the plans for the road to prevent corrosion from volcanic gasses. One of the eight concrete pipe culverts is somewhat larger than the others, with a 3-foot-high headwall and angled wing walls on the inlet side. This culvert is part of a large mortared stone embankment in the Southwest Rift Zone.

Corrugated Steel Pipe Culverts

LCS ID: 568424

In addition to the eight concrete pipe culverts, three culverts in the same section of Crater Rim Drive have corrugated steel pipes, and one has a combination of the two materials, with metal on the inlet side and concrete on the outlet side. These are of similar style and materials as the concrete pipe culverts and differ only in the pipe material.

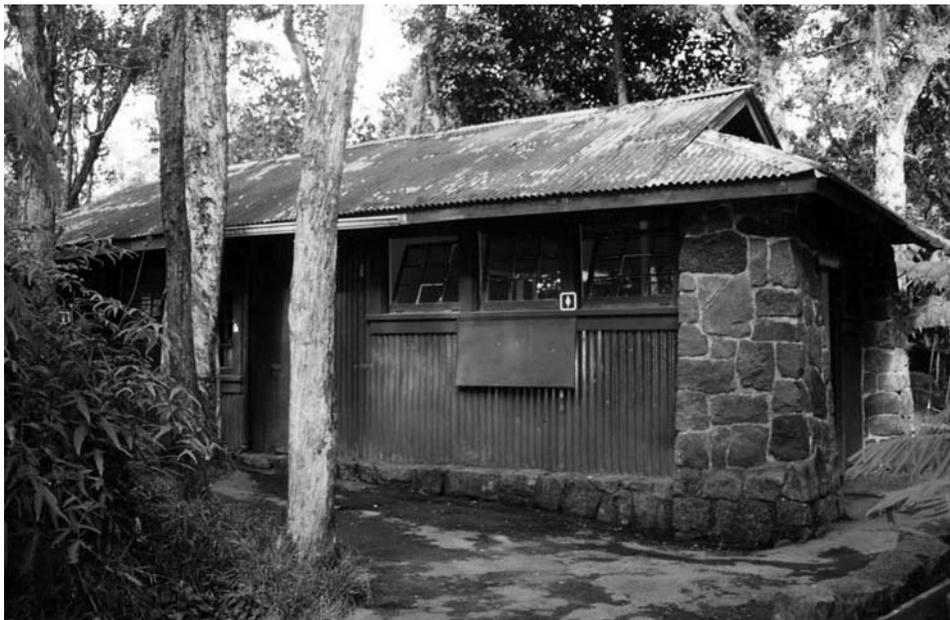
Fern Jungle Culvert

LCS ID: 568427

One culvert can be found in the section of Crater Rim Drive that passes through the fern jungle area near Thurston Lava Tube. The culvert has double 12-inch metal pipes and a mortared stone headwall on the inlet and outlet sides. On the inlet side, a similar retaining wall holds back the cut slope about 2 feet from the face of the headwall, allowing a small space between the two for water to empty into. It is unknown when this culvert was built, but it almost certainly dates at least to the significant period.



Buildings and Structures #1. Contemporary photo of the Volcano House, built in 1941. (PWRO 2005)



Buildings and Structures #2. Contemporary photo of the Thurston Lava Tube comfort station, built in 1933. (Carey and Co. 2002)



Buildings and Structures #3. Contemporary photo of the concrete pillar at the Whitney Seismograph Vault. The vault is beneath the mound in the background. (PWRO 2005)



Buildings and Structures #4. The concrete marker, inscribed “AUG 1887”, may be a monument marking the completion of Peter Lee’s road from Pahala to the Volcano House. (PWRO 2005)



Buildings and Structures #5. The stone guard wall at Puu Puai parking lot was once along the Crater Rim Drive alignment. The metal guard rail was installed after the period of significance. (PWRO 2005)



Buildings and Structures #6. The guard wall at the Thurston Lava Tube parking lot is lower than when it was constructed, either from settling, a build-up of paving matrix, or a combination of both. Compare with photo History #7. (PWRO 2005)

Characteristic Feature	ID LCS Number	Type of Contribution
1877 Volcano House	05842	Contributing
Volcano Observatory and Jaggar Museum	58270	Contributing
Volcano House	58274	Contributing
Thurston Lava Tube Comfort Station	58272	Contributing
Whitney Seismograph Vault	5841	Contributing
1887 Marker (Marker with Benchmark)	58399	Contributing
Crater Rim Guard Walls	58395	Contributing
Thurston Lava Tube Guard Walls	101790	Contributing
Volcano House Guard Wall	58394	Contributing
Old Volcano House Site Retaining Wall	461594	Contributing
Old Volcano House Site Overlook Walls	568346	Contributing
Rubble Retaining Walls in Fern Jungle	568371	Contributing
Mortared Lava Rock Embankment Facing	568433	Contributing
Stone-lined Ditches along Crater Rim Drive	568377	Contributing
Stone Shoulders on Crater Rim Drive	568389	Contributing
Cut Lava Rock Curbing	568408	Contributing
Volcano Observatory Parking Lot Culverts	568412	Contributing
Jaggar Museum Culvert	568414	Contributing
Concrete Pipe Culverts	568422	Contributing
Corrugated Steel Pipe Culverts	568424	Contributing
Fern Jungle Culvert	568427	Contributing

Topography

For the purposes of the CLI, topography is defined as the three-dimensional configuration of the landscape surface characterized by features (such as slope and articulation) and orientation (such as elevation and solar aspect).

One of the tenets of the rustic and naturalistic design principles that guided park development in the 1920s and 1930s is the unobtrusiveness of human-built forms in the natural landscape. This was often achieved through careful planning of building sites and road alignments that minimized cut and fill and disturbance to the native forest and desert. Where manipulation of the ground plane was necessary, the earth cuts and fill slopes were treated in a way that blended them with the surrounding topography, often rendering them all but invisible to visitors. Rock cuts were carefully carved by skilled masons to appear natural, high banks were reinforced with stone retaining walls, and steep road shoulders were rounded and planted with native vegetation to prevent erosion. These techniques were employed at Hawaii Volcanoes National Park in the development of the Kilauea summit area, the construction of Crater Rim Drive, and the building of the signature trails, and are still apparent in the extant terraces, embankments, rock cuts, and other topographical features in the Crater Rim Historic District.

Crater Rim Drive

Many of the roads that would eventually make up Crater Rim Drive were constructed before Hawaii National Park was formed. The routes and alignments of these roads, as well as the techniques for constructing the roadbed, were based on economy and available labor and resources, rather than on a concerted design philosophy. The meager budgets and simple technologies of the early road projects led the road builders to choose routes that reduced the need for large-scale grading, a consequence in line with naturalistic road engineering principles. When the NPS expanded and upgraded the Kilauea road system in the 1920s and 1930s, they employed techniques that were being used in other national parks to create scenic park roads. On existing roads, the park made small adjustments to the alignment and profile of the road to ease curves and reduce grades. New roads were carefully sited to maximize the scenic experience of visitors while minimizing the impact on the landscape.

Crater Rim Drive takes visitors from the high north bluff, the highest point on the caldera rim at 4,080 feet, down to Halemaumau and back, a 445-foot change in elevation. Along the way, it crosses an undulating landscape of lava beds, the steep slopes of the caldera walls, and the alternating ridges and drainages of the fern jungle.

Cut and Fill

Due to the undulating volcanic landscape around Kilauea Caldera, the cross section of Crater Rim Drive tends to alternate between cut and fill. Where the road cuts through the lava or bedrock, the exposed rock cuts were shaped to give them a naturalistic appearance. Where the cut banks are soil, the shoulders were rounded by CCC crews and planted with native vegetation to prevent erosion. Cut-through sections typically have ditches on either side to convey water.

Filled-through sections of the road were built on raised roadbed of soil and cinder, with the fill banks often reinforced with riprap or mortared stone embankment facing. These fill-through sections are most prominent in the Southwest Rift area, where there is no vegetation to conceal the fill banks. The raised roadbed provides long views of the lava beds and the Kau desert. These areas contrast with the forested

areas west of headquarters and through the fern jungle, where the fill banks disappear in the dense vegetation, and the cross section of the road is not evident from the roadway.

There are few sections of the road characterized by a cross slope cut and fill. One such section, as Crater Rim Drive descends from the South West Rift area to Halemaumau, features a stone embankment and drainage ditch on the non-caldera side.

Many segments of Crater Rim Drive cross flat areas that required little cut and fill. These segments include the headquarters area, Steaming Bluff and Uwekahuna Bluff, and the lava beds in the floor of the caldera. The exception in the headquarters area is in front of the original Volcano House site, where portions of the bluff are retained on the non-caldera side with a stone retaining wall and exposed cuts through the lava.

Rock Cuts

Beyond mere utility, the rock cuts along Crater Rim Drive are featured design elements of the road that help define its character. Following the tenants of naturalistic landscape design, NPS landscape engineers who designed park roads in the 1920s and 1930s went to great lengths to make rock cuts appear natural. Skilled stone masons were often employed to carve the rock cuts into naturalistic forms, following the natural patterns of the indigenous rock.

This effort is evident in the rock cuts along Crater Rim Drive. Moss-covered rock cuts near Thurston Lava Tube seem to emerge from the lush fern jungle. In the open landscape of the Steaming Bluff, dark, low lava rock banks line the road, resembling natural rock outcroppings. The rock cuts vary in character depending on the nature of the lava through which they cut, often revealing the unusual forms created when the lava flowed. In places, they appear to be made of large stone blocks, while in others, layers of folded lava created cavities that were exposed when the cut was made. Some of the exposed rock cuts are combined with dry-stacked stone walls, irregularly coursed with lava stones, which blend nearly indiscernibly with the rock cuts. As a whole, the rock cuts are a strongly unifying element of Crater Rim Drive.

Retaining Walls

Where embankments were too steep to support themselves, they were reinforced with stone. Along Crater Rim Drive these stone reinforcements typically occur on the fill slopes and are of three types: cobble riprap embankments, mortared stone embankments, and dry-stacked stone retaining walls. The riprap and mortared stone embankments are found along the section of Crater Rim Drive that was constructed in 1933 as part of the Uwekahuna-Bird Park road. This section crosses the undulating topography of the Southwest Rift zone and is characterized by long segments of raised roadbed on fill. The hand-laid cobble riprap embankments extend discontinuously for nearly a half mile just west of Uwekahuna Bluff. The mortared stone embankments were laid by the CCC in 1934 to repair damage the road had sustained from heavy rains in the months after its construction. These embankment facings are smooth and un-coursed. Asphalt from subsequent road paving has covered the stone embankments in places.

The dry-stacked retaining walls occur mostly in the fern jungle section around Thurston Lava Tube. Due to dense vegetation, these are not visible from the road. One of the largest walls is just south of the lava tube parking area on the caldera side of the road. The roughly-coursed stone wall is 8.5 feet high at its tallest. The date of construction of this (and other walls in the area) may date as far back as the

completion of the Halemaumau Road in 1908. In 1933, a parapet guard wall was constructed along the top of the retaining wall. Other smaller sections of retaining wall occur throughout the fern jungle. Some of these, hidden several feet from the current road in the dense vegetation, reveal earlier alignments of the road.

Road Traces

As the alignment of Crater Rim Drive was adjusted throughout the 1920s, traces of the former roadbed were left alongside the new road. These can be seen today in the near-road topography in the fern jungle and in the Southwest Rift area. In the fern jungle, these road traces are often accompanied by fragments of retaining wall and reveal where the sharp curves of the early road were eased. In the Southwest Rift area, the road traces are from the first road between Halemaumau and Uwekahuna built in 1931.



Topography #1. Rock cuts in the dark volcanic rock west of the headquarters site look like natural rock outcroppings. (PWRO 2005)



Topography #2. Rock cuts near Kilauea Iki reveal unique volcanic formations. (PWRO 2005)



Topography #3. The terrace that held the Volcano House before 1940 is retained by a combination of stone retaining wall and natural rock cut. (PWRO 2005)



Topography #4. Contemporary photo showing grading on the Kilauea Iki Trail, built by the CCC in 1934. Stone riprap and dry-stacked retaining walls were used to support the steep slopes and switchback corners. (PWRO 2005)

Vegetation

Vegetation that may contribute to the historic district includes individual plants and plant communities, whether indigenous or introduced to the landscape. For the purposes of this discussion, the term “native” refers to vegetation that is indigenous, endemic, or Polynesian-introduced; “exotic” refers to species that have been introduced since non-Polynesian contact.

Vegetation within the Crater Rim Historic District is a major character-defining feature. This includes native vegetation communities that create strikingly different landscapes from one point on the caldera to another, as well as planted landscaping plants that lend a distinctly local aesthetic to the developed areas. Early park planners gave a great deal of thought to the role vegetation was to play in the park landscape. Master Plans from the 1930s included planting plans for the area in front of the Volcano House and for the employee housing area. Native plant species were favored in these plans, and NPS landscape architects cautioned against the use of exotic ornamentals. Natural plant communities were also given consideration in the planning of the park. The dense forests around Thurston Lava Tube were considered a park attraction in themselves, and the original route of the road to the caldera floor was chosen in part because it passed through what was called the “fern jungle.” When suggestions were made in the 1920s to widen some of the curves along the road to create a better driving experience, Superintendent Boles insisted that it be done in such a way that preserved as much of the natural forest along the road as possible. These efforts created a park that was unique in its local Hawaiian character, while adhering to established NPS design philosophies. The patterns of vegetation within Crater Rim Historic District

continue to reveal the historic character and design principles that characterized the park during the period of significance.

Natural Vegetation Patterns

Much of the vegetation in the historic district is a result of carefully preserved natural communities. These include the closed ohia and hapuu tree fern forest on the east side of the caldera and the open ohia woodland and dry shrubland in the north and northwest portions, as well as the barren lava beds, which have a distinct character in their lack of vegetation. The majority of the areas outside of the headquarters area, including Uwekahuna Bluff, Thurston Lava Tube, and the various lookouts around the caldera, rely on the natural vegetation to establish the landscape character. These areas contain little in the way of identifiably intentional planting schemes.

The natural vegetation communities of Kilauea Caldera are discussed in further detail in the Natural Systems and Features section above.

Planted Vegetation

Designed and intentionally planted vegetation within the Crater Rim Historic District is for the most part limited to the headquarters area. Early planting plans called for the use of native vegetation, including ohia lehua (*Metrosideros polymorpha*), koa (*Acacia koa*), and hapuu tree ferns (*Cibotium* sp.), along the road and around the buildings in the headquarters area. Under the NPS landscape division's direction, indigenous and endemic plants such as: aalii (*Dodonaea viscosa*), hapuu fern, and amau fern (*Sadleria cyatheoides*) were the principal plants used as ornamentals. Additionally, several specimen kopiko trees (*Psychotria hawaiiensis*) were transplanted from the Bird Park area to the Administration building area in 1935. M.S. Sager, the NPS landscape architect orchestrating the landscape design, noted that the "planting project is interesting experimentally as the writer believes that many of the native shrubs of the park have never been transplanted, or certainly not used before in ornamental planting." (Landscape Architects Reports April and May 1934). Images from the late 1930s show that many of the native plants that were transplanted throughout the district, were thriving in their new location. Today, aalii, hapuu fern, and amau fern are well established and appear as though they have always grown there.

Existing designed vegetation in the headquarters area and around the Volcano House tends to be massed in beds that create a lush, tropical look. The vegetation occurs in three main types of arrangement: 1) widely spaced ohia lehua planted on lawn; 2) widely spaced ohia lehua, koa, sandalwood (*Santalum* sp.), or other native trees with a low-lying understory consisting of ginger, ti (*Cordyline fruticosa*), and hapuu and amau fern; and 3) dense native vegetation whose understory and canopy create a uniform and impenetrable wall comprised of ohia lehua, koa, sandalwood, hapuu, amau, ti, etc, as well as exotics such as kahili ginger. These types of planting beds are arranged informally around buildings, flanking pathways and roads, and on the edge of developed areas. Small areas of open lawn of Bermuda grass (*Cynodon dactylon*) are also located throughout the area interspersed with the beds of native vegetation. Please see diagram Spatial Organization #1 for general character and arrangement of vegetation around the Volcano House.

Overall, the existing vegetation patterns and plant palette is still representative of the patterns and palette that date to the period of significance. Despite some additions of exotic ornamentals and invasive weeds, native vegetation such as dense ohia forest and ornamental natives still dominate the landscape. Because the historic vegetation patterns and palette are largely intact, the vegetation landscape characteristic contributes to the setting of the Crater Rim Historic District.

Exotic Vegetation

In 1930, when Thomas Vint (Chief Landscape Architect of the NPS Western Field Office) made his first visit to Hawaii Volcanoes to begin master planning for the park, he recognized the park's problem with invasive vegetation such as nasturtiums and blackberry and encouraged a vigorous removal plan. In his trip report, he also commented on the inappropriateness of exotic ornamentals he observed around the Volcano House. He recommended that the Volcano House gardeners should slowly replace the ornamental exotics with indigenous or endemic plants. Furthermore, he encouraged the park and its residents to use only native plants in their gardening. He explained, "This question of exotic plants is one that is particularly serious in Hawai'i Park. It is one that will not be solved in a short time. It should be considered a permanent problem, and one which every park employee is responsible for." (Landscape Architect Report, February and March 1930).

Despite Vint's position on exotic vegetation in the park, exotic ornamentals were planted throughout the administration and employee housing area and around the Volcano House. Exotic species included: camellia, hydrangea, azalea (*Rhododendron* sp.), fuchsia, rose (*rosa*), iris, and Norfolk pine (*Araucaria heterophylla*); as well as exotic invasives (or potential invasives) such as lacevine (*Polygonum* sp.), avocado, agave, Hilo holly (*Ardisia crenata*), English ivy (*Hedera helix*), sweet pea (*Lathyrus odoratus*), spiderplant (*Chlorophytum cosmosus*), giant reed (*Arundo donax*), daisy fleabane (*Erigeron karvinskianus*), pearl flower (*Heteroacentron subtriplenervum*), common horehound (*Marrubium vulgare*), monstera (*Monstera deliciosa*), Mexican elderberry (*Sambucus mexicana*), dwarf octopus tree (*Schefflera arboricola*), roving sailor (*Saxifraga stolonifera*), *Tibouchina* sp., and *Morella faya*. Careful management of vegetation and the avoidance of exotic vegetation in planting designs in recent decades have reduced the presence of these species within the district.

Today, exotic ornamental species such as camellia, hydrangea, azalea, iris, fuchsia, and rose are largely confined to the residential and administration areas, still appearing as foundation or specimen plantings around the employee quarters. Outside of the employee quarters area, exotics are found in planting beds and native forest areas near the Volcano House and throughout the district, typically tucked in amongst the native vegetation. Both fire tree (*Morella faya*) and Kahili ginger are highly invasive species and displace native rain forest species at the Kilauea Summit area. Except where it is being actively controlled, fire tree dominates the rain forest between Thurston Lava Tube and Keanakakoi. Kahili ginger is the most conspicuous understory species in the rainforest along roads and trails between the Volcano House, Thurston Lava Tube, and the caldera floor.

No mention of the invasive or potentially invasive plants listed above is made in the landscape architecture reports from the 1930s. None of these species were identified as part of the planting palette during the period of significance and it is highly unlikely that the NPS landscape architects (Vint and Sager), who espoused the use of native vegetation and control of invasive species, would have suggested using these species as ornamentals. Because it is unlikely that these existing invasive or potentially invasive exotics date to the period of significance, they do not contribute to the historic district.



Vegetation #1. Photo of the Kilauea Iki Trail demonstrates how natural vegetation communities, in this case ohia lehua and hapuu forest, are used in developed areas to create a distinctive character. (PWRO 2005)



Vegetation #2. The open ohia lehua and dry shrub vegetation at Uwekahuna Bluff establish the character at the Jaggar Museum. (PWRO 2005)



Vegetation #3. The barren rock-strewn caldera floor near Halemaumau is notable for its lack of significant vegetation. (PWRO 2005)



Vegetation #4. A combination of naturally occurring and planted vegetation composes the landscape around the Volcano House. (PWRO 2005)



Vegetation #5. A small number of native foundation plants adorn the front of the Volcano House. (PWRO 2005)



Vegetation #6. Behind the Volcano House, ohia lehua trees are planted over Bermuda grass lawn, creating an open character. (PWRO 2005)

Views and Vistas

One of the primary attractions of Hawaii Volcanoes National Park has always been the spectacular views. Sweeping views of the caldera can be enjoyed from numerous places around its rim. Mauna Loa rises above the open Kau desert on the north and west side of the caldera. Crater Rim Drive was carefully designed to showcase the natural features of the park, skirting close to the rim to offer frequent peeks over its precipice. In places, vegetation was cleared and overlooks constructed, complete with parking areas and guard walls, to provide discrete vistas. In other places, the wide open landscape allowed views of nearly 360 degrees. As Crater Rim Drive developed and evolved to meet new needs, views of the caldera, Mauna Loa, volcanic features, and the park's unique vegetation were carefully protected to ensure an uncompromised visitor experience. Today, the views and vistas in the Crater Rim Historic District continue to define the visitor experience and help to preserve the district's historic character.

For the purpose of this CLI, the views and vistas around Kilauea Caldera can be categorized into two groups: discrete views and vistas that were specifically designed and should be carefully managed to preserve the design intent, and broader, general views that are available by virtue of the open landscape and dramatic terrain and that contribute generally to the setting of the district.

Discrete, Designed Views

Volcano House (see photo Views and Vistas #1)

The view from the caldera rim behind the Volcano House is the first glimpse most visitors get of Kilauea. As visitors emerge from the back door of the Volcano House, they are greeted with a wide view of Kilauea Caldera. Halemaumau is visible, as is Steaming Bluff and Uwekahuna Bluff. Rather than a

vertical drop, the caldera wall here is a gradual forested slope. Because of this, the view of the blackened, desolate caldera floor is framed from below by the lush, green Hawaiian vegetation.

The view is accessible from a long walkway that runs the length of the Volcano House. A stone guard wall that follows the path predates the Volcano House, when the site was the location of the volcano observatory and volcanologist's residence. As it is the most accessible from the Volcano House and headquarters area, this has always been one of the most important views in the park.

Because of the lush vegetation in this area and the sloped caldera wall behind the guard wall, there is the potential for the views from behind the Volcano House to be obscured by vegetation. The character of the views here should be defined by low, framing vegetation, but should not be allowed to become overgrown or obscured.

Uwekahuna Bluff

Uwekahuna Bluff was chosen as the site for the volcano observatory and museum because of its commanding view of Kilauea Caldera and Halemaumau Crater. The bluff is the highest point on the caldera rim and overlooks a vertical drop of several hundred feet. An observation area and stone guard wall was built on the caldera's edge when the museum was constructed in 1927. The view from the back part of this viewing area is sweeping and unobstructed.

Halemaumau

From a large parking lot, a short trail crosses the lava beds to an observation platform, where visitors can peer into Halemaumau Crater. There is no vegetation here, and the view is only obscured by the steam and volcanic gasses issuing from the many cracks in the lava.

In the early days of tourism at Kilauea, Halemaumau was the summit's premier attraction. The crater was in a period of activity in the late nineteenth and early twentieth centuries. The bottom of the crater was filled with a lava lake and frequent flares and fountains delighted viewers. The first crater road from Volcano House was built expressly to offer visitors a close-up view of the "fire pit." The road terminated a mere 150 feet from the edge of the crater. In the 1920s, volcanic activity in Halemaumau diminished as the magma receded underground. As the floor of the crater sank, the walls collapsed, increasing the size of the crater and destroying part of the road and viewing area. By the early 1930s, the parking area had been rebuilt to accommodate over 500 cars. Although volcanic activity in the crater has abated since then, Halemaumau continues to be a popular destination for park visitors.

Keanakakoi

Although one of the smaller craters on Kilauea's summit, Keanakakoi is nonetheless an impressive site. The route for the first Crater Road was chosen specifically so that it would pass Keanakakoi and Kilauea Iki craters. Crater Rim Drive passes within 50 feet of the edge of Keanakakoi, where a turnout parking area provides an opportunity to stop and view the crater. The view into the crater from the turnout is open and unobstructed by vegetation.

Thurston Lava Tube (see photo Views and Vistas #2)

The view into the Thurston Lava Tube crater contrasts sharply with many of the other views around Kilauea summit. Whereas the active craters, including Halemaumau, Keanakakoi, Kilauea Iki, and Kilauea Caldera itself are black and barren, the Thurston crater is lush and green. From the parking area, visitors walk a short distance to an observation platform with stone guard walls. Here, views of the small crater are filtered through tree trunks and fern fronds. The viewpoint is above a canopy of tree ferns, which give the impression of a soft green carpet below.

Kilauea Iki (see photo Views and Vistas #3)

Like Keanakakoi, Kilauea Iki was one of the sites the original Crater Road showcased as it wound its way down from the Volcano House to Halemaumau. Dormant at the time, the crater was nonetheless an impressive site. Crater Road passed very close to the crater rim, providing an opportunity to create an overlook turnout, where drivers could stop to view the crater. In 1959, Kilauea Iki awoke and spewed lava, ash, and cinders from its southwest wall. Throngs came to view the eruption, overwhelming the meager parking area and prompting an expansion and realignment of the parking lot and road. When the eruption was over, a new cinder mound, called Puu Puai, rose above the crater wall where the eruption occurred, and cracked, steaming lava covered the crater floor. Today this is a popular stop along Crater Rim Drive. Views from the overlook are framed by vegetation, but are generally open in character.

Waldron Ledge

Waldron Ledge was another important vista point along Crater Rim Drive, providing a view of Kilauea Caldera over a vertical caldera wall of 400 feet. The road segment along Waldron Ledge was closed in the 1980s due to earthquake damage, but the overlook was still accessible on foot. Today, portions of the damaged road, as well as the overlook, are part of the Crater Rim Trail and continue to allow visitors to access the view at Waldron Ledge.

General Views

Mauna Loa

As Crater Rim Drive emerges from the forest onto Steaming Bluff, the first views of Mauna Loa open up. Mauna Loa is a broad, shield-shaped volcanic dome that looms over the northwest horizon. Although often obscured by clouds, on clear days Mauna Loa is clearly visible over the low scrub and grassland along the bluff.

Steaming Bluff

From the steam vents parking area, a short trail leads to the edge of Steaming Bluff, where it intersects with Crater Rim Trail. The drop from here to the caldera floor is vertical, and the view is unobstructed.



Views and Vistas #1. Views of the caldera from behind the Volcano House are framed by ferns and low vegetation.



Views and Vistas #2. The view from the overlook at Thurston Lava Tube of the lush, fern-filled crater is filtered through tree trunks and fern fronds. (PWRO 2005)



Views and Vistas #3. The view from the Kilauea Iki overlook is characteristic of views around the caldera that are framed by vegetation. (PWRO 2005)

Characteristic Feature	ID LCS Number	Type of Contribution
Uwekahuna Bluff View		Contributing
Halemaumau View		Contributing
Keanakakoi View		Contributing
Thurston Lava Tube View		Contributing
Kilauea Iki View		Contributing
Waldron Ledge View		Contributing

Land Use

Land use is defined as the principal activities that have formed, shaped, or organized the landscape as a result of human activity. The primary uses in and around Kilauea Caldera have historically fallen into the categories of visitor recreation and site-seeing, lodging, and scientific research. These continue to be the primary land uses within the Crater Rim Historic District and contribute to its integrity.

Visitor Services

The development around Kilauea Caldera was guided foremost by the desire to bring visitors in close contact with the volcano. This led to the first roads to the summit and to the establishment of the Volcano House in the nineteenth century to allow people to stay at the caldera overnight. Since then, nearly all of the development in the district has been for the accommodation and circulation of visitors amongst the caldera's many natural attractions.

Lodging

The first structure for lodging visitors to the volcano was built in 1846. Since then, the Volcano House has operated nearly continuously, providing accommodations on the caldera rim. When Hawaii National Park was formed in 1916, the land that the Volcano House occupied was incorporated into the park and leased back to the hotel company as a private concession. For nearly 100 years, the various incarnations of the hotel occupied the original site, just north of the main road through the park. In 1941, after a fire destroyed the hotel, it relocated to the south side of the road on the precipice of the caldera itself. Today, the Volcano House, still operated by a private concessionaire, continues to provide lodging to park visitors.

Circulation

Crater Rim Drive and its various associated elements, including parking lots, turnouts, overlooks, and side roads, have served to move people around the caldera rim area, allowing them to see such sites as Thurston Lava Tube, Kilauea Iki, Keanakakoi, Halemaumau, and other natural attractions. These elements continue to serve this purpose, playing an important role in the organization and the function of the district.

Education

In 1927, Hawaiian Volcano Research Association constructed the volcano observatory and museum at Uwekahuna Bluff. The museum was later renamed the Thomas A. Jaggar Museum in honor of the volcanologist who led the research at Kilauea from 1912 to 1940. The Jaggar Museum continues to be the center of educational services in the park.

Scientific Research

In 1912, the first permanent structure for the study of Kilauea's volcanic activity was constructed on the northeast rim near the Volcano House by Thomas Jaggar, then a professor of volcanology at MIT. The early observatory consisted of a seismograph vault dug into the soil to the bedrock and a wooden observatory building. The observatory served as the center of scientific research for Kilauea and Mauna Loa from its inception in 1912 until 1940, when the facilities (all but the seismograph vault) were razed to make room for the new Volcano House. At the end of 1941, the observatory moved into its new building on the other side of Crater Rim Drive, conducting its research here for seven years. In 1948, the NPS took over the new observatory building for a visitor center, moving the scientific functions, by now under the management of the United States Geological Survey (USGS) to the facility at Uwekahuna Bluff.

The buildings at Uwekahuna Bluff were constructed by the Hawaiian Volcano Research Association in 1927 as a museum and naturalist office in order to provide a point of interface between the scientific work and the visiting public. When the USGS was evicted from their building near the Volcano House, the primary scientific functions moved to Uwekahuna, sharing the space with the museum. The new site was better suited for scientific research, as it has clear views of both Halemaumau and Mauna Loa, and it was further away from the congested headquarters area. The observatory has remained at Uwekahuna Bluff since, moving into a large addition constructed in 1985.

Archeological Sites

For the purpose of the CLI, archeological sites refer to the location of ruins, traces, or deposited artifacts in the landscape and are evidenced by the presence of either surface or subsurface features. By identifying archeological resources within the historic district, we are not suggesting that the property is significant under criterion D (the potential to yield information), but that the archeological resources contribute to the integrity of the property by helping to convey the design or association of the district.

Headquarters Area

In 1994, an archeological survey of the headquarters area by park staff and reported by the Western Archeological Conservation Center (WACC) identified three sites and three features: the Steam Bath House (50-10-52-19, 456); the Ginger Patch Dump (50-10-52-19, 457); and the HQ Crack Dump (50-10-52-19, 458). The features include what is suspected to be a foundation for the chemistry laboratory, the remains of water tank supports under the water shed, and a road trace.

The steam bath house consists of a concrete foundation partitioned into six rooms, and is accessed by mortared stone stairs and a concrete path. A metal heater tube is in the steam crack nearby. It is unknown when the steam bath was constructed, but it is depicted on historic maps from 1931 and 1963.

The Ginger Patch Dump refers to a debris dump, so named because it was discovered in the process of clearing a patch of ginger plants in 1992. Artifacts were collected by the park archeologist Laura Schuster and are accessioned into park collections under number 355. The site is now under fill and a site record was compiled utilizing documentation by Schuster in 1992 and the location plotted by Schuster and Park Superintendent Jim Martin in 1994.

The HQ Crack Dump is about 10 meters wide and at least 20 meters deep in places; a moderate amount of steam is still emitted. This crack was reportedly a main dump for the Volcano House and in years past park employees would climb into the crack to collect bottles. A Model T car is also reportedly located in the crack. The crack is heavily overgrown with vegetation and is too dangerous to enter without proper equipment and training.

Feature 1 is probably the chemistry laboratory foundation which consists of only a cement slab foundation, 26 feet by 33 feet 8 inches, with a drain pipe in the northwest corner and one cement block with a utility pole in it. The pole measures 4 inches by 5 inches and is 4 feet tall with two iron I-beams attached to the sides. The lab was built in 1925 and razed in 1959. Ground visibility was good and it is likely that artifacts exist.

Feature 2 is the remains of water tank supports under the water shed, portions of which were constructed in 1927. The area once contained a 400,000 gallon tank which collapsed in 1946. Eleven 10,000 gallon redwood water tanks were “moved from the CCC camp and relocated on the concrete base of the former 400,000 gallon tank” in 1950 or 1951. Today all that is extant are the sides of mortared stone foundations which were paved over by maintenance crews in 1994; the foundations are still intact under the asphalt.

Feature 3 is a road trace that extends along the north edge of the headquarters area. This trace, visible both in topography and vegetation patterns, appears on the 1938 master plan as “bridle path around the crater.”

Uwekahuna-Bird Park Road Trace (see photos Archeological Sites #1 and #2)

The trace of the Uwekahuna-Bird Park road constructed in 1933 and discontinued in 1961 is still visible in the desert north of Uwekahuna Bluff. The trace extends for 2,000 feet from Crater Rim Drive to Mamalahoa Highway (and for a short distance north of the highway, although the portion north of the highway is outside of the boundary of the historic district and will be addressed at a future time). At the junction with Crater Rim Drive, denser vegetation was planted to hide the trace from the road, but beyond this clump of ohia lehua trees and shrubs, the road is plainly visible. The roadbed is raised in places and stones line the trace on both sides. In the dry conditions and compacted soil, vegetation has been slow to obscure the road. Current vegetation on the roadbed consists of grasses and ohelo, and the straight road trace is obvious from its lack of trees. Four culverts are extant along the road trace. These are octagonal concrete pipe culverts with mortared stone headwalls on both inlet and outlet. One culvert has a substantial dry-stacked stone retaining wall above it, holding the high filled roadbed. Because the road no longer functions as it was intended, and because there is currently no access to or visibility of the road trace, it is being managed as an archeological site rather than a contributing structure or circulation feature.

Halemaumau Vaults (see photos Archeological Sites #3 and #4)

Two concrete vault located near the Halemaumau parking lot are likely the remnants of restrooms that were located there in the 1930s. The vaults are approximately 4 feet by 10 feet and 6 feet deep. Remnants of timber framing are in and near the vaults.



Archeological Sites #1. Although not visible from Crater Rim Drive, the Uwekahuna-Bird Park Road trace is evident from the topography and vegetation patterns. (PWRO 2005)



Archeological Sites #2. Several culverts, including this one with a dry-stacked retaining wall above it, remain on the abandoned Uwekahuna-Bird Park Road trace. (PWRO 2005)



Archeological Sites #3. One of two concrete vaults cut into the lava near the Halemaumau parking lot. These vaults were likely the two comfort stations built sometime in the 1920s or 1930s. (PWRO 2005)



Archeological Sites #4. The shelter and two comfort stations at Halemaumau, c. 1934 (no longer extant).
(HAVO Landscape Architects Reports)

Management Information

Descriptive and Geographic Information

Historic Name: Kilauea Crater, Hawaii National Park
Current Name: Crater Rim Historic District, Hawaii Volcanoes National Park
Management Unit:
Tract Numbers:
State and County: Hawaii, Hawaii
Size (acres): 5,000

Boundary UTM

Source	Type	Datum	Zone	Easting	Northing
GPS Uncorrected	Area	NAD 83	11	258422	2147851
GPS Uncorrected	Area	NAD 83	11	259625	2150014
GPS Uncorrected	Area	NAD 83	11	261469	2151126
GPS Uncorrected	Area	NAD 83	11	265612	2149329
GPS Uncorrected	Area	NAD 83	11	265750	2147562
GPS Uncorrected	Area	NAD 83	11	260463	2145444
GPS Uncorrected	Area	NAD 83	11	259138	2146221

National Register Information

National Register Documentation:

Explanatory Narrative:

Carey and Company, a historical architecture firm based out of San Francisco, prepared the Kilauea Administration and Employee Housing Historic District nomination, the Crater Rim Drive Historic District nomination, and the multiple property: Hawaii National Park Planning and Development through World War II nomination. All of these documents are currently (2005) on park review.

National Register Eligibility:

Explanatory Narrative:

Date of eligibility Determination:

National Register Classification: District

Significance Level: State

Contributing/Individual:	Individual
Significance Criteria:	C—Inventory unit embodies distinctive characteristics of type/period/method of construction; or represents work of master; or possesses high artistic values; or represents significant/distinguishable entity whose components lack individual distinction. A—Inventory Unit is associated with events that have made a significant contribution to the broad patterns of our history.

Period of Significance

Time Period: 1916-1942

Historic Context Theme:	Transforming the Environment
Historic Context Subtheme:	Conservation of Natural Resources
Historic Context Facet:	The Great Depression and Conservation

Time Period: 1916-1942

Historic Context Theme:	Expressing Cultural Values
Historic Context Subtheme:	Landscape Architecture
Historic Context Facet:	The 1930s: Era of Public Works

Area of Significance

Category:	Conservation
Priority:	1

Category:	Landscape Architecture
Priority:	2

Category:	Architecture
Priority:	2

National Historic Landmark Information

No

World Heritage Site Information

Hawaii Volcanoes National Park was named a World Heritage Site by UNESCO in 1987.

Cultural Landscape Type and Use

Cultural Landscape Type: Designed Landscape

Current and Historic Use/Function:

Use/Function Category:	Landscape
Use/Function:	Natural Area - Other

Use/Function Category:	Recreation/Culture
Use/Function:	Outdoor Recreation
Use/Function Category:	Recreation/Culture
Use/Function:	Museum
Use/Function Category:	Education
Use/Function:	Research Facility

Ethnographic Information

Ethnographic Survey Conducted: Yes:

An ethnographic study was conducted by Charles M. Langlas, Cultural Anthropologist with the University of Hawaii at Hilo. The results of the study were completed in 2003: Native Hawaiian Use of Hawaii Volcanoes National Park: A Historical and Ethnographic Overview. The purpose of this study was to document traditional Native Hawaiian use of resources on Park lands, both in the past and the present and to examine the relationship between that resource use and Park management. Perhaps most important to mention is that Native Hawaiians view the entire Kilauea Caldera as sacred and as the “origin of new land.” Hawaiians give thanks to Kilauea and the goddess Pele (the maker of land) in sites all over the caldera’s rim. Additionally, Native Hawaiian’s access areas throughout the park, including the Kilauea headquarters area to collect plants for religious purposes. Aalii and liko lehua (the leaf buds of the ohia tree) are two plants that are particularly sought after and available in this area. In addition to plant gathering, the area in front of the 1877 Volcano House—located just outside of the historic district boundaries—is often used for religious rituals.

Adjacent Lands Information

Do Adjacent Lands Contribute: No

General Management Information

Management Category:	Should be preserved and maintained
Management Category Date:	November 27, 2005
Explanatory Narrative:	Crater Rim Historic District meets all of the following criteria: the property meets National Register criteria; the property is compatible with the park's legislated significance; and the property has continuing or potential purpose that is appropriate to its traditional use or function.

Condition Assessment and Impacts

The criteria for determining the condition of landscapes is consistent with the Resource Management Plan Guideline definitions (1994) and is decided with the concurrence of park management. Cultural landscape conditions are defined as follows:

Good: indicates the landscape shows no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The landscape's cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition.

Fair: indicates the landscape shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3-5 years to prevent further harm to its cultural and/or natural values. If left to continue without the appropriate corrective action, the cumulative effect of the deterioration of many of the character-defining elements will cause the landscape to degrade to a poor condition.

Poor: indicates the landscape shows clear evidence of major disturbance and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical and natural values.

Undetermined: not enough information available to make an evaluation.

Condition Assessment:	Good
Assessment Date:	06/21/2005
Date Recorded:	03/01/2006
Park Management Concurrence:	
Level of Impact Severity:	low

Stabilization Measures:

Stabilization for features within Crater Rim Historic District include the management of invasive vegetation, the management of views being obscured by vegetation, the removal of intrusive vegetation in or near stone structures, and the repair of stone structures that have experienced structural deterioration.

Impact:

Type of Impact:
Internal/External:
Description:

Vegetation/Invasive Plants

Internal

Several species of invasive plants are found throughout the historic district, particularly in the areas around the Volcano House and along the edges of roads and trails. Invasive vegetation management programs are ongoing in an effort to reduce the impacts of these species on the natural and historic landscape.

Impact:

Type of Impact:
Internal/External:
Description:

Vegetation/Invasive Plants

Internal

Views along the caldera rim in the eastern portion of the caldera, where vegetation is lush and grows rapidly, are being obscured or threatened by encroaching vegetation. Currently, only the view from the Kilauea Iki overlook is in need of clearing to stabilize the historic view, but views at the Volcano House, Waldron Ledge, and Thurston Lava Tube should also be monitored for encroaching vegetation.

Impact:

Type of Impact:
Internal/External:
Description:

Structural Deterioration

Internal

Stone structures throughout the district, including the parapet guard walls on Crater Rim Drive, the walls from the old Volcano House, stone retaining walls along Crater Rim Drive in the fern jungle, and stone structures at Thurston Lava Tube, are showing signs of deterioration, cracking, and instability. These structures should be repaired using appropriate techniques and materials. Repairs should include removal of intrusive non-historic vegetation, reclaiming and reusing displaced stones, and repointing mortar. Replacement stones, if required should be compatible with existing stones.

Impact:

Type of Impact:
Internal/External:
Description:

Vegetation/Invasive Plants

Internal

Stone structures throughout the district are threatened by intrusive vegetation growing in or near the structures. Tree roots, if left unchecked, can pry stones out of stone walls and other structures. Features that were identified as being impacted by vegetation include the stone retaining walls along Crater Rim Drive in the fern jungle, stone wall around Thurston Lava Tube, stone walls at the old Volcano House site, and the 1887

Impact:

Type of Impact:

Internal/External:

Description:

marker near the old Volcano House site. Non-historic intrusive vegetation should be removed, taking care not to further damage stone work.

Erosion

Internal

Kilauea Iki Trail was severely damaged by erosion resulting from heavy rains in November 2001. Some emergency repairs were done to make it safe for visitor use immediately following the rains. However, these repairs were temporary and long-term repairs are needed to stabilize the resources.

Agreements, Legal Interest, and Access

Management Agreement:

None

Explanatory Narrative:

NPS Legal Interest:

Fee Simple

Explanatory Narrative:

Public Access:

Unrestricted

Treatment

Approved Treatment: Preservation

Approved Treatment Document: General Management Plan

Document Date: 1985

Explanatory Narrative:

The current approved treatment of “preservation” was determined in the 1985 General management Plan which states, “Preserve the sites and structural remains of the early Hawaiian period and historical period in cooperation with local Hawaiian interests.”

Approved Treatment Completed: No

Approved Treatment Cost

LCS Structure Approved Treatment Cost: None

Landscape Approved Treatment Cost: None

Cost Date:

Level of Estimate:

Cost Estimate:

Explanatory Description:

Stabilization Costs

LCS Structure Stabilization Cost: \$292,020

LCS Stabilization Measures	PMIS Number	Estimated Cost
Repair historic stonework throughout the district	43679	\$ 155,000.00
Repair Kilauea Iki Trail	86876	\$ 87,020.00
Repair leaking roof in Jaggar Museum	85270	\$ 50,000.00

Landscape Stabilization Costs: \$154,775

Landscape Stabilization Measures	PMIS Number	Estimated Cost
Restore historic views and remove hazardous trees and exotic vegetation around the Volcano House.	117775	\$ 10,000.00
Clear vegetation to restore historic views at Kilauea Iki overlook.	121238	\$ 18,096.00

Cost Date: 06/01/2006

Level of Estimate: C – Similar Facilities

Cost Estimator: Support Office

Explanatory Description:

The LCS and Landscape stabilization cost estimates were obtained from PMIS statements that cover the stabilization and repair of historic structures as well as vegetation clearing to maintain historic views and control historically inappropriate exotic vegetation.

Appendix

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Supplemental Information

Title: Existing Conditions Site Map (attached)
Description: Composite site map showing the existing conditions in 2005.

Title: 1916 Site Map (attached)
Description: Site Map showing the Kilauea Caldera Rim area at the beginning of the period of significance in 1916.

Title: 1942 Site Map (attached)
Description: Site Map showing the Kilauea Caldera Rim area at the end of the period of significance in 1942.

Title: Contributing Features Map #1 (attached)
Description: Map showing the sections of Crater Rim Drive that still reflect the alignment of the historic period.

Title: Contributing Features Map #2 (attached)
Description: Map showing the contributing buildings and structures in the Crater Rim Historic District.

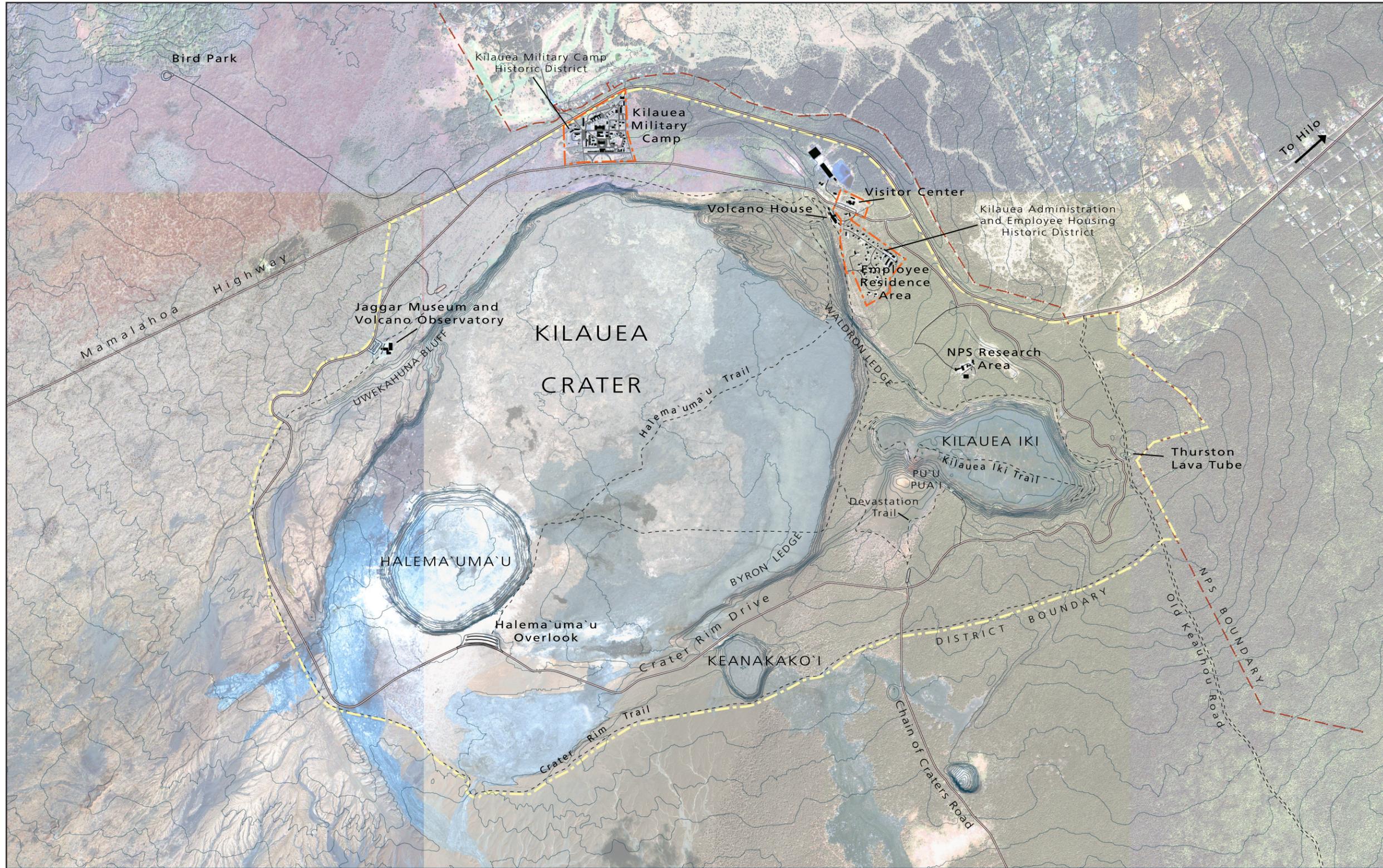
Title: Hawaii National Park Master Plans, 1931-1941.
Description: Master plans for the headquarters area and for the general development of the caldera updated annually from 1931-1941. Copies located at the Denver Service Center (DSC).

Title: Kilauea Historic Maps, 1912-1963
Description: Various historic maps of the Kilauea summit area, including USGS maps and NPS plans. Copies located at the DSC.

Title: Draft Crater Rim Drive Historic Road Inventory
Description: Prepared by Architectural Resources Group (ARG). Inventory of historic and non-historic resources along Crater Rim Drive. Draft currently on review.

Title: Hawaii Volcanoes National Park Roads
Description: Historic American Engineering Record (HAER) report on the roads in Hawaii Volcanoes National Park, including Crater Rim Drive.

Title: Hawaii Volcanoes National Park Headquarter Area Archeological Survey
Description: Prepared by the Western Archeological Conservation Center (WACC) in 1994; survey of the archeological resources in the Kilauea headquarter area.



SUPPLEMENTAL
INFORMATION

Existing Conditions
Site Map

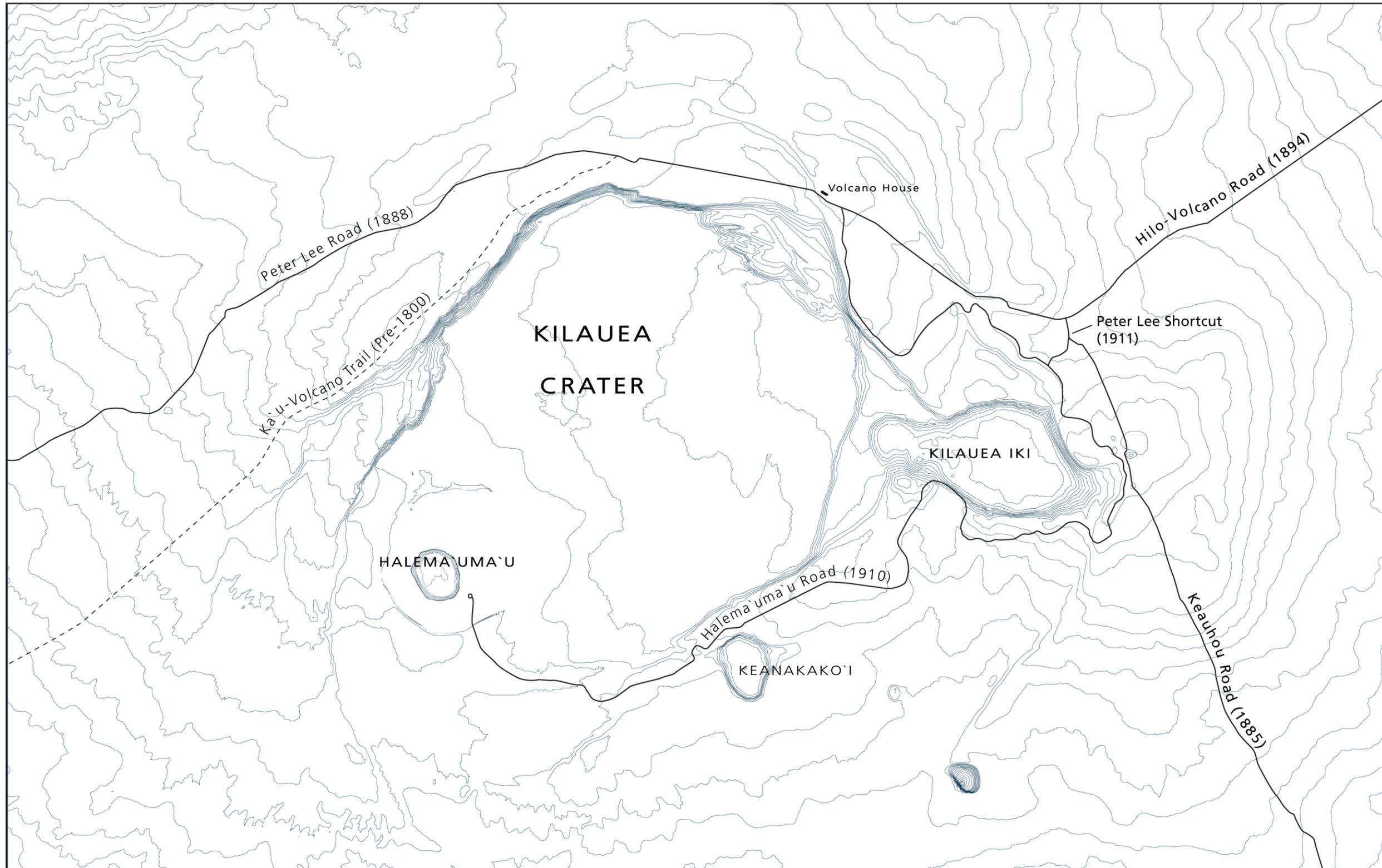
Composite site map showing the
existing conditions in 2005.



Cultural Landscapes Inventory
Crater Rim Historic District 2006

National Park Service
Pacific West Region
Cultural Landscape Program





SUPPLEMENTAL
INFORMATION

1916 Site Map

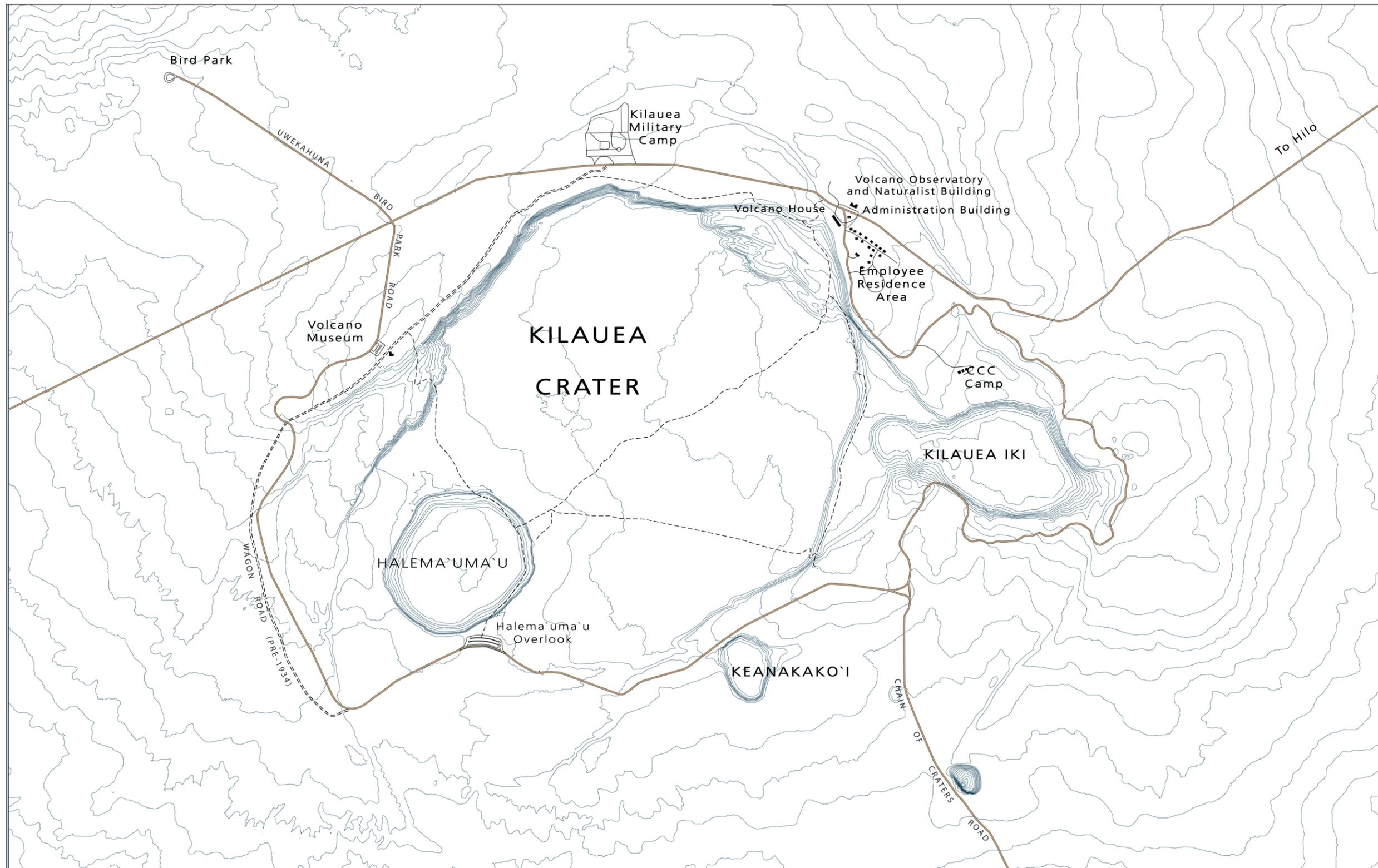
Site map showing the Kilauea Crater Rim area at the beginning of the period of significance in 1916.



Cultural Landscapes Inventory
Crater Rim Historic District 2006

National Park Service
Pacific West Region
Cultural Landscape Program





**SUPPLEMENTAL
INFORMATION**

1942 Site Map

Site map showing the Kilauea Crater Rim area at the end of the period of significance in 1942.

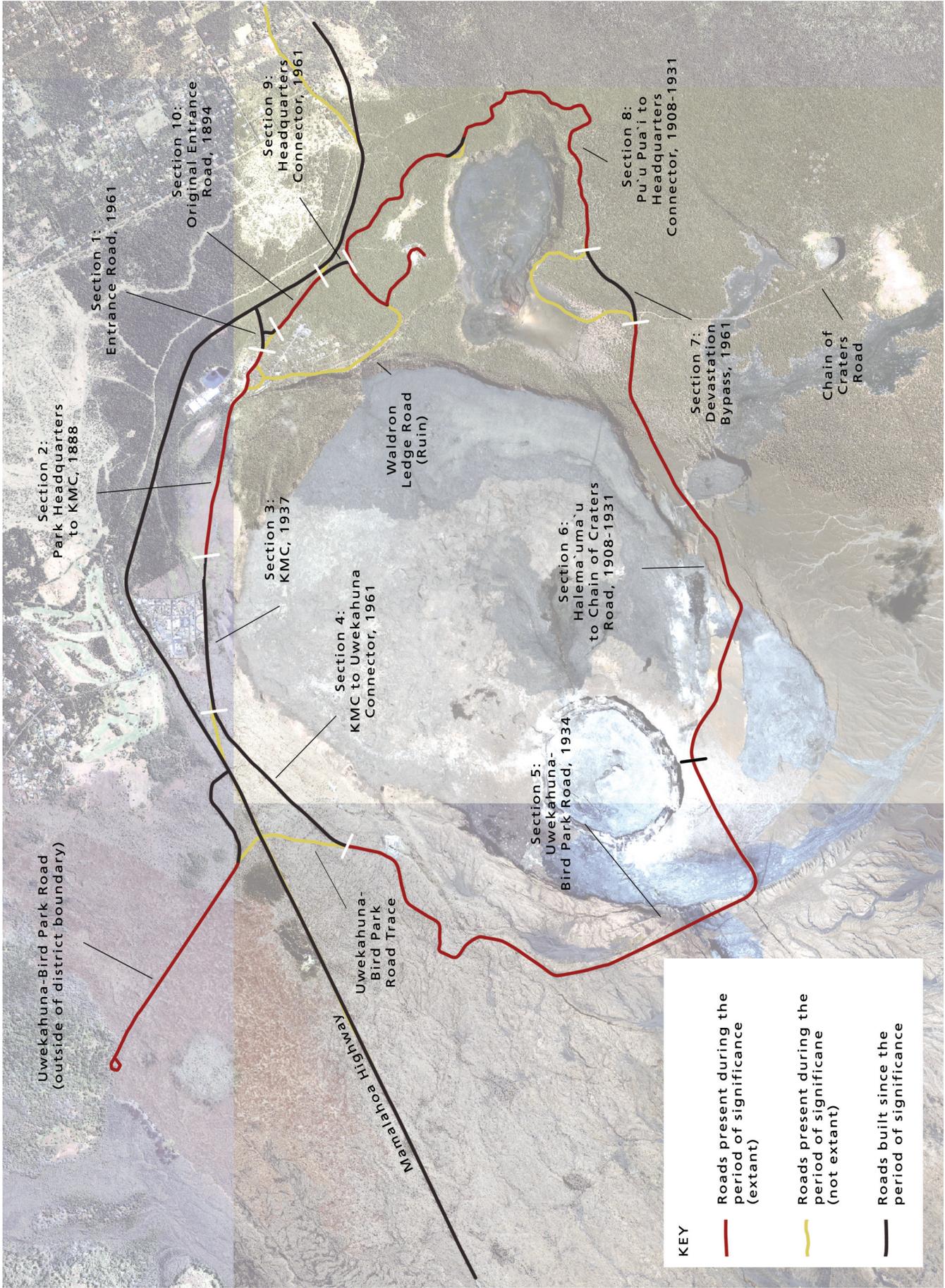


0 2,000 4,000 Feet

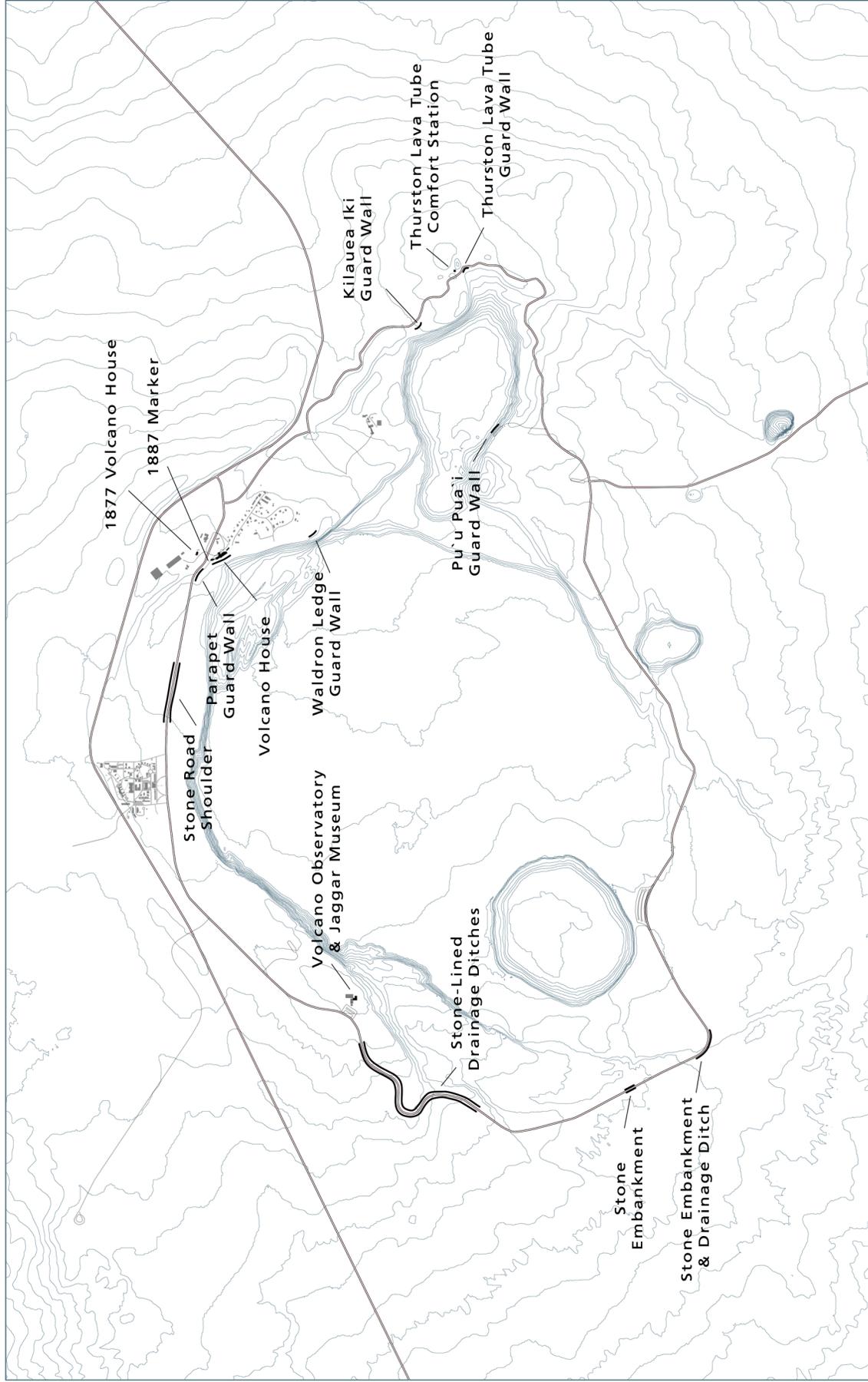
Cultural Landscapes Inventory
Crater Rim Historic District 2006

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Contributing Features Map #1. Diagram showing the sections of Crater Rim Drive that still reflect the alignment of the historic period.



Contributing Features Map #2. Map of Crater Rim Historic District showing contributing buildings and structures.