



## **OUTSTANDING ENVIRONMENTAL RESOURCES AND VALUES OF THE CASTLE MOUNTAINS AND PIUTE VALLEY PUBLIC LANDS, SOUTHERN NEVADA:**

A Nomination to the U. S. Bureau of Land Management (Needles Field Office) for Area of Critical Environmental Concern (ACEC) Status, Castle Mountains, Nevada

Submitted by Basin and Range Watch to:

Las Vegas Field Office, Bureau of Land Management  
4701 N Torrey Pines Drive  
Las Vegas, NV, 89130

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### **SUMMARY**

This petition nominates public lands in the Piute Valley, Castle Mountains, New York Mountains and McCullough Mountains for status as an Area of Critical Environmental Concern (ACEC). These lands are primarily located in Clark County, Nevada and are roughly 38,000 acres in extent. This nomination describes the significant environmental resources and values of these lands, and the need for special management attention. The Piute-Castle region contains an important habitat that supports a variety of rare and important species as well as important visual and cultural resources.

(See Appendix for Map)

The Castle Mountains contain a unique arid grassland community in both California and Nevada. This area contains the only stands of diverse C4 perennial grasslands west of the Colorado River, subtropical grasslands that are normally found in the Sonoran Desert uplands in Arizona and Mexico. Grass species common in this plant community flower and seed during the warm seasons of summer and fall, especially after strong monsoon rainfall events. Normally found in the Sonoran Region, and even as far east as the Great Plains, grasses such as Black grama (*Bouteloua eriopoda*), Blue grama (*B. gracilis*), Sideoats grama (*B. curtipendula*), are found in this corner of the Mojave Desert uplands, ranging into a small area of adjacent California in the Castle Mountains National Monument and Mojave National Preserve. This arid summer monsoon grassland

community grades below into diverse creosote scrub (*Larrea tridentata*) and above into Blackbrush scrub (*Coleogyne ramosissima*) and one of the world's largest Joshua tree woodlands (*Yucca brevifolia*), providing a wide diversity of habitats for reptiles, birds, and mammals.

The new ACEC would be adjacent to the existing Piute-Eldorado Area of Critical Environmental Concern which was established to protect the desert tortoise. While the upper elevations of the ACEC are too high to be good tortoise habitat, the lower eastern half would be quite suitable and protect connectivity habitat for the species. The region also contains the highest known density of golden eagles in the region. In February, 2016, President Obama signed the new Castle Mountains National Monument into law. The Monument protects 22,000 acres of public lands on the California side and is surrounded by the Mojave National Preserve, the third largest unit of the National Park system in the Continental United States. The scenic Castle Peaks are adjacent to this ACEC proposal. On the Nevada side is Walking Box Ranch, a historic cattle ranch purchased by Hollywood actors Rex and Clara Bow in 1931. In 2005, the BLM purchased the Walking Box Ranch with a grant from the Southern Nevada Public Lands Management Act. The entire region is in view of Spirit Mountain, the Place of Creation for many Colorado River Indian Tribes. The Monument Proclamation recognizes a diversity of natural values found on the Nevada side of its border, including sacred values. For example, the Proclamation states, "Views from Hart Peak encompass vast wilderness and distinctive peaks, including Spirit Mountain in Nevada, a sacred site to many Native American tribes. The remoteness of the Castle Mountains area offers visitors the chance to experience the solitude of the desert and its increasingly rare natural soundscapes and dark night skies."

The Piute-Castle region is undergoing potential development pressures for large-scale renewable energy, mining and other land uses.

The proposed Crescent Peak Wind Project would potentially build over 200 industrial-scale wind turbines on 32,000 acres and extend close to 22 miles running north/south adjacent to the California border. A large wind project would compromise the visual resources and threaten sensitive biological resources. Also needed would be several new roads and transmission lines. Specifically, the Crescent Peak Wind Project would place up to 220 wind turbines on the site. They would be 450 feet tall and have large concrete foundations. The project would create 93 miles of new roads and upgrade 16 miles of existing roads. Roads would need to be 36 feet wide to accommodate large construction equipment. Close to 20 miles of new transmission would need to be constructed to transmit energy turbines to substations. Transmission would also need to be trenched underground. New lay down areas and construction sites would be cleared. Turbines would need to be illuminated at night time with red flashing lights to comply with FAA regulations.

This proposal to preserve lands in the Piute-Castle region as an Area of Critical Environmental Concern is in response to the recent Right of Way application for the Crescent Peak Wind Project. Basin and Range Watch also joined a lawsuit against the agency over the recently canceled Searchlight Wind Project, which would have been very close to the proposed ACEC. The Searchlight Wind Project was stopped over impacts to golden eagles and desert tortoise. The Bureau of Land Management is now reviewing a Supplemental Environmental Impact Statement for the Southern Nevada Resource Management Plan. One of the main subjects for review is "renewable energy". Because this is a Land Use Plan update, we are permitted to nominate lands for consideration for an Area of Critical Environmental Concern. It is our concern and belief that any large-scale wind project built in the location will create unmitigable impacts to adjacent conservation areas, wildlife, visual resources and cultural resources. In 2014, Basin and Range Watch made a request in the original RMP review to designate the entire region "Wind Energy Free". The BLM has been telling us that a Notice of Intent for the Federal Register has been prepared for Crescent Peak Wind Project and is waiting for approval from the Washington office. While we are not sure why this has taken so long, BLM has repeatedly stated that this

will be coming up soon. This ACEC nomination is intended to be a request for the BLM to use as a conservation alternative if the Crescent Peak Wind Project EIS is released to the public.

In the Mojave Desert Ecoregional Assessment undertaken by The Nature Conservancy (Randall et al. 2010), the western part of the Piute Valley is identified as Ecologically Intact. These are defined as *“lands of high conservation value are largely undisturbed and unfragmented and support conservation targets. They buffer Ecologically Core lands and require levels of protection that will allow them to remain relatively undisturbed to preserve ecological processes and to provide viable habitat and connectivity for native animals, plants, and communities.”*

The recommended conservation objectives for Ecologically Intact lands is to: *“Promote land uses and management practices that maintain or improve landscape integrity and protect conservation targets. Promote restoration of habitat connectivity, natural vegetation communities, and ecological processes (e.g., sand transport and water-flow regimes).”*

Conserving these lands as an ACEC would promote habitat and wildlife connectivity between the Castle Mountains National Monument, Mojave National Preserve, South McCullough Wilderness, Wee Thump Joshua Tree Wilderness Area, and the Piute-Eldorado ACEC.

This ACEC nomination seeks to preserve the following resources:

### **Biological Resources:**

#### **Plants:**

The Castle Mountains present an opportunity to protect a unique grassland. The proposed site contains warm adapted C4 perennial bunchgrass grasslands on the Nevada side and are contiguous with the California side. The only stands of such grasslands west of the Colorado River are those occurring between Searchlight, Nevada, and the New York Mountains in the Mojave National Preserve, north to McCullough Range and south into Castle Mountains. East of the Colorado River, this vegetation assemblage ranges from Kingman, Arizona, to New Mexico, and southwards into Mexico. So this is a unique habitat in Nevada and California which would be threatened by a large-scale wind energy project or other conflicts.

The area is a hotbed of near-endemic and rare plants in the California and Nevada Desert, with many unusual species (see Appendix).

#### **Bighorn Sheep:**

The Nevada Department of Wildlife has identified the Castle Mountains as good habitat for bighorn sheep. The mountains present favorable topography for bighorn and provide a significant source of food. The open lower bajada near Walking Box Ranch provides good linkage habitat for bighorn as well. The region provides linkage for bighorn from the Castle Mountains to the New York and Piute Mountains.

Bighorn sheep habitat data provided by the BLM (1998) show a total of 9,497 acres of crucial desert bighorn sheep habitat and 7,491 acres of desert bighorn sheep winter range occurs within the proposed ACEC. Several bighorn sheep were seen during helicopter raptor nest surveys for the proposed Crescent Peak Wind Project site, particularly in the northern section of the site.

Intermountain areas of the desert floor that bighorn traverse between mountain ranges can be as important to the long-term viability of populations as are the mountain ranges themselves.

Alluvial fans near steep rocky terrain can provide crucial foraging habitat for bighorn sheep. For example, ewes at the end of gestation that need nutrients may come down from steep, rocky terrain looking for higher quality forage. They might use areas for only three weeks, but those three weeks are critical.

And as noted in the previous section, the Castle Mountains National Monument Proclamation describes bighorn sheep resources and values in the ACEC nomination region.

### **Gila Monster:**

Elevations up to 4,300 feet on the proposed site are habitat for the Gila monster. Its range is limited to regions that receive several inches of rain during the summer months and have mild winters and hot summers. The Gila monster spends a significant portion of its life underground and is most active during the spring. The species has been impacted by habitat loss due to urbanization, some agricultural uses and illegal collection. This reptile has a very restricted range in Southern Nevada. Thomson et al. (2016) show records of Gila monster observations and potential habitat in the Providence, Kingston, Clark, and Piute Mountains of eastern Mojave Desert regions adjacent to the proposed ACEC in Nevada. They say the New York Mountains may also hold a population.

The Gila monster is a fossorial species that is very difficult to locate. Dr. Daniel Beck of Central Washington University, who is the leading authority on the biology of helodermatid lizards had this to say about surveys:

“As you know it is extremely difficult to make accurate population estimates of Gila monsters, especially in the Mojave Desert, where they are even less frequently active than in the Sonoran Desert. Some sites in the eastern Mojave desert contain population densities of up to 20 lizards/square mile. I know of sites in southern Nevada that contain fairly high densities as well, perhaps as high as 10-15/square mile (just an estimate). High densities are associated with sites that have relatively high topographical complexity (lots of topographical relief, boulders, burrows, and potential shelters for Gila monsters). Sandy areas bordering rocky outcrops are good habitat areas. I'd advise decision makers not to assume the absence of Gila monsters based on short-term surveys” (Daniel Beck, personal communication 2009).

Populations of this species in the Mojave Desert are fringe populations and could carry unique genetic bottleneck traits that should be studied, and their habitat protected.

### **Desert Tortoise:**

The Piute Valley is important for Mojave desert tortoise (*Gopherus agassizii*), and has relatively high densities compared to other areas of the Mojave and Colorado Desert of California and Nevada. Range-wide monitoring of populations in 2016 resulted in an estimate of 4.0 tortoises per square kilometer in the Piute Valley section of the Colorado Desert Recovery Unit (U.S. Fish and Wildlife Service 2016b). This was higher than estimated density from adjacent Eldorado Valley. Some tortoise observations occurred on the western margin of the Unit, adjacent to this proposed ACEC.

Tortoises are present also within the ACEC nomination: the Plan of Development for the Crescent Peak Wind Project describes how one tortoise was observed in 2005 within the wind project site proposal. An estimated

10,143 acres of tortoise habitat may be in the wind project proposal alone, with higher elevations slightly above normal tortoise range. Yet much of the ACEC nomination may be good tortoise habitat, as delineated by the U.S. Geological Survey on their Geochange website: “Creosote bush, burrobush, mojave yucca and blackbrush generally distinguish desert tortoise habitat. At higher altitudes, Joshua tree and galleta grass (*Pleuraphis rigida*) are common plant indicators” (USGS 2016). This easily describes the plant communities of the ACEC nomination.

Habitat fragmentation from new roads and utility corridors would significantly impact desert tortoises and poses a major threat to the species. A wind project in this habitat would be a major disturbance. The proposed ACEC may be important as a buffer to Critical Habitat in Piute valley, as well as potential future habitat for tortoises if climate change impacts cause populations to move upslope.

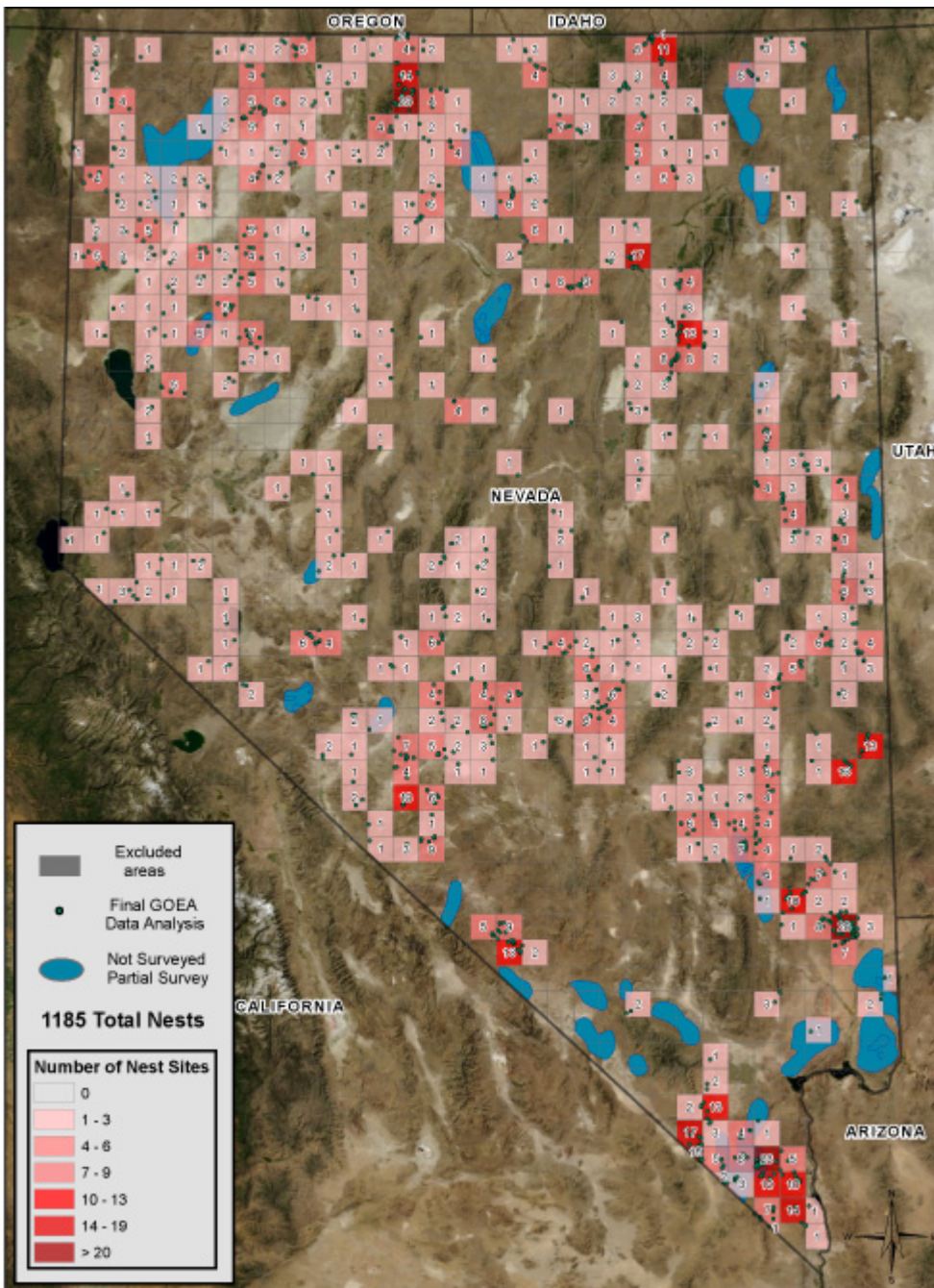
### **Golden Eagles:**

Nest surveys undertaken from 2003 to 2011 by John Boone of the Great Basin Bird Observatory and Cris Tomlinson of the Nevada Division of Wildlife (NDOW) produced a density map of golden eagle nest surveys for Nevada (Boone and Tomlinson 2014). These were aerial (helicopter) and ground surveys in an attempt to cover the whole state and fill in gaps in knowledge of where breeding territories are, so NDOW can better manage for renewable energy impacts. The region has among the highest nest density in the state (see map below). The area includes the Castle Mountains, the Searchlight Hills, the Walking Box Ranch, Spirit Mountain and most of the Piute Valley region. This area had a proposal by Apex Clean Energy to construct a large-scale wind project called Searchlight Wind, which would not have been compatible with such a dense concentration of eagle territories. Equally, the proposal to build the Crescent Peak Wind Project in the Castle Mountains would be quite problematic. Part of the reason that the Record of Decision was voided for the Searchlight Project was because 28 golden eagle nests were located within 10 miles of the proposed project site. Raptors and other birds do not see the rapid spinning tips of wind turbine blades and this has caused mortality problems with wind energy. Wind turbine blades can spin up to 175 MPH.

Golden eagle trends are stable to slowly declining across the western U.S. Boone estimated there could be approximately 3,000 breeding golden eagles in Nevada. It is believed that this region is very important to golden eagles.

The influence of energy development, particularly wind energy, taken together with other anthropogenic sources of mortality, including electrocution on power distribution lines, contaminants, collisions with vehicles, and illegal shooting, may be resulting in declining Golden Eagle populations (U.S. Fish and Wildlife Service 2016a).

Bald and Golden eagles are protected by three federal laws: The Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act and the Lacey Act. These laws prohibit the possession, use and sale of eagle feathers and parts as well as a number of other activities, including the transportation of eagles and feathers and parts that have been illegally obtained. The Eagle Act has prohibited take of Bald Eagles since 1940 and Golden Eagles since 1962. Take means pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb.



^Nevada Department of Wildlife Map shows the high concentration of eagle nests built near and within the proposed site.

**Other Birds:**

The site would be located about 20 miles from the Colorado River which is now under National Park Service jurisdiction in Lake Mead National Recreation Area. Both Lake Mead and Lake Mojave support a diversity of aquatic avian fauna, many of which migrate over the Castle Mountains.

Lakes Mead and Mohave support diverse populations of resident and migratory waterfowl, songbirds, shorebirds, passerines, and birds of prey. Cliff habitat near open water supported 52 peregrine falcons in 2008 and approximately 24 breeding territories (NPS 2015), constituting the largest population in southern Nevada

and northwestern Arizona. Lakes Mead and Mohave annually support approximately 160 wintering bald eagles, providing a significant stop along the Pacific Flyway.

The lakes are habitat for the endangered Southwestern willow flycatcher in the Virgin and Muddy River areas. Close to 400 species of migratory birds have been recorded within the Recreation Area. Shorebirds include sandpipers, plovers, ibis, and others. Marsh birds include soras and rails. Waterfowl include ducks, grebes, coots, loons, and cormorants. Wading birds include herons and egrets. Birds associated with the open water include kingfishers, swallows, and terns. Birds of prey at Lake Mead include bald eagle, osprey, hawk, and owls. Some waterbirds have been recorded using flyways across the Nevada and California Desert.

The Castle Mountains, McCullough Mountains, New York Mountains and Piute Valley to the Searchlight Hills have a unique Sonoran bird fauna that is more typical of Arizona. Gilded flickers, Harris' Hawks, and an apparently resident population of Curve-billed thrashers, are the only locations of these species in Nevada, and rarely found west of the Colorado River. The highly diverse Madrean Desert Grasslands, Joshua tree woodlands, and varied scrublands ranging from creosote scrublands to black brush, along with arid wash trees including desert willows, make this a biodiversity hotspot for birds in the region.

### **Biological Soil Crusts:**

Soil biological crust is a mix of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts and fungi. Biological soil crusts are common throughout the proposed ACEC boundaries.

Damage to intact desert soils with biotic crusts and the resulting increased siltation during flooding and dust can adversely impact desert ecosystems. Biological crusts protect the soil and hold weeds at bay. Both the Castle Mountains and the Piute Valley have a very high density of biological soil crusts compared to other areas of the Mojave Desert, and should be protected. These living soil crusts naturally sequester carbon dioxide, and thus these regions are a pool for carbon that can help offset Climate Change impacts, as long as it is not mechanically disturbed.

### **Cultural Resources:**

The Castle Mountains and Piute Valley are all in the view-scape of Spirit Mountain. Spirit Mountain and the surrounding canyons collectively have been named a Traditional Cultural Property and are listed on the National Register of Historic Places because of their significance to the Yuman speaking tribes which include Mohave, Hualapai, Yavapai, Havasupai, Quechan, Pai pai and Maricopa. Spirit Mountain and the surrounding canyons are sacred grounds for the Yuman speaking tribes of the lower Colorado River. The mountain plays a prominent role in the religion and mythology of these people. They believe the mountain (called Avikwame by the Mohave people and Wikame by the Hualapai) is the spiritual birthplace of the tribes. Spirit Mountain. Spirit Mountain is The Center of Creation for several Native American tribes including the Ft. Mojave, Havasu, and Quechen. It is also a Sacred Site to the Hopi and Chemehuevi. The Bureau of Land Management and the National Park Service have designated the region a Traditional Cultural Property and it is also listed on the National Historic Register.

The ACEC would help preserve the Cultural Landscape of the region. Any large development such as a wind energy project would be visible for over 50 miles. This would include Spirit Mountain. Cultural Landscapes in this area include Ethnographic Landscapes of heritage resources, old trails, views to Spirit Mountain, and aboriginal clan relationships to the animals, plants, and natural features. Mining and ranching history contribute to significant Historical Landscapes.

Under Section 106 of the National Historic Preservation Act, any federal undertaking that may adversely affect a historic property on or eligible for listing on, the National Register of Historic Places must consider how to avoid, minimize, or mitigate adverse effects to historic properties, including cultural landscapes. Unfortunately, these kinds of historic properties have not always been recognized or understood by federal agencies and the preservation community.

It is our understanding from personal communication with the BLM that no cultural resources surveys have been conducted for this site, but cultural resources are known to exist on the site. The north section of the site has been mined for more than 100 years, and numerous mining sites have been recorded. Some of these sites could be eligible for inclusion in the National Register for Historic Places. Historical trash scatters and prehistoric lithic scatters and sites, including rockshelters, petroglyphs, and quarry sites, are known throughout portions of the site. Additionally, it is expected that unrecorded sites exist throughout the area, especially in washes and canyons near springs and seeps. The Walking Box Ranch, is a historic cattle ranch purchased by Hollywood actors Rex and Clara Bow in 1931. In 2005, the BLM purchased the Walking Box Ranch with a grant from the Southern Nevada Public Lands Management Act. The Nature Conservancy owns two conservation easements on the Ranch property, preserving habitat for the desert tortoise. Any huge energy project next to this site would degrade natural and cultural values that have been protected by these designations.

The Bureau of Land Management could better preserve this landscape with this ACEC proposal.

#### **Visual Resources:**

The Visual Resources of the region are outstanding. To the west, just directly over the California Border, are the rugged and spectacular Castle Peaks section of the Mojave National Preserve and the recently established Castle Mountains National Monument, both of which are managed by the National Park Service for their outstanding resources.

Located just east of the proposed ACEC is the historic Walking Box Ranch. To the Northwest would be the McCullough Range, a Mojave Desert sky island wilderness area and part of the proposal. Also located to the Northwest is the Wee Thump Joshua Tree Wilderness Area on the bajada of the McCullough Range which preserves one of Nevada's most mature and spectacular Joshua tree forests. To the east is Lake Mead National Recreation Area and the small community of Searchlight, Nevada. Also to the east is Spirit Mountain, the Place of Creation for some Native American Tribes. Aside from a couple of transmission lines, the view-scape remains largely unbroken.

The ACEC should be managed to protect the scenic quality of the Joshua tree woodland in the area, which is unique within Nevada for its density and total area. The scenic qualities of the Joshua tree woodland are further enhanced by the largely natural setting. As the nomination already mentions, a couple of transmission lines and the aptly named Joshua Tree Highway are some of the only major visual distractions in an otherwise unbroken natural setting. An ACEC would empower BLM to continue to protect the unique scenic values of the region from industrial scale projects that would significantly impair the ability of visitors to enjoy the natural, scenic qualities.

The current BLM designated visual status of the proposed site is broken up into 2 Visual Resource Management (VRM) Classes – VRM Class II in the north section and VRM Class III in the south section.



The VRM Class II Objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

The VRM Class III Objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

The Crescent Peak Wind Project applicant has also acknowledged the incompatibility of its project in the region. In its Plan of Development, the applicant writes, "Since this site is currently designated as a VRM Class II area, wind development is not compatible." The applicant goes on to write that it seeks BLM to downgrade the VRM classification in order to allow its development.

We believe that the ACEC should be managed under VRM I Standards. The VRM I Class Objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

Because the region is being considered for a large-scale wind energy project, the BLM should consider the potential cumulative visual impacts that adjacent activity would have on conservation areas. Even if the proposed site were to remain under management for a lower visual class, the immense size of the project would make it visible for well over 50 miles. The turbines would have to also be illuminated at night to comply with FAA regulations. Any large wind turbines and accompanying infrastructure built on this site for example, would cumulatively degrade the view from the Castle Peaks section of the Mojave National Preserve. Equally, this would degrade the view from all directions. Accompanying gen-tie lines and new substation would also break up the wild character of the present landscape.

(See Appendix for photos)

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### **ACEC Designation and Management:**

We understand that the BLM designates ACEC's for both cultural and/or biological resources. Given the information briefly summarized herein, we strongly suggest that the new Area of Critical Environmental Concern be designated to protect both cultural *and* biological resources identified herein.

The importance of these biological and cultural resources warrants the consideration of this new ACEC as the preferred alternative in future environmental documents, which are typically associated with a given development proposal. If not the preferred alternative, it is prudent that each new Environmental Impact Statement (EIS) consider as one of its alternatives a conservation alternative that designates this proposed ACEC.

We understand that designation of a new ACEC would require development of an associated ACEC management plan, and that interested parties may provide through both public input and volunteer efforts support of such a planning effort. Herein, we extend our commitment to assist the BLM by all legal means available to help provide further baseline information and future support to complete the new ACEC management plan.

Although it would be our contention that no new large-scale renewable energy projects should occur in this ACEC, we expect that the management plan would provide standards and guidelines that would codify the level of acceptable development identified through public scoping that would minimize significant impacts to both cultural and biological resources. Mapping of the sensitive plant species and tortoise hotspots may reveal areas where conflicts would be minimized and some, albeit limited, development acceptable.

Without the added protection provided by the ACEC designation, conflicting uses could lead to declines in the numbers or ranges of rare plant and animal species and compromise important, irreplaceable cultural resources. The ACEC management provisions should be tailored to the specific needs of the plants and animals found in this new ACEC.

Prudent management prescriptions that may apply to this ACEC include: (1) Minimization or complete exclusion of renewable energy projects; (2) Withdrawal of all lands within the expanded ACEC boundary from new mineral entry excluding the Crescent Peak Mining District; (3) Acquisition of private lands from willing sellers and designation of vehicle routes; and (4) Botanical surveys for special status plants listed herein and incorporation of conservation measures for the plants and their habitat where new occurrences are identified.

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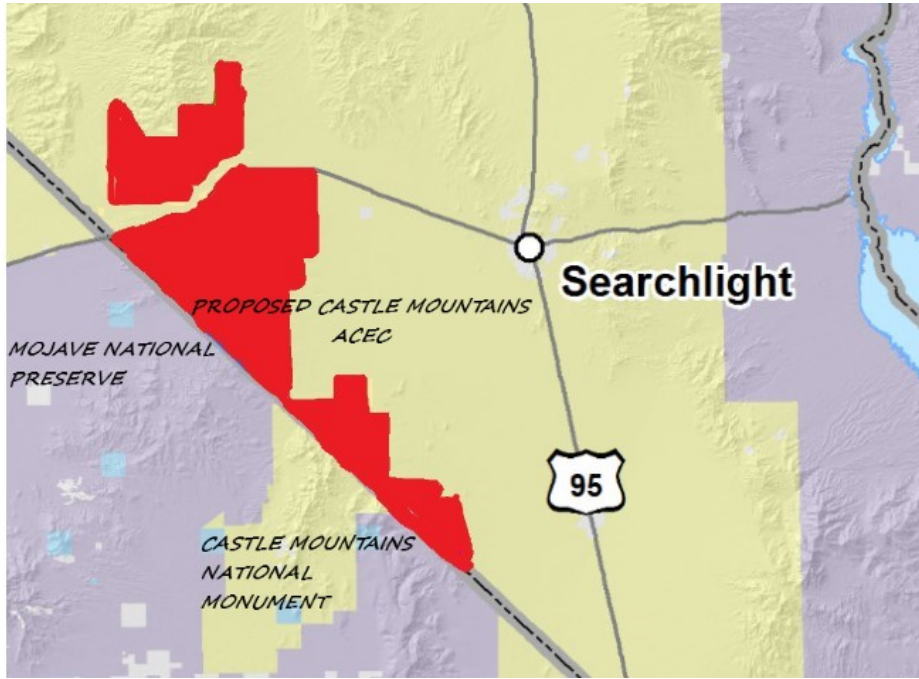
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## **Appendix**

### **Map of the Proposed ACEC:**



Here is the map of the roughly 38,000 acre proposed Castle Mountains Area of Critical Environmental Concern (ACEC) by Basin and Range Watch

## Special Status Plant Species of the Castle Mountains

Prior to floristic surveys done by Andre and Bell 5 taxa, included within the California Native Plant Society's Rare, Threatened, and Endangered Plant Inventory (CNPS 2014), were known from the Castle Mountains. After explorations were made by Andre and Bell it was found that 36 CNPS special status plant species are found here making this mountain range a hotspot for rare plant species and populations.

Near endemics: *Penstemon bicolor*, *Acmispon argyraeus* var. *multicaulis*. *Scleropogon brevifolius* in California restricted to Lanfair Valley.....

**Table #.** Special status plant species of the Castle Mountains

Family	Taxon	Rank
Pteridaceae	<i>Pellaea truncata</i>	2B.3
Apiaceae	<i>Cymopterus multinervatus</i>	2B.2
Apocynaceae	<i>Asclepias nyctaginifolia</i>	2B.1
Asteraceae	<i>Sanvitalia abertii</i>	2B.2
Asteraceae	<i>Xanthisma gracile</i>	4.3 change to 2B
Boraginaceae	<i>Cryptantha tumulosa</i>	4.3
Boraginaceae	<i>Phacelia coerulea</i>	2B.3
Cactaceae	<i>Grusonia parishii</i>	2B.2
Euphorbiaceae	<i>Chamaesyce abramsiana</i>	2B.2
Euphorbiaceae	<i>Chamaesyce revoluta</i>	4.3
Euphorbiaceae	<i>Euphorbia exstipulata</i> var. <i>exstipulata</i>	2B.1
Euphorbiaceae	<i>Tragia ramosa</i>	4.3
Fabaceae	<i>Acmispon argyraeus</i> var. <i>multicaulis</i>	1B.3
Fabaceae	<i>Astragalus nutans</i>	4.3
Linaceae	<i>Linum puberulum</i>	2B.3
Malvaceae	<i>Abutilon parvulum</i>	2B.3
Nyctaginaceae	<i>Mirabilis coccinea</i>	2B.3
Oleaceae	<i>Menadora scabra</i> var. <i>scabra</i>	2B.3
Onagraceae	<i>Oenothera caespitosa</i> ssp. <i>crinita</i>	4.2
Orobanchaceae	<i>Cordylanthus parviflorus</i>	2B.3
Plantaginaceae	<i>Penstemon bicolor</i> ssp. <i>roseus</i>	1B.1
Polemoniaceae	<i>Aliciella triodon</i>	2B.2
Polygalaceae	<i>Polygala acanthoclada</i>	2B.3
Polygonaceae	<i>Eriogonum heermannii</i> var. <i>floccosum</i>	4.3
Portulacaceae	<i>Portulaca halimoides</i>	4.2
Rubiaceae	<i>Galium proliferum</i>	2B.2

Solanaceae	<i>Physalis lobata</i>	2B.3
Verbenaceae	<i>Aloysia wrightii</i>	4.3
Zygophyllaceae	<i>Kallstroemia parviflora</i>	4.2
Alliaceae	<i>Allium nevadense</i>	2B.3
Poaceae	<i>Bouteloua eriopoda</i>	4.2
Poaceae	<i>Enneapogon desvauxii</i>	2B.2
Poaceae	<i>Muhlenbergia appressa</i>	2B.2
Poaceae	<i>Munroa squarrosa</i>	2B.2
Poaceae	<i>Panicum hirticaule</i>	2B.1
Poaceae	<i>Scleropogon brevifolius</i>	2B.3

([https://www.cnps.org/cnps/conservation/letters/drecp/201502-6\\_Flora\\_Castle\\_Mountains.pdf](https://www.cnps.org/cnps/conservation/letters/drecp/201502-6_Flora_Castle_Mountains.pdf), accessed 1-2018)

**Visual Resource Photos:**



^Castle Mountains, Nevada, Looking East



^The Castle Peaks in the Mojave National Preserve, California seen from the proposed Castle Mountains ACEC, Nevada. The unique grassland can also be seen in the photo.



^The Hart Mine Road shows the undeveloped character of the region.



^ The Castle Mountains National Monument, California, seen from the proposed Nevada ACEC. This is one of the world's most extensive Joshua tree forests.



^Castle Mountains, Nevada





^Spirit Mountain seen from the proposed ACEC



^The Castle Peaks, Mojave National Preserve seen from the proposed ACEC