

November 11, 2011  
Job Number: 1064-018  
Historical Research of Keeler Dunes

**MEMORANDUM FOR THE RECORD**

2.6 1064-018.M04

**TO:** Great Basin Unified Air Pollution Control District  
(Mr. Ted Schade and Ms. Grace Holder)

**FROM:** Sapphos Environmental, Inc.  
(Ms. Leslie Heumann and Ms. Marlise Fratinardo)

**SUBJECT:** Historical Research of Keeler Dunes

**FIGURES:** 1. Project Vicinity Map

**EXECUTIVE SUMMARY**

This Memorandum for the Record (MFR) presents the results of research conducted in August and September 2011 regarding the history of the community of Keeler, California, and the development of the Keeler Dunes. No located historical materials referenced the Keeler Dunes prior to the 1980s. The absence of specific references to the Keeler Dunes in historical materials suggests that the Keeler Dunes are a recent phenomenon that developed during the late 20th century. A total of 94 documents, including books, maps, reports, articles, and photographs, dating from the 1860s to 2011 were reviewed for information relevant to the Keeler Dunes. The history of Keeler is extensively documented in the historical record; however, there is little historical evidence regarding the origin or development of the Keeler Dunes.

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## BACKGROUND

Located on the alluvial fan to the east of the exposed dry bed of Owens Lake, the Keeler Dunes have been a persistent contributor to fugitive dust emissions during high-wind events that exceed the 24-hour state and federal standard for particulate matter (PM<sub>10</sub>) within the Owens Valley Planning Area.<sup>1</sup> The Keeler Dunes appear to be moving and spreading to the east and southeast toward the adjacent community of Keeler and the foothills of the Inyo Mountains (Figure 1, *Project Vicinity Map*). While circumstantially associated with the desiccation of Owens Lake during the mid-1920s, the precise origin of the Keeler Dunes is unknown. The current research effort located and assessed the historical record to document the presence of the Keeler Dunes such that an approximate date of origin of the Keeler Dunes could be identified.

## METHODOLOGY

The background investigations included a combination of existing literature reviews and original archival research to (a) research the history of the community of Keeler and (b) to trace the development of the Keeler Dunes. Research was conducted in public records and a number of repositories, including the California History Index of the Los Angeles Public Library; the collections of the Inyo County Free Library (August 28, 2011), the Eastern California Museum (August 29, 2011), the Bancroft Library at the University of California at Berkeley (September 6–7, 2011); and the archives of the Automobile Club of Southern California. Archival research included primary sources, such as historical aerial photography at the Benjamin and Gladys Thomas Air Photo Archives maintained by the Department of Geography of the University of California at Los Angeles; historic images; historic newspapers indexed by the ProQuest Newspaper Database; a focused review of the *Inyo Register* and *Inyo Independent*; and ephemera. Secondary sources included general histories; historical resources survey reports; previous research conducted in support of the Owens Valley PM<sub>10</sub> Planning Area Demonstration of Attainment State Implementation Plan (SIP); technical materials relating to federal, state, and local historic preservation; and other materials, as available or appropriate.

## BRIEF HISTORY OF KEELER

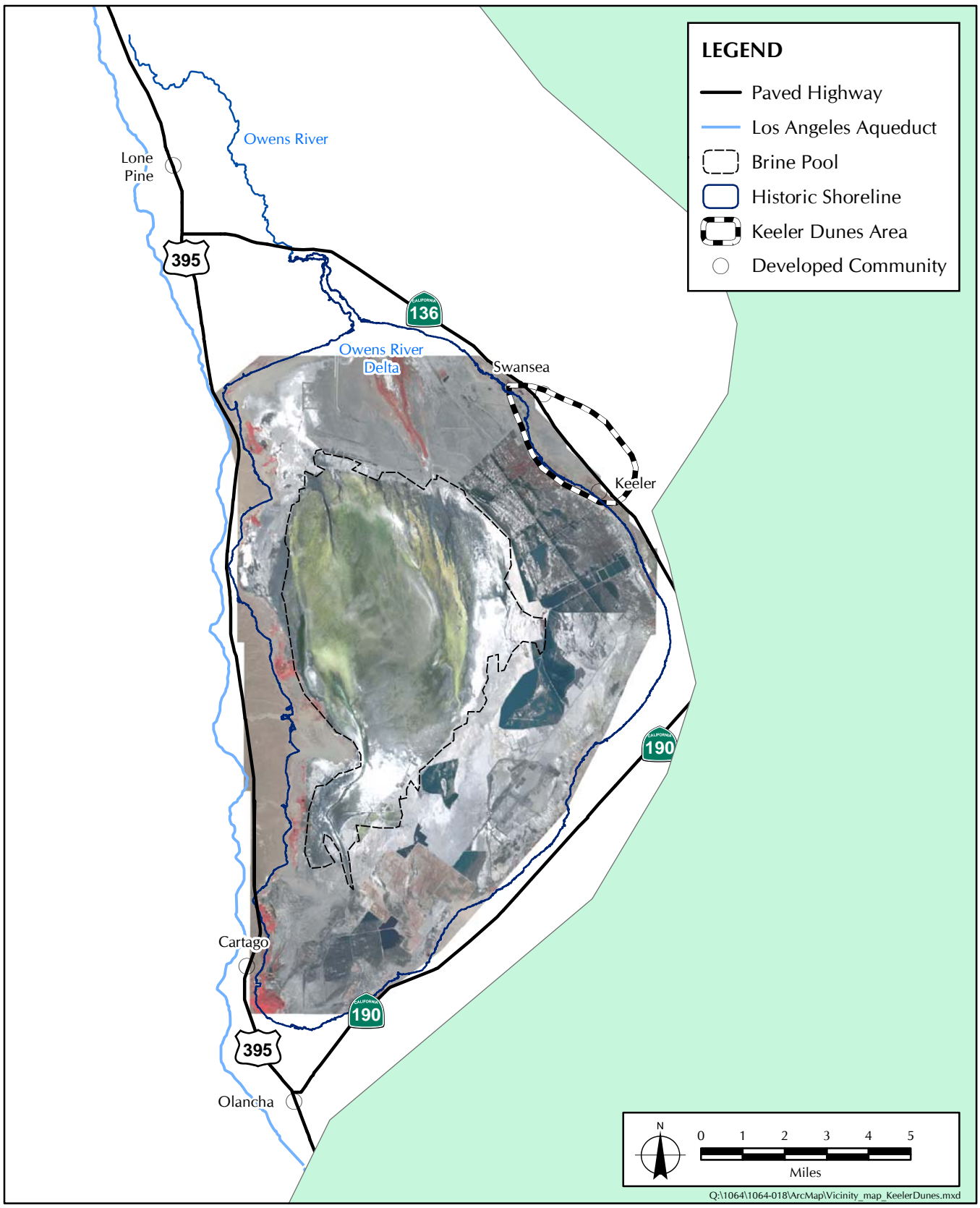
The community of Keeler originated with the 1860s discovery of the Cerro Gordo Mine by prospector Pablo Flores. Rich with silver and lead, the mine is located approximately 9,000 feet above Owens Lake in the Inyo Mountains. By 1868, 20-mule-team wagons made regular deliveries of silver-lead bullion from Cerro Gordo through the Antelope Valley to Los Angeles. In 1869, the Owens Lake Silver-Lead Company constructed a smelter complex at Swansea on the shores of Owens Lake. In the early 1870s, a steamship carried Cerro Gordo bullion from the Swansea smelter to the southern end of Owens Lake at Cartago, from where the bullion was then freighted to Los Angeles.<sup>2</sup>

A second landing at Owens Lake, named Cerro Gordo, was constructed in an area known as Hawley, California, located approximately 6 miles to the south of Swansea. Hawley was later renamed Keeler after Captain James Marshall Keeler, a Civil War veteran from Connecticut. Captain Keeler reestablished a local mill and flume in this area and in 1883 would develop the site

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<sup>1</sup> Great Basin Unified Air Pollution Control District. Accessed on 23 September 2011. *Great Basin Unified Air Pollution Control District: Keeler Dunes at Owens Lake, Keeler Dune Information*. Web site. Available at: <http://www.gbuapcd.org/keelerdunes/index.htm>

<sup>2</sup> Inyo County Assessor. 1917. *Agricultural and Industrial Survey of Inyo County, California*. Independence, CA.



**FIGURE 1**  
Project Vicinity Map

plan, consisting of 42 blocks, for the new community of Keeler sited at the northeastern edge of Owens Lake. In 1883, the narrow-gauge Carson & Colorado Railroad arrived at Keeler. Originating at Mound House, Nevada, and terminating at Keeler, California, the 300-mile railroad line would provide vital connectivity from the Owens Valley to western Nevada. Upon the completion of the railroad, a rail official acknowledged the railway's remote passage: "Gentlemen, we have either built this railroad 300 miles too long, or 300 years too soon." Known locally as the Slim Princess, the railroad would operate in the Owens Valley from 1883 until 1960.

During the 1880s, the mineral-rich area produced dozens of raw materials that included refined soda ash, salt, and talc, as well as ore and concentrates from the nearby gold, silver, lead, zinc, and copper mines. As a booming mining settlement, the Cerro Gordo and Keeler area was known for lawlessness, saloons, boarding houses, and dance halls. In its mining heyday, Keeler supported two 27-room hotels, The Keeler and The Terminal, and 7,500 permanent residents. By the 1910s, Keeler was largely populated by employees from local refining and soda ash operations who lived in company cottages near their respective plants. During this period, Keeler had one grammar school, one church, three general stores, one gas station, three restaurants, and two pool halls. The total production of the raw materials delivered from Keeler between 1880 and 1948 has been estimated at \$213 million.<sup>3 4 5</sup>

The construction of the Los Angeles Aqueduct would directly affect the future of Keeler. With the diversion of the Owens River and the completion of the Los Angeles Aqueduct in 1913, evaporation exceeded the supply of Owens Lake. The mineral-rich Owens Lake was largely dry by the mid-1920s, and consisted primarily of soluble salts.<sup>6</sup> By the late 1950s, operations at the Cerro Gordo Mine had ceased. In 1960s, the Carson & Colorado Railroad was permanently closed. Keeler had a population of 39 residents in 1979.<sup>7</sup> Often referenced as a "ghost town" today, Keeler has been inhabited continuously since it was founded in the 1880s and had a population of 66 residents in 2010.<sup>8 9</sup>

The history of the community of Keeler and its numerous mining operations is well documented in several local first-hand accounts of the area, such as *Desert Days: Living in the California Desert, 1914-1929*, which is composed of recollections of the O'Connell Family from the 1910s and 1920s, and other local histories, including *The Story of Keeler: Southern Terminus of the Carson & Colorado Railroad* by Frances C. Krauter (published by Owens Inyo Company).

## DISCUSSION

This MFR summarizes the findings of historical research regarding (a) the history of the community of Keeler and (b) the development of the Keeler Dunes. Table 1, *Summary of Historical Research*,

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<sup>3</sup> O'Connell Family. 1995. "Keeler: the Land that God Forgot." In *Desert Days: Living in the California Desert, 1914-1929*. ROC INK. Available at: Eastern California Museum, Independence, CA.

<sup>4</sup> Inyo County Assessor. 1917. *Agricultural and Industrial Survey of Inyo County, California*. Independence, CA.

<sup>5</sup> Krautter, Frances C. ca. 1959. *The Story of Keeler: Southern Terminus of the Carson & Colorado Railroad*. Owens Inyo Company. Available at: Eastern California Museum, Independence, CA.

<sup>6</sup> O'Connell Family. 1995. "Keeler: the Land that God Forgot." In *Desert Days: Living in the California Desert, 1914-1929*. ROC INK. Available at: Eastern California Museum, Independence, CA.

<sup>7</sup> Larsen, David. 4 March 1979. "California Town Survives Hazards of Modern Society." In *Las Vegas Review Journal*.

<sup>8</sup> Krautter, Frances C. ca. 1959. *The Story of Keeler: Southern Terminus of the Carson & Colorado Railroad*. Owens Inyo Company. Available at: Eastern California Museum, Independence, CA.

<sup>9</sup> U.S. Census Bureau. 2010 Demographic Profile Data. American Fact Finder. Available at: <http://factfinder2.census.gov/>

itemizes the materials consulted in chronological order and presents the results of the historical research efforts in tabular format. Only two accounts dating from 1987 and 2000 of the total 94 reviewed documents specifically reference the Keeler Dunes. The absence of specific references to the Keeler Dunes in 92 of the 94 documents that were reviewed may be interpreted to mean that the Keeler Dunes either did not exist or did not disturb the surrounding area during the time periods that these sources were written.

**TABLE 1  
SUMMARY OF HISTORICAL RESEARCH**

<b>Source</b>	<b>Date</b>	<b>Description</b>	<b>Summary</b>
Keddie, Arthur Walter. "Holt's Map of the Owens River Mining County/Compiled and Drawn from the Most Reliable Information by Arthur W. Keddie." Online Archive of California. Berkeley, California: University of California at Berkeley, Bancroft Library.	1864	Map depicting the Owens Valley area during the 1860s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Hoffman, Charles Frederick. "Original Plottings of Inyo & White Mts. & region of Owens Lake."	ca. 1870	Map depicting Owens Lake area during the 1870s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Von Schmidt, Alexis Waldemar. Map of the Eastern Boundary of the State of California. Drawn by F. von Leight and J.D. Hoffmann. San Francisco, California: Bradley & Rulofson.	1872	Map depicting the eastern California area during the 1870s	The map is outside the range of the Owens Lake area. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Mallory, J. C., First Lieutenant of Engineers. Hand-drawn map of the Owens Lake area.	June 25, 1875	Map of the Owens Lake area during the 1870	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Map of Keeler, Inyo County, California. Surveyed by James Oliver. Scale 100 feet to 1 inch; lots 25 by 50 feet.	December 1883	Original townsite map of Keeler, California	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Keeler, James Marshall. Mining Map of Inyo County. San Francisco, California: Britton & Rey.	ca. 1884	Map depicting mines in Inyo County during the 1880s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

<b>Source</b>	<b>Date</b>	<b>Description</b>	<b>Summary</b>
"Homes for Settlers: Government Land, Plenty of Water; A Delightful and Healthy Country." Independence, California: <i>Inyo Independent</i> Print.	1886	Discussion of the Owens Lake area during the 1880s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Goodyear, W. A. Eighth Annual Report of the State Mineralogist (excerpt).	1888	Discussion of the Owens Lake area during the 1880s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Davis, J. Z. <i>et. al.</i> Written by Goodyear, W. A. "Inyo County." Report of the State Mineralogist. Department of Natural Resources, Division of Mines. Independence, California: Eastern California Museum.	October 1, 1888	Geological/mineralogical study and report	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Legal papers of the Inyo Land Company.	ca. 1900	Discussion of Inyo Land Company at Keeler	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Statement regarding the chances for Dutch emigrants in Owens Valley.	ca. 1900	Discussion of soil conditions in the Owens Valley area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Newspaper clippings, town of Keeler. Independence, California: Eastern California Museum.	ca. 1908-1980	Miscellaneous newspaper clippings on the history of Keeler, California	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Newspaper clippings and historical photographs, Natural Soda Products. Independence, California: Eastern California Museum.	ca. 1908-1966	Primary source materials regarding the history of Natural Soda Products Company, Keeler, California	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Lippincott, Joseph Barlow. "Material for Mojave-Keeler Railroad." Photograph. Online Archive of California. Berkeley, California: University of California at Berkeley, Water Resources Center Archives	April 1908	Photograph of Keeler area during the 1900s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Department of the Interior, United States Geological Survey. "Some Desert Watering Places in Southeastern California and Northwestern Nevada." Water Supply Paper No. 224.	1909	Discussion of the Owens Lake area during the 1900s	Includes map depicting water resources of the Owens Lake area. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
"Laying Steel Ties to Bind." <i>Los Angeles Times</i> .	August 4, 1908	Discussion of the Keeler area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Espee Branch Nearly Done." <i>Los Angeles Times</i> .	August 13, 1909	Discussion of the Keeler area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Furnace and Mill of Inyo Development Company, Keeler, California." Photograph. Online Archive of California. Berkeley, California: University of California at Berkeley, Water Resources Center Archives.	1912	Photograph of Keeler area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Crude soda at Inyo Dev. Co.'s Well, Keeler, California." Photograph. Online Archive of California. Berkeley, California: University of California at Berkeley, Water Resources Center Archives.	1912	Photograph of Keeler area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Touring Bureau Route and Map Service, Automobile Club of Southern California, "Automobile Touring Routes from Los Angeles to Lake Tahoe Along the Eastern and Western Slopes of the Sierras." Strip Map No. 3115.	1912	Map of the Owens Lake area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Lee, Charles, H. "An Intensive Study of the Water Resources of a Part of Owens Valley, California." Water Supply Paper No. 294. Washington, DC: Department of the Interior, United States Geological Survey.	1912	Hydrological study and report	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Topographic Map, Ballarat, California, Quadrangle. United States Geological Survey.	1913, reprinted 1921	USGS topographic map	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Knoph, Adolph. "Mineral Resources of the Inyo and White Mountains." <i>Contributions to Economic Geology</i> . Bulletin 540. Washington, DC: United States Geological Survey.	1914 (based on geological field survey work conducted in 1912)	Geological/mineralogical study and report	Area between Keeler and Darwin is identified as "a series of lake beds" consisting of loose granitic detritus. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Map of Inyo County, California, compiled from the most recent official data. Drawn and published by Punnett Brothers.	1914	Map depicting Owens Lake area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Map of Inyo County, California, issued by the California State Mining Bureau.	ca. 1915	Map depicting Owens Lake area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Agricultural and Industrial Survey of Inyo County, California." Independence, California: Inyo County Assessor.	1917	Discussion of the Keeler area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Eakle, Arthur. S. et. al. Written by Clarence A. Waring and Emile Huguenin. "Mines and Mineral Resources: Alpine County, Inyo County, Mono County." California State Mining Bureau.	1917	Geological/mineralogical study and report	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Spence Air Photos.	n/a (ca. 1918-1971)	Aerial photography of the Owens Valley area	The available Spence Air Photos for this area were taken west of the Sierras. No relevant information was identified.
Knopf, Adolph. <i>A Geological Reconnaissance of the Inyo Range and the Eastern Slope of the Southern Sierra Nevada, California</i> . Department of the Interior, United States Geological Survey. Washington, DC: Government Printing Office.	1918 (based upon geological field survey work conducted in 1912)	Discussion of the Owens Valley area during the 1910s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.



**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Geological Reconnaissance Map of the Mount Whitney Quadrangle and Parts of the Olancha and Ballarat, California, Quadrangles.	1918 (based upon geological field survey work conducted in 1912)	Map depicting the Owens Valley area during the 1910s	The immediate Keeler area is identified as "lake bed" and "alluvial cones." The map legend identifies "soil, silt, and wind-blown sand" near Independence, California, and not in the Keeler area. There is no mention or depiction of the Keeler Dunes.
Miscellaneous historical photos, Eastern California Museum collection.	n.d., circa 1920s	Archival photos	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Report XVII of the State Mineralogist. "Mining in California in 1920." California State Mining Bureau.	January 1921	Geological/mineralogical study and report	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Chalfant, Willie Arthur. <i>The Story of Inyo</i> . Bishop, California: Community Printing and Publishing.	1922	Local history of Inyo County	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Highest and Lowest Novelties on Continent Found Within California Border." <i>Los Angeles Times</i> .	December 4, 1927	Discussion of the Keeler area during the 1920s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Kinsey, Don J. The Water Trail. Department of Water and Power, City of Los Angeles.	1928	Local history of Owens Valley	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Robertson, G. Ross. "California Desert Soda: Plant of the Natural Soda Products Company at Keeler, Calif. on Owens Lake." In <i>Industrial and Engineering Chemistry</i> , Vol 23, No. 5.	February 10, 1931	Discussion of Natural Soda Products Company at Keeler	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

<b>Source</b>	<b>Date</b>	<b>Description</b>	<b>Summary</b>
Overholt, Alma. "California First State in Auto Ownership." <i>Los Angeles Times</i> .	March 15, 1931	Discussion of the Keeler area during the 1930s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Parcher, Mary Louise and Will C. Parcher. <i>Dry Ditches</i> . Bishop, California. Inyo Register Press.	1934	Discussion of the Owens Lake area during the 1930s	References to the return of the Owens Valley to desert conditions as local residents leave Owens Valley after the construction of the Los Angeles Aqueduct. No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Rogers, Lynn, J. "Death Valley, Where Pioneers Met Death, Now is Mecca of Eager Tourists." <i>Los Angeles Times</i> .	December 30, 1934	Discussion of the Keeler area during the 1930s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Bradley, Walter, W. California Journal of Mines and Geology. Quarterly Chapter of State Mineralogist's Report. Vol. 34, No. 4.	October 1938	Geological/mineralogical study and report	Includes map depicting mines of the Owens Lake area. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Fairchild Aerial Survey, Inc. Aerial photography, Flight No. C-9135.	1940s	Aerial photography of the Owens Valley area from the 1940s	Fairchild Aerial Survey, Inc. conducted aerial photography in the Owens Valley during 1944 (flight C-9135) for the Los Angeles Department of Water and Power. There are no Fairchild air photos prior to flight C-9135 in the Owens Valley. No relevant information was identified.
"Keeler." <i>Inyo Independent</i> .	February 18, 1946	Newspaper column	Reference to a "terrific dust storm" in Darwin, CA. No information relevant to the origin or presence of the Keeler Dunes was identified. No mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Map Showing Right-of-Way on State Highway Route-IX-INY-127-C. State of California, Department of Public Works, Division of Highways.	August 1949	Road alignment documentation (IX-INY-127-C), which may have been relinquished due to blowing sand (see November 18, 2004 listing under Hancock, Paul. "Keeler Right of Way, History and Chronology." Department of Public Works, County of Inyo)	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes. No specific reason is provided for why the road alignment was proposed.
Assessors Map Book 26, pp. 23–24. County of Inyo, California.	1950	Road alignment documentation (IX-INY-127-C)	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes. No specific reason is provided for why the road alignment was proposed.
Assessors Map Book 27, p. 27. County of Inyo, California.	1950	Road alignment documentation (IX-INY-127-C)	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes. No specific reason is provided for why the road alignment was proposed.
Assessors Map Book 31, pp. 02, 05, 06, 09. County of Inyo, California.	1950	Road alignment documentation (IX-INY-127-C)	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes. No specific reason is provided for why the road alignment was proposed.
"Nonmetallics Known to World Market." Independence, California: Eastern California Museum.	n.d., ca. 1950	History of Sierra Talc & Chemical Company, Keeler, California	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

<b>Source</b>	<b>Date</b>	<b>Description</b>	<b>Summary</b>
"This is Cerro Gordo Today-a \$20,000,000 Ghost Town." <i>Los Angeles Times</i> .	March 13, 1950	Discussion of the Keeler area during the 1950s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Lowden, S. W., District Engineer. Intra-District and Departmental Correspondence. State of California, Department of Public Works, Division of Highways.	August 24, 1950	Discussion of relinquishment of a portion of existing highway for the construction of a new road (IX-Iny-127-C) crossing west of Keeler. Total length of abandoned right-of-way is 4.37 miles. (see November 18, 2004, listing under Hancock, Paul. "Keeler Right of Way, History and Chronology." Department of Public Works, County of Inyo)	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes. No specific reason is provided for why the road alignment was proposed.
Calef, Wesley. "The Salines of Southeastern California." In <i>Economic Geography</i> , Vol. 27, No. 1, pp 43-64.	January 1951	History of borate minerals; discussion of Owens Lake area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Hinds, Norman, E. A. <i>Evolution of the California Landscape</i> . Bulletin 158. San Francisco, California: State of California, Department of Natural Resources, Division of Mines.	1952	Geological/mineralogical study and report	Possible photograph of the Keeler area facing east, circa 1948. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
"Ghost Towns and a Vanishing Lake." <i>Sunset Magazine</i> .	March 1953	Discussion of the Owens Lake area during the 1950s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Pedneau, Bessie. "Letter to R. E. Millelstaedt, Public Utilities Commission." Keeler Women's Club.	April 18, 1953	Letter regarding proposed abandonment of Southern Pacific depot services in Keeler	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Geologic Map of the Owens Valley Region, California. <i>Geology of Southern California</i> . Bulletin 170. Compilation by Paul C. Bateman and C. W. Merriam. San Francisco, California: State of California, Department of Natural Resources, Division of Mines.	1954	USGS Topographic map	The Keeler area is identified as "lake beds." No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Krautter, Frances Corey. <i>The Story of Keeler, Southern Terminus of the Carson &amp; Colorado Railroad</i> . Owens Inyo Company.	n.d. ca. 1959	Local history of Keeler	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Soda Ash History of Owens Lake, 1887-1959." In <i>Mineral Information Service</i> . Vol. 12, No. 10. State of California, Department of Natural Resources, Division of Mines.	October 1959	History of soda ash operations in the Keeler area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Hart, Alan S. <i>The Story of District IX</i> . California Department of Transportation.	n.d., ca. 1960	History of District IX, California Division of Highways	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Schumacher, Genny, ed. <i>Deepest Valley: Guide to Owens Valley and its Mountain Lakes, Roadsides, and Trails</i> . The Sierra Club. Vail-Ballou Press.	1962	Geological field guide	Discussion of avoiding high winds and sand storms to prevent automobile damage (p. 25). No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
"Mapping the Owens Valley Area." <i>Mineral Information Service</i> . Vol. 17, No. 7. State of California, Department of Natural Resources, Division of Mines.	July 1964	History of mapping in the Owens Valley area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Hill, David W. <i>Inyo Skyline Road Log</i> . Bishop, California: Chalfant Press, Inc.	1965	Geological field guide	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
DeDecker, Mary. <i>Mines of the Eastern Sierra</i> . Glendale, California: La Siesta Press.	1966	History of the Keeler area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Generalized Geologic Map of the Inyo Mountains Region, California. Compiled by Donald C. Ross, from published sources and unpublished original geologic maps.	1967	Map depicting the Owens Valley area during the 1960s	Map area does not include Owens Lake or Keeler area. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
"Recreation and Other Public Uses of the City of Los Angeles Lands in the Owens Valley-Mono Basin Area." City of Los Angeles Department of Water and Power.	January 1967	Documentation of land purchases in the Owens Valley area by the City of Los Angeles	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
"Second Los Angeles Aqueduct River Project." Los Angeles, California: City of Los Angeles Department of Water and Power.	ca. 1969	Discussion of the Los Angeles Aqueduct project during the 1960s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Larsen, David. "California Town Survives Hazards of Modern Society." In <i>Las Vegas Review Journal</i> .	March 4, 1970	Discussion of the Keeler area during the 1970s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Leadabrand, Russ. "Exploring California Byways VI: Owens Valley Trips for a Day or a Weekend." Originally published in <i>Westways</i> . Automobile Club of Southern California.	1972	Discussion of the Keeler area during the 1970s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Wood, Richard Coke. <i>The Owens Valley and the Los Angeles Water Controversy</i> . Stockton, California: University of the Pacific.	1973	Local history of Owens Valley	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Earl, Guy Chaffee. <i>Enchanted Valley and Other Sketches</i> . Self-published. Glendale, California: The Arthur H. Clarke Company.	1976	Childhood recollections of the Owens Lake area during the early 20th century	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

<b>Source</b>	<b>Date</b>	<b>Description</b>	<b>Summary</b>
Matson, John O. "The Distribution of Rodents in Owens Lake Region, Inyo County, California." In <i>Contributions in Science</i> , No. 276. Los Angeles, California: Natural History Museum of Los Angeles County.	June 23, 1976	Scientific study in the Owens Lake area	Study includes Keeler area, yet only Olancha dunes are identified. No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Strong, Mary Frances. "Owens Lake Loop Trip." <i>Desert Magazine</i> .	July 1978	Discussion of the Owens Lake area during the 1970s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Pramann, Sandie. "An Ill Wind Blowing." <i>Sierra Life</i> .	n.d., circa 1985	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Gath, Eldon M. et. al. eds. <i>Geology and Mineral Wealth of the Owens Valley Region, California. Annual Field Trip Guidebook, No. 15</i> . Santa Ana, California: South Coast Geological Society, Inc.	1987	Geological field guide	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Katzenstein, Linda. "Southern Inyo Air Worst in State." <i>Inyo Register</i> .	October 2, 1987	Discussion of contemporary Keeler and air quality issues	Reference to sand dunes moving from the Keeler area across the dry bed of Owens Lake.
Cox, John D. "UC Davis Crew Working to Revive Dead Lake Bed." <i>Sacramento Bee</i> .	November 1, 1993	Discussion of contemporary Keeler and air quality issues	Discussion of using artificial dunes to mitigate air quality impacts. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Flichette, Todd. "Dust Storms Blow Away Air Standards." <i>Inyo Register</i> .	December 19, 1993	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Houghton, Samuel G. <i>A Trace of Desert Waters: The Great Basin Story</i> . Las Vegas, Nevada: University of Nevada Press.	1994	Brief history of the Carson & Colorado Railroad	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
O'Connell Family. "Keeler: the Land that God Forgot." <i>Desert Days: Living in the California Desert, 1914-1929</i> . ROC INK. Available at: Eastern California Museum, Independence, California.	1995	Discussion of the Keeler area during the 1910s-1920s	References in 1925 to sand in the Keeler area (p. 37). No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Flichette, Todd. "Planning Key to Shaping Future of Owens Lake." <i>Inyo Register</i> .	February 1, 1995	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Palazzo, Robert P. <i>Darwin, California</i> . Western Places Monograph Series. Vol. 4, No. 4. Lake Grove, Oregon.	1996	History of the Darwin area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Cone, Marla. "Owens Valley Plan Seeks L.A. Water to Curb Pollution." <i>Los Angeles Times</i> .	December 12, 1996	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Cone, Marla. "More Study of Dust Storm Curbs Urged." <i>Los Angeles Times</i> .	1997	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Brooks, Joan. <i>Desert Padre: The Life and Writings of Father John J. Crowley, 1891-1940</i> . Bishop, California: Mesquite Press.	1997	Discussion of the Owens Lake area during the 1920s through 1940s	First-hand account of dust storms in the Owens Lake area in 1934 (p. 45). No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Lukins, Julian. "Keeler Dreams of Water." <i>Inyo Register</i> .	February 25, 1997	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.



**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Fleeman, Michael. "Long Running Battle Over Owens Lake Turns to Dust." <i>The Press Democrat</i> .	August 10, 1997	Discussion of the Owens Lake area during the 1990s	Discussion of dust storms in the Keeler area. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Sharp, Robert P. and Allen F. Grazier. <i>Geology Underfoot in Death Valley and Owens Valley</i> . Missoula, Montana: Mountain Press Publishing Company.	October 1997	Geological field guide	Discussion of Olancho dunes. No relevant information was identified. There is no mention or depiction of the Keeler Dunes.
Lukins, Julian. "Keeler's History Poised to Repeat." <i>Inyo Register</i> .	November 17, 1998	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Nadeau, Remi. <i>Ghost Towns and Mining Camps of California: a History and Guide</i> . Santa Barbara, California: Crest Publishers.	1999	Historical field guide	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Nadeau, Remi. <i>The Silver Seekers</i> . Santa Barbara, California: Crest Publishers.	1999	History of mining in the Keeler area	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Ewan, Rebecca Fish. <i>A Land Between: Owens Valley, California</i> . Baltimore, Maryland: Johns Hopkins University Press.	2000	Brief history of the Keeler area	Discussion of the Keeler Dunes as viewed from State Route 190: "The road undulates with the duned terrain. Large dunes dwindle down to a scraggy beachfront where sand and saltbush are strewn about dropped out from street flows of volcanic stones and pebbles."

**TABLE 1**  
**SUMMARY OF HISTORICAL RESEARCH, *Continued***

Source	Date	Description	Summary
Hancock, Paul. "Keeler Right of Way, History and Chronology." Independence, California: County of Inyo Department of Public Works.	November 18, 2004	Contemporary history and chronology of State Route 136 right-of-way in the area between Lone Pine and Keeler	Contemporary statement that in the late 1940s, the State was having maintenance problems from blowing sand from Owens Lake, leading to the realignment of Route 136 in the 1950s. There is no mention or depiction of the Keeler Dunes.
Piper, Karen. <i>Left in the Dust: How Race and Politics Created an Environmental Tragedy in L.A.</i> New York: Palgrave Macmillan.	2006	Discussion of contemporary Keeler and air quality issues	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Nilsson, Elena, Russell Bevill, and Michael S. Kelly with contributions by Erin Dwyer. "Archaeological Inventory of the First and Second Los Angeles Aqueducts and Selected Access Roads, Kern, Inyo, and Los Angeles Counties, California." URS Corporation.	March 2006	Archaeological inventory report	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.
Pipkin, George. <i>Cartago, My Cartago: Memories of the Way it Was When I Lived at Cartago, April 1924 to October 1927.</i> Murchison Publication. Available at: Eastern California Museum, Independence, California.	2011	Reminiscences of the Owens Lake area during the 1920s	No information relevant to the origin or presence of the Keeler Dunes was identified. There is no mention or depiction of the Keeler Dunes.

## CONCLUSION

This MFR presents the results of research conducted in August and September 2011 on the history of the community of Keeler, California, and the development of the Keeler Dunes. The history of the community of Keeler is extensively documented in the historical record, yet little historical evidence was uncovered regarding the origin or historical development of the Keeler Dunes. The historical materials were reviewed for their potential to reveal information regarding the origin or historical presence of the Keeler Dunes. No located historical materials referenced the Keeler Dunes prior to the late 1980s.

Early area maps typically reference only geographical features and do not include information regarding local environmental conditions, such as the presence of dust or sand. Several maps identified the Keeler area as lake beds. A 1914 map based upon a 1912 field survey, which was included in "Mineral Resources of the Inyo and White Mountains" by Adolph Knopf, depicted the Keeler area as a series of lake beds.<sup>10</sup> The survey information collected in 1912 was used in 1918

<sup>10</sup> Knopf, Adolph. 1918. *A Geological Reconnaissance of the Inyo Range and the Eastern Slope of the Southern Sierra Nevada, California.* Department of the Interior, U.S. Geological Survey. Washington, DC: Government Printing Office.

to prepare a geological map in which the Keeler area was again identified as a “lake bed” and “alluvial cones.” The 1918 map noted the presence of soil, silt, and wind-blown sand near Independence, California, which suggests that the field surveyors would have reported similar conditions if they had existed in the Keeler area. The Keeler area was again identified as lake beds in a 1954 U.S. Geological Survey topographic map.<sup>11</sup>

Occurrences of dust or sand storms in the Owens Lake vicinity are referenced in primary sources dating from 1934, 1946, and 1962.<sup>12,13,14</sup> The presence of sand in the Keeler area during 1925 was noted in reminiscences prepared by a Keeler area family that was published in 1995.<sup>15</sup> Of the sources consulted, the earliest account that specifically refers to the Keeler Dunes is a 1987 newspaper article.<sup>16</sup> In 2000, the view of the Keeler Dunes from State Route 190 is described.<sup>17</sup> A letter from 2004 states that maintenance problems from blowing sand led to the realignment of Route 136 in the 1950s.<sup>18</sup> Period documentation regarding the 1950s realignment was located but no mention was made regarding blowing sand or other environmental conditions that may have prompted the decision to realign Route 136. Contemporary references to sand dunes in the Olancho area were located.<sup>19,20</sup> The absence of historical information that specifically references the presence or origin of the Keeler Dunes suggests that the Keeler Dunes are a recent phenomenon that developed during the late twentieth century.

Should there be any questions regarding the information contained in this MFR, please contact Ms. Marlise Fratinardo at (626) 683-3547.

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<sup>11</sup> Geologic Map of the Owens Valley Region, California. 1954. *Geology of Southern California*. Bulletin 170. Compilation by Paul C. Bateman and C. W. Merriam. San Francisco, CA: California Department of Natural Resources, Division of Mines.

<sup>12</sup> Parcher, Mary Louise and Will C. Parcher. 1934. *Dry Ditches*. Bishop, CA: Inyo Register Press.

<sup>13</sup> *Inyo Independent*. “Keeler.” 18 February 1946.

<sup>14</sup> Schumacher, Genny, ed. 1962. *Deepest Valley: Guide to Owens Valley and its Mountain Lakes, Roadsides, and Trails*. The Sierra Club. Vail-Ballou Press.

<sup>15</sup> O’Connell Family. 1995. “Keeler: the Land that God Forgot.” In *Desert Days: Living in the California Desert, 1914-1929*. ROC INK. Available at: Eastern California Museum, Independence, CA.

<sup>16</sup> Katzenstein, Linda. 2 October 1987. “Southern Inyo Air Worst in State.” In *Inyo Register*.

<sup>17</sup> Ewan, Rebecca Fish. 2000. *A Land Between: Owens Valley, California*. Baltimore, MD: Johns Hopkins University Press.

<sup>18</sup> Hancock, Paul. 18 November 2004. “Keeler Right of Way, History and Chronology.” Independence, CA: County of Inyo Department of Public Works.

<sup>19</sup> Matson, John O. 23 June 1976. “The Distribution of Rodents in Owens Lake Region, Inyo County, California.” In *Contributions in Science* 276. Los Angeles, CA: Natural History Museum of Los Angeles County.

<sup>20</sup> Sharp, Robert P. and Allen F. Grazier. October 1997. *Geology Underfoot in Death Valley and Owens Valley*. Missoula, MT: Mountain Press Publishing Company.