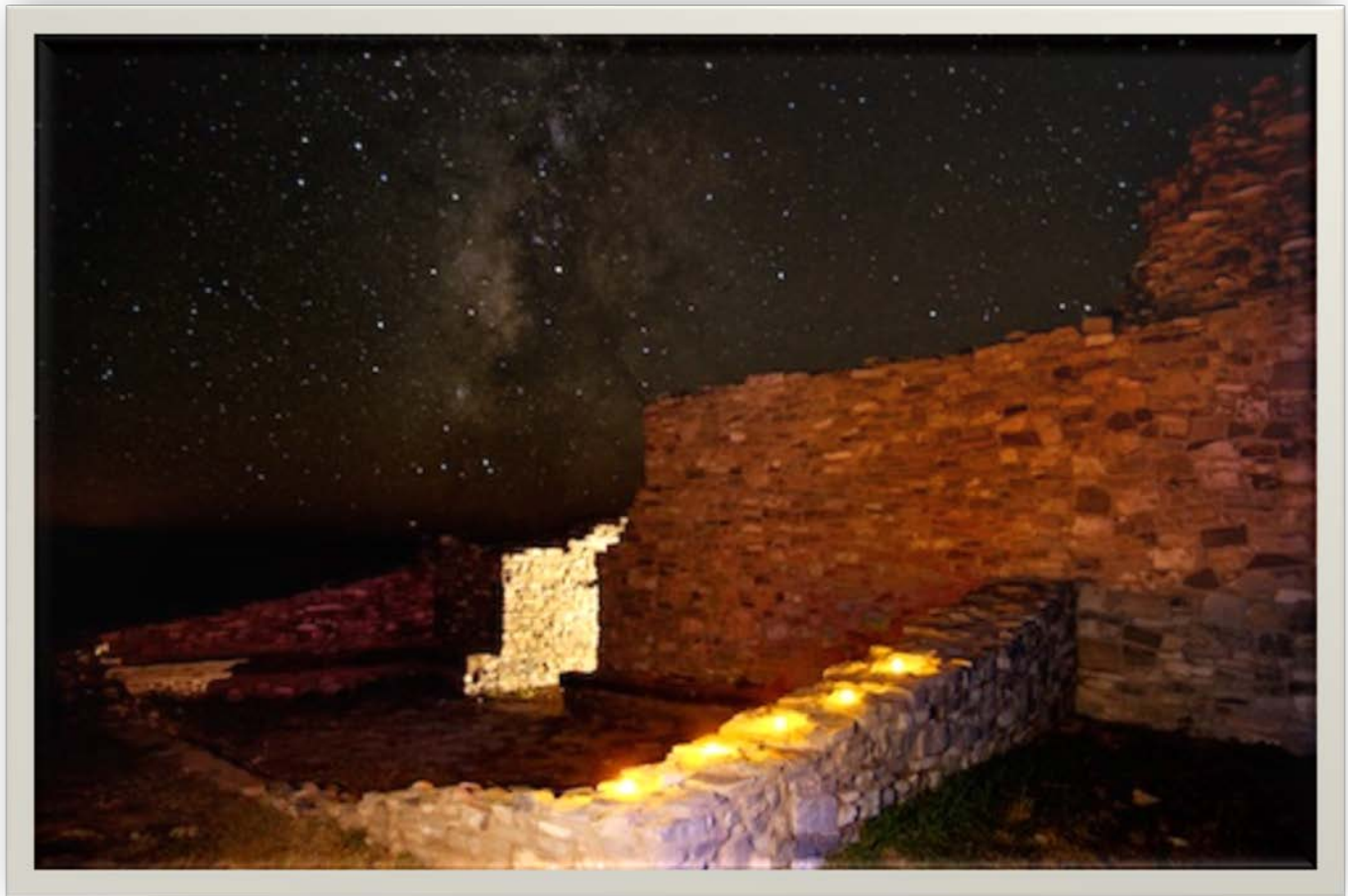




International Dark Sky Park Designation Nomination Package

August 2016



Ruins and Stars at Gran Quivira
Photo credit: David Schneider

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Salinas Pueblo Missions International Dark Sky Park Summary

Salinas Pueblo Missions National Monument is a spectacular resource that reflects the criteria desired for designation as a dark sky resource. Due to its remoteness, high elevation, distance from urbanization, dry air and clear skies, and status as a unit of the National Park System, Salinas Pueblo Missions has the ability to preserve, protect, and promote night sky values.

Night sky data recorded for the Monument indicates the sky quality is silver-tier status, as described below.

1) Philosophy: Nighttime environments that have minor impacts from light pollution and other artificial light disturbance, yet still display good quality night skies and have exemplary nighttime landscapes.

Though a major metropolitan area, as well as a few small communities, are present nearby, the Monument displays good quality night skies.

2) Artificial Light and Skyglow: Point light sources and glary lights do not dominate nighttime scene. Light domes present around horizon but do not stretch to zenith.

Due to the Monument's remote location, few light sources are visible from within the park. Light dome from Albuquerque is visible, but is obstructed by the benefit of the Manzano Mountain range.

3) Observable Sky Phenomena: Brighter sky phenomena can be regularly viewed, with fainter ones sometimes visible. Milky Way is visible in summer and winter.

The Milky Way is seen on clear nights throughout the year, as well as faint meteors and the zodiacal light.

4) Nocturnal Environment: Areas that have minor to moderate ground illumination from artificial skyglow. Lights that may cause disorientation to wildlife are distant. Disruption of ecological processes in minor with no impairment to plants or wildlife.

Again, due to the remoteness of the park, the Monument preserves a dark sky devoid of significant light. Natural processes are sustained and not impacted by light.

5) Visual Limiting Magnitude: 6.0 to 6.7 under clear skies and good conditions.

Qualified astronomers recorded visual limiting magnitude readings of between 6.38 and 6.49.

6) Bortle Sky Class: 3-5. Qualified astronomers determined the Monument is a Bortle class of 2.

7) Unihedron Sky Quality Meter: 21.74-21.00. Data collected in the Monument shows SQM readings of: Abo unit: 21.51, Quarai: 21.41, and Gran Quivira: 21.51, resulting in an overall Monument average of 21.48.



United States Department of the Interior



NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
12795 West Alameda Parkway
P.O. Box 25287
Denver, Colorado 80225-0287

IN REPLY REFER TO:
IMRO-RSS-NR (1242)

March 28, 2016

Board of Directors
International Dark-Sky Association
3223 North First Avenue
Tucson, Arizona 85719-2103

Dear IDA Board of Directors:

As an IDA member in good standing, I am writing this letter to formally nominate Salinas Pueblo Missions National Monument as an International Dark Sky Park (IDSP). It is my privilege to make this nomination for reasons described below.

Salinas Pueblo Missions National Monument (SAPU) was established to preserve outstanding examples of 17th century Spanish Franciscan mission churches and tell the stories of interactions between local Pueblo Indians and Spanish Franciscan missionaries during that time. The monument contains three large Pueblo Indian villages, three mission churches, and conventos. Citing the Gran Quivira as “one of the largest and most important of the early Spanish church ruins” as well as “numerous Indian pueblo ruins in its vicinity,” President William Howard Taft formally established Gran Quivira National Monument via Proclamation 882 on November 1, 1909. To better reflect its expanded characteristics after new units were added in 1980 and 1981, SAPU was given its current name on October 28, 1988.

SAPU’s remote location affords it outstanding opportunities for astronomical events and night skies viewing. Due to the intervening Manzano Mountains, which shelter SAPU from much of the skyglow created by the City of Albuquerque, SAPU constitutes an important dark skies viewing site for residents in central New Mexico. Deferring to the traditional native star stories which have likely been told at this site for centuries, SAPU has served in modern times as an astronomy group destination for at least the past 30 years. In recent years, SAPU has partnered with prestigious public and professional astronomy organizations in support of its annual star party.

With the support of the Intermountain Region’s Natural Resources Division, I appreciate the opportunity to serve as a member of IDA and to promote dark skies conservation within our region. I also appreciate the efforts of IDA to identify special locations where the night sky can be appreciated in its natural beauty. I fully believe that SAPU deserves recognition for its efforts to protect and promote the dark sky in central New Mexico, and I am pleased to nominate it as an

IDSP. Should you have any questions, please contact me at Randy.Stanley@nps.gov or 303-987-6890.

Sincerely,

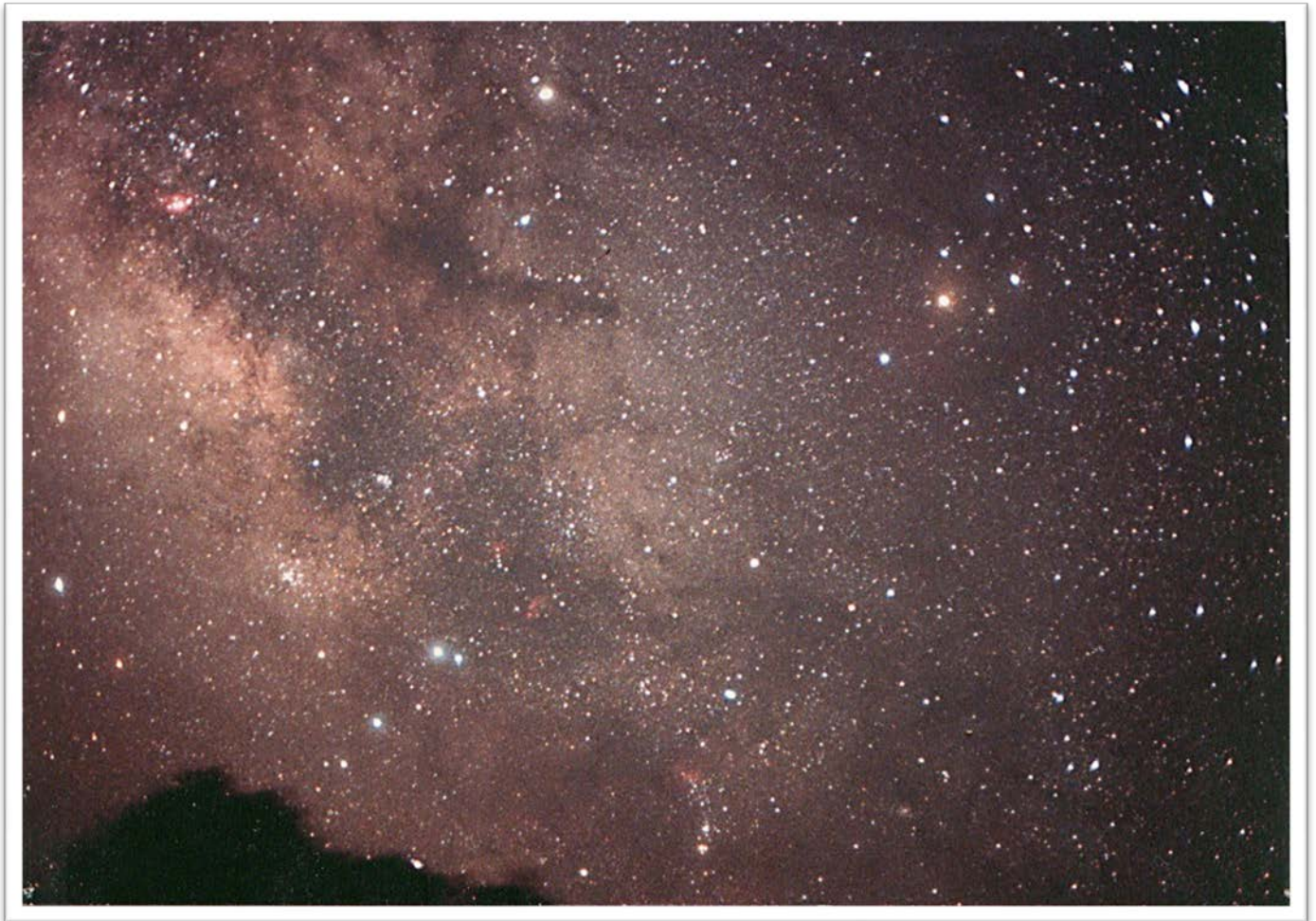
A handwritten signature in black ink, appearing to read "R. Stanley", with a stylized flourish at the end.

Randy Stanley
Natural Sounds & Night Skies Coordinator, Natural Resources Division

cc: Patrick Malone, Acting Superintendent, Salinas Pueblo Missions National Monument
David Vana-Miller, Resource Stewardship Program Manager, IMR-NR
Nathan Ament, Colorado Plateau Dark Skies Coordinator, IMR-NR

1

Description of the Monument's Night Sky Resources



Milky Way from Gran Quivira
Photo credit: Jack Kramer

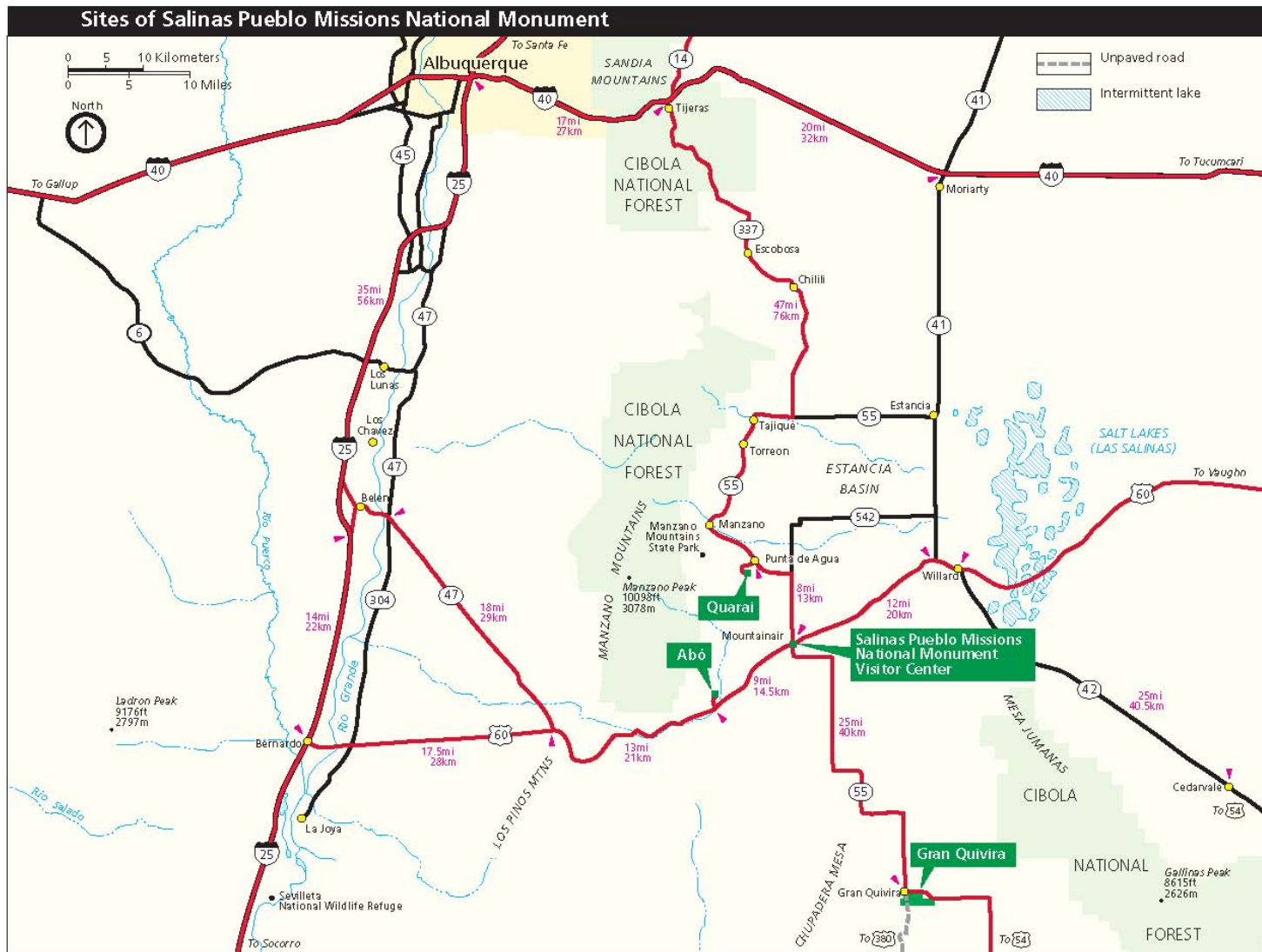
Location and Description of the Monument

The Monument is located in central New Mexico and is made up of 1,071 acres across three units: Quarai, Abó, and Gran Quivira. The Monument's headquarters and main visitor center are located in Mountainair, NM.

The Quarai unit is located eight miles north of Mountainair near Punta de Agua. It is the smallest of the three units (98 acres). Quarai sits on a red sandstone (geologically referred to as Abó Red Sandstone) outcropping covered with a juniper forest that slopes toward a tree-lined, spring-fed stream. Dense stands of chokecherries, currants, and gooseberries can be found, as well as historic apple trees. Today, Quarai consists of a prehistoric settlement, a large 17th century Tiwa pueblo, a large 17th century Spanish Franciscan mission, a small 19th century church, rancho compound, petroglyphs, and other associated sites and artifacts. Facilities include a small visitor center with a bookstore, museum, restrooms, a ½-mile ruins walking trail, and the 1-mile natural surface Spanish Corral Trail.

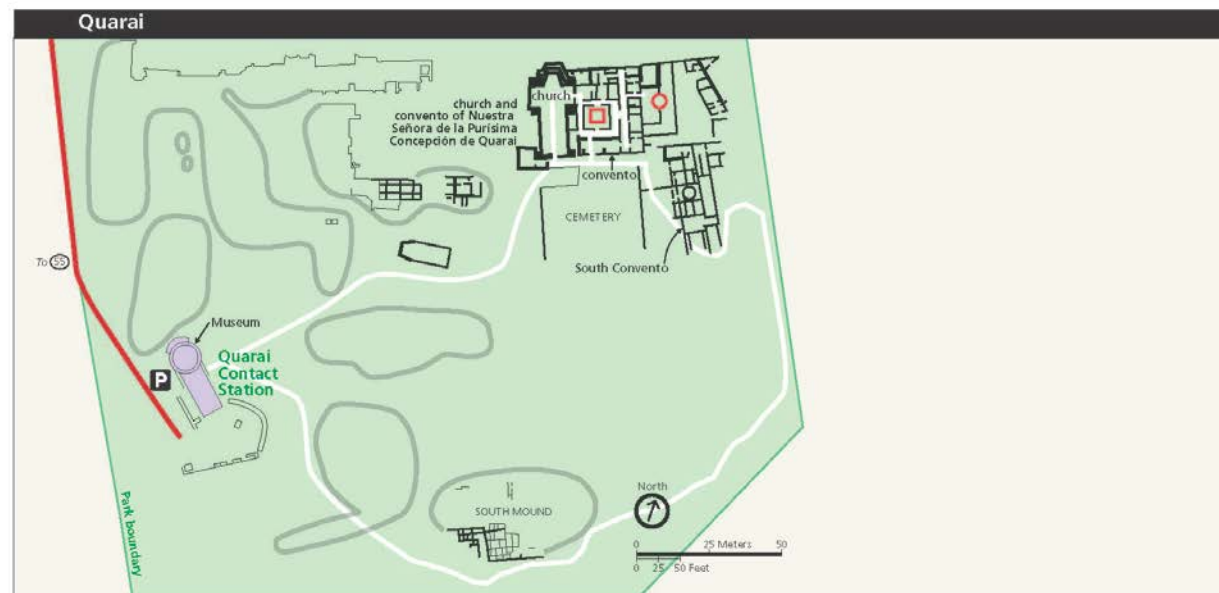
The Abó unit is 9 miles west of Mountainair and contains approximately 279 acres. Abó was built on another outcrop of the same Abó Red Sandstone as Quarai, at the southeastern base of the Manzano Mountains. Today, the unit consists of pit houses, jacales (adobe-style housing structures), prehistoric and historic pueblos, 17th century Spanish Franciscan mission structures, 19th century rancho structures, pictographs, petroglyphs, and other associated sites and artifacts. Facilities include a small visitor center with a bookstore, restrooms, and a ½-mile ruins walking trail.

The Gran Quivira unit is the largest of the three units at approximately 610 acres. It is located 25 miles south of Mountainair on rocky, gray Chupadero Mesa. Today, Gran Quivira consists of pit houses, prehistoric and historic pueblos, 17th century Spanish Franciscan mission structures, 19th and 20th century homesteads, petroglyphs, and other associated sites and artifacts. Facilities include a small visitor center with a bookstore, museum, restrooms, and a ½-mile ruins walking trail.





Map of Abo unit



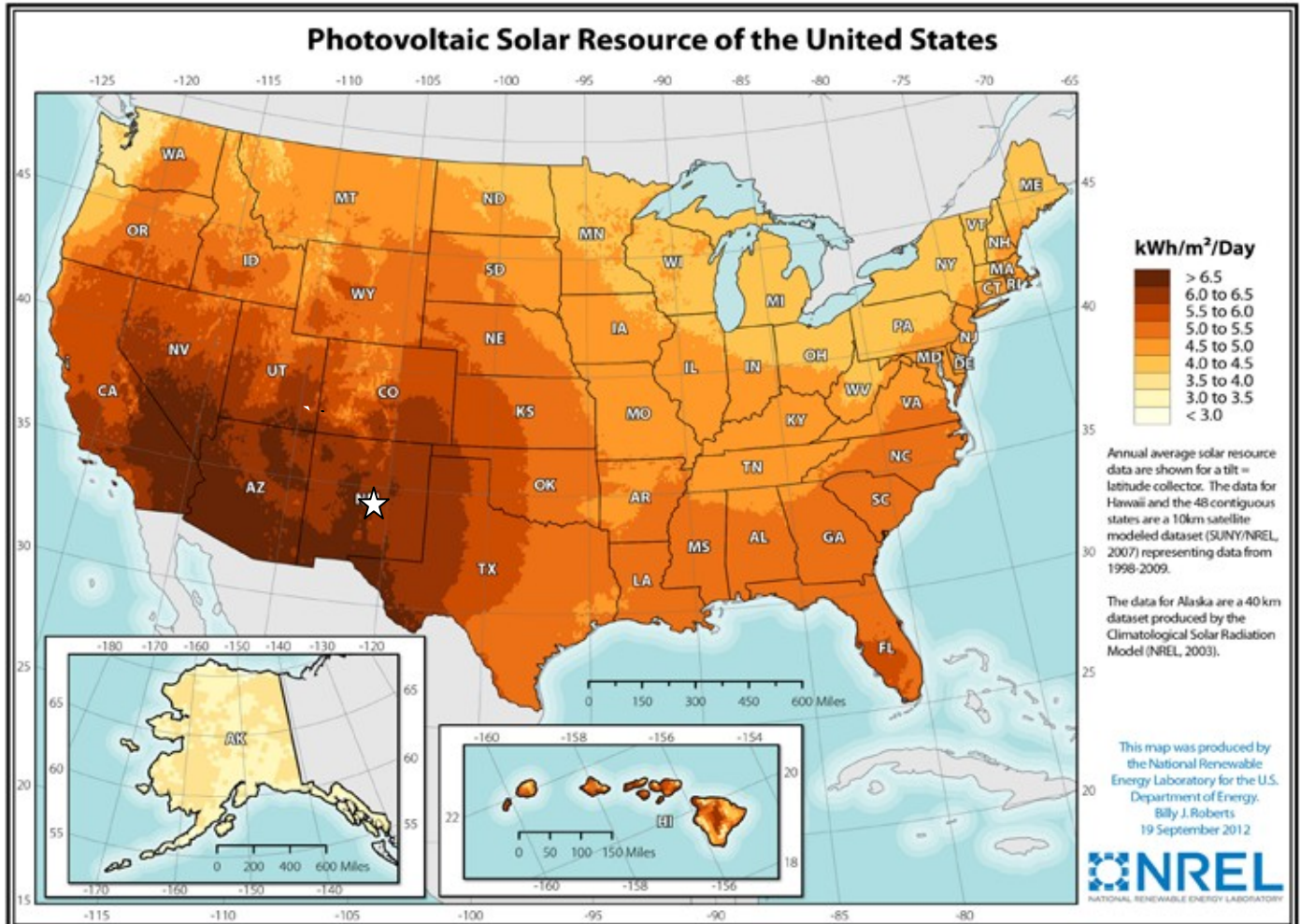
Map of Quarai unit



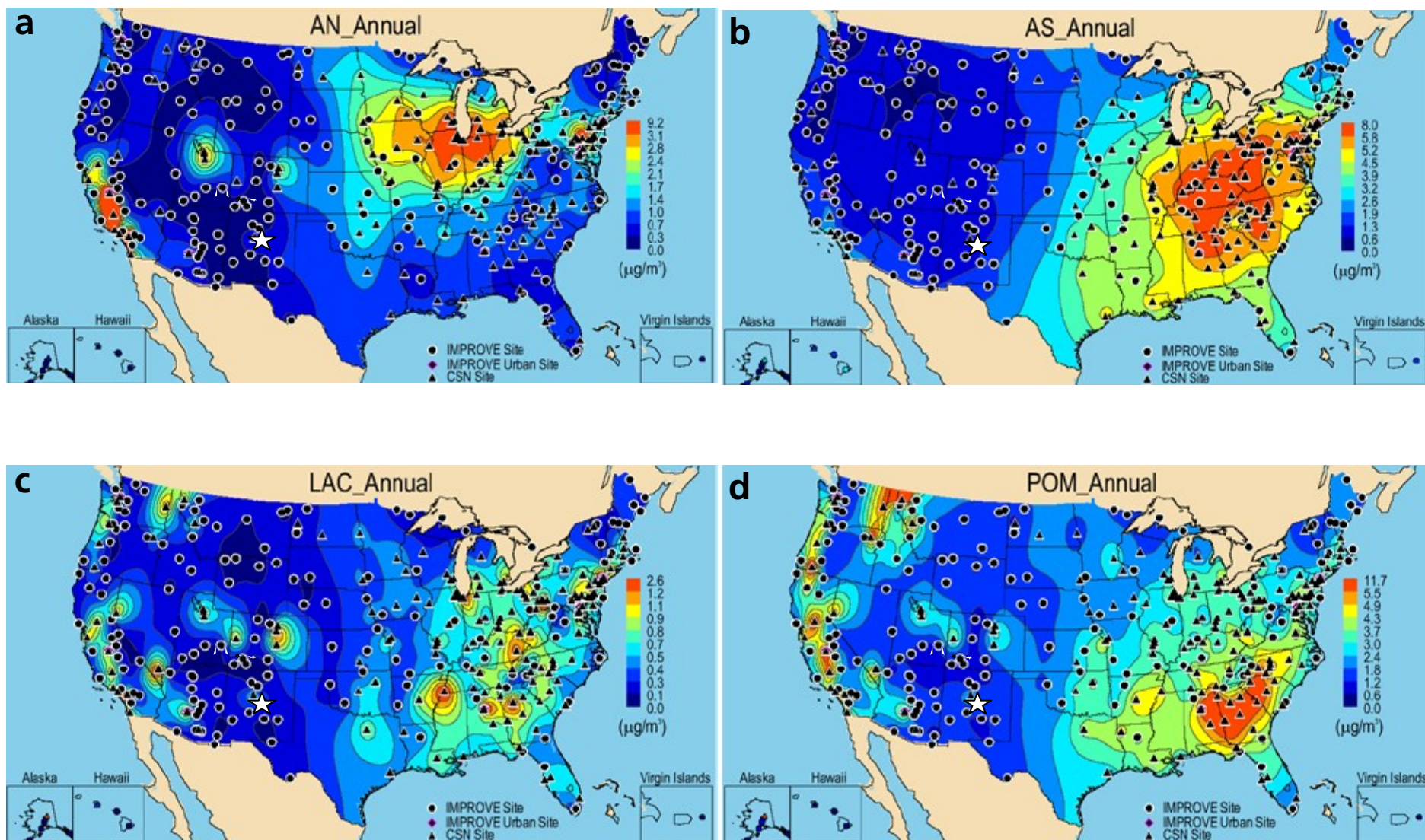
Map of Gran Quivira unit

Climate and Visibility

The Monument is located in an arid climate with annual precipitation averaging about 14 inches. Elevations average about 6,500 feet. Air quality is such that visibility is excellent. Clear nights skies are common.



Map showing insolation received as a proxy for cloud-cover. Star marks the Monument's approximate location. Source: www.nrel.gov



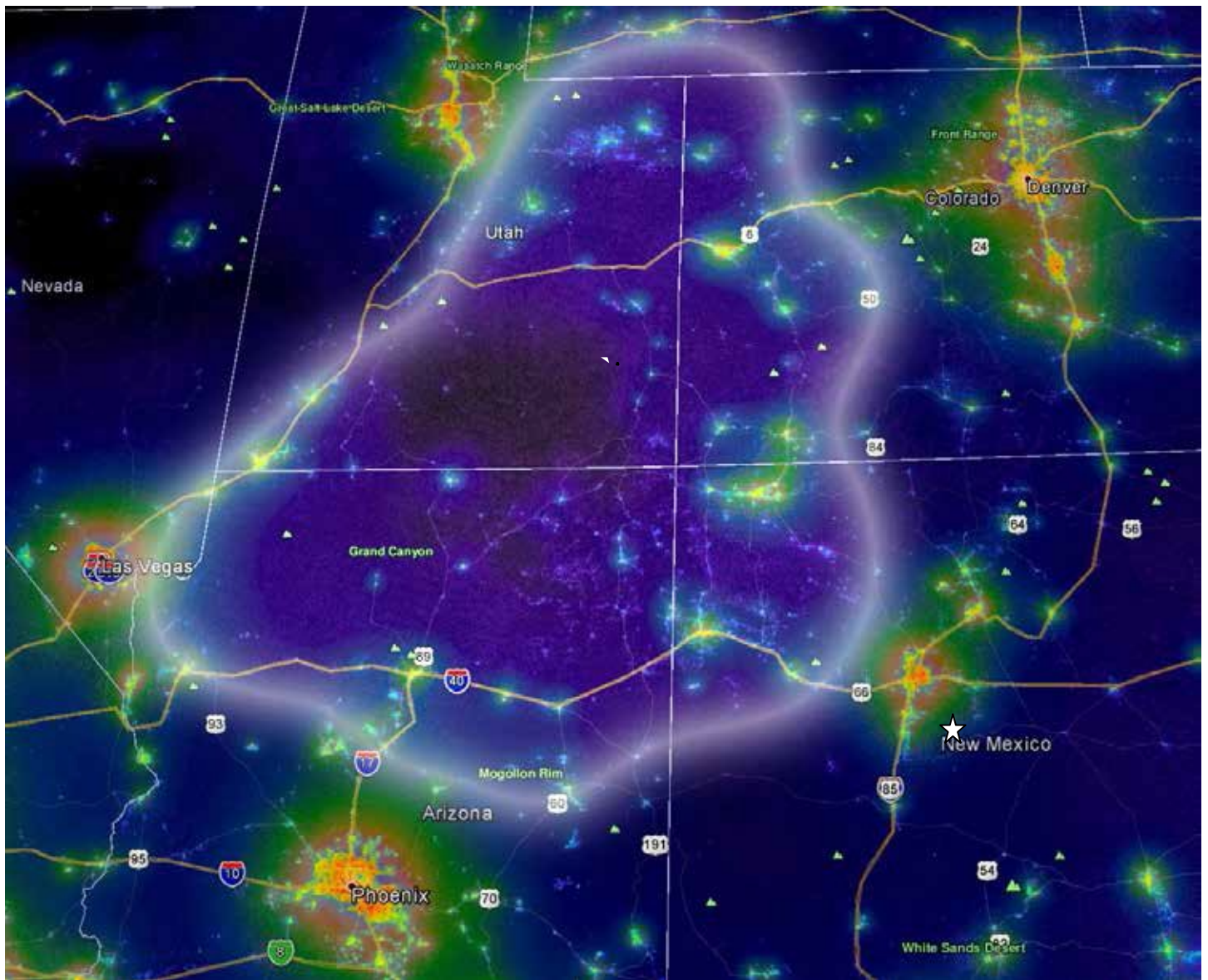
Contour maps of various constituents of air pollution that impact visual clarity of the atmosphere. (a) Ammonium Nitrate, (b) Ammonium Sulphate, (c) Light absorbing carbon, (d) Particulate Organic Matter. Data provided by the Interagency Monitoring of Protected Visual Environments (IMPROVE) network. Annual mean mass concentrations for measurements taken between 2005-2008 ($\mu\text{g m}^{-3}$). Adapted from Hand, et. al 2011. Star marks the approximate location of Salinas Pueblo Missions NM.

Isolation from Light Pollution

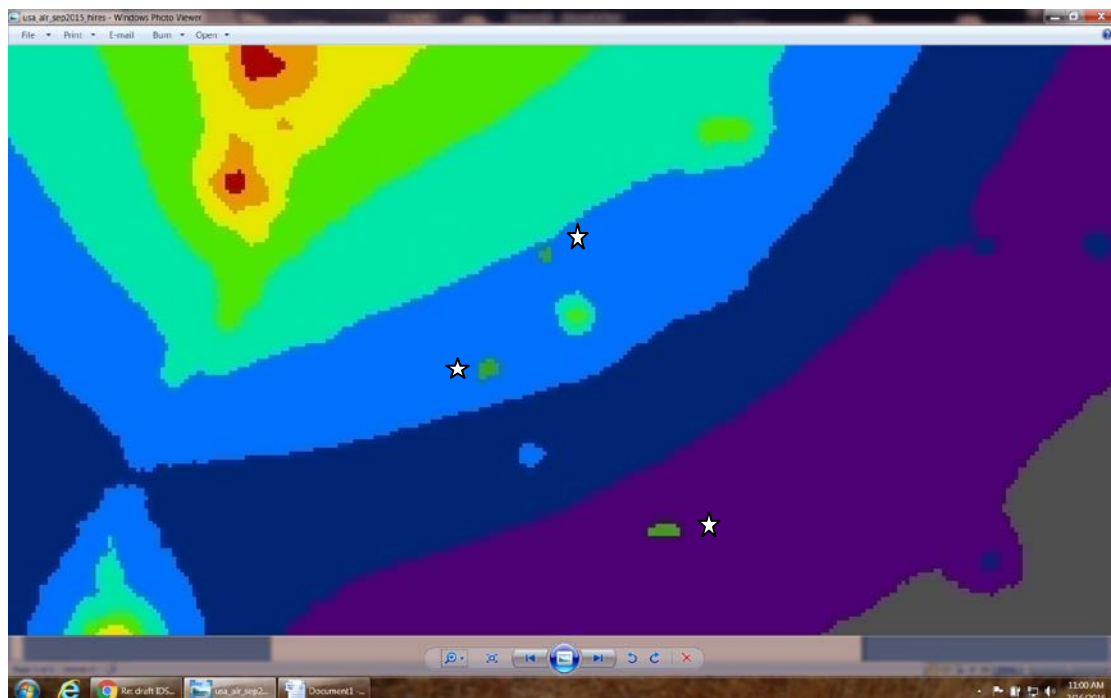
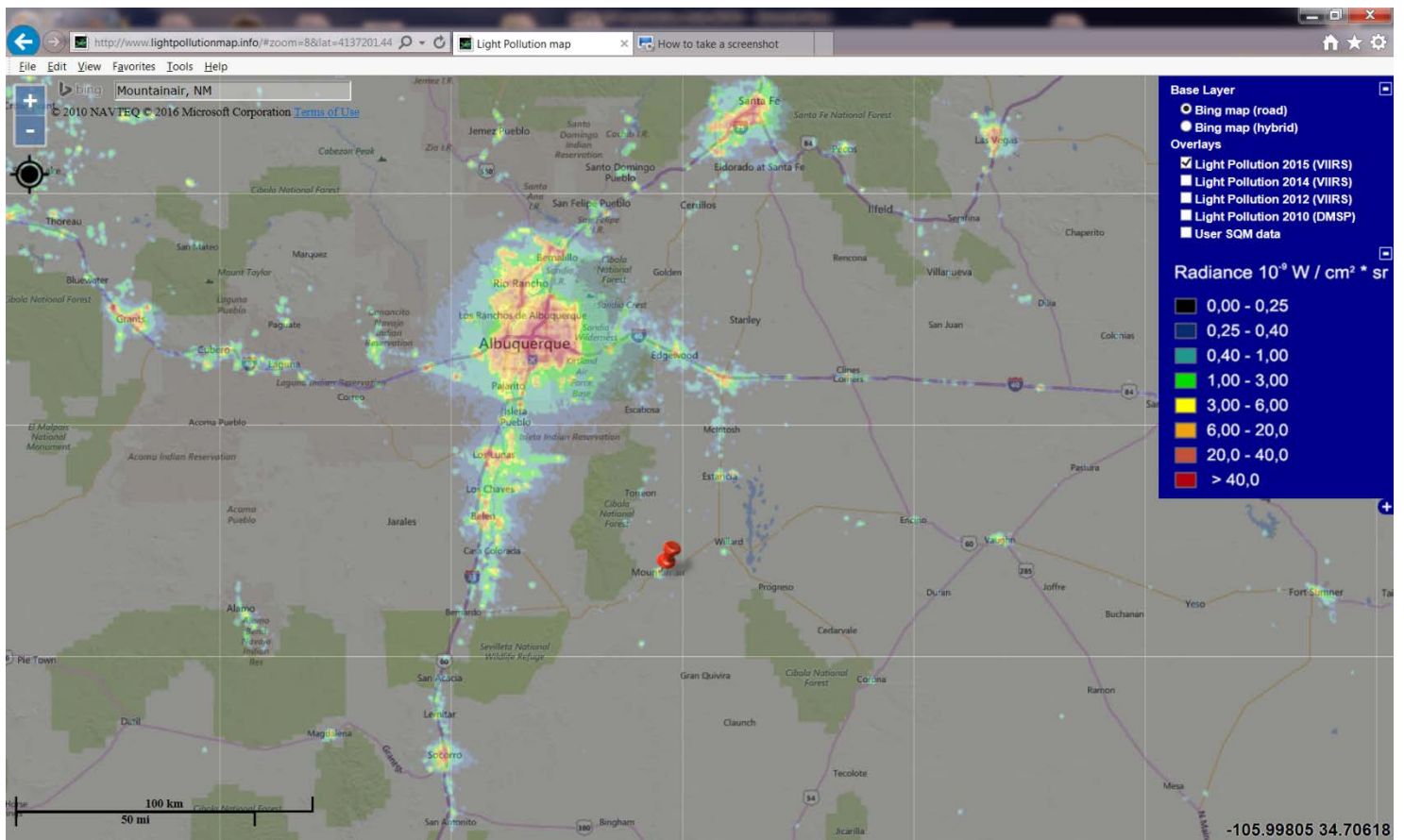
Light pollution limits the visibility of the Milky Way to the unaided eye, the visibility of nebulae and galaxies seen in telescopes, and raises the noise on CCD astrophotographs. Only the observation of planets and double stars is unaffected. Low light pollution conditions, or dark skies, are one of the most important properties of a good astronomical observing site.

The Monument is located in the Estancia basin, which is a bowl that is flanked by mountains and mesas. The Manzano Mountains to the west block much of the light pollution and sky glow generated from Albuquerque and development along the I-25 corridor. Views and night sky conditions at the three units of the park are very high quality and impressive. Gran Quivira offers the best views, with a nearly unobstructed 360 degree view and the ability to see distant mountain ranges up to 100 miles away.

Salinas Pueblo Missions National Monument is located in a rural area. The Monument headquarters is in Mountainair (population 895). Nearby towns include Willard (12 miles east; population 240) and Estancia (25 miles northwest; population 1,612). Bernardo and Belen are located some 50 miles west on the other side of the Manzano Mountains, and Albuquerque is 75 miles to the northwest. The Monument and its immediate environs produce very little light pollution of their own, with only minimal measurable amounts from certain parts of the park.



Outline of Colorado Plateau with light pollution sources. Star marks the approximate location of Salinas Pueblo Missions NM.
NPS Night Skies Team Anthropogenic Light Ratio Continental Model (2014)



Assessment of the Monument's Sky Quality

Introduction and Methods

Sky quality data were collected by Monument staff during April 2016 using a Unihedron Sky Quality Meter (SQM) (magnitudes per square arcsecond). Measurements were taken in a variety of locations across the three units of the Monument at a total of 12 sites. Readings were taken using a SQM and SQM-L. The median values (in **bold** and shaded) were averaged to produce a representative SQM value for each unit of the Monument. The SQM values for three units were then averaged to provide an overall value for the Monument.

Results

Abo						
Site	SQM Reading # 1	SQM Reading # 2	SQM Reading # 3	SQM-L Reading # 1	SQM-L Reading # 2	SQM-L Reading # 3
VC parking lot	21.46	21.49	21.53	21.35	21.35	21.36
Loop trail (near departure to petroglyph site)	21.55	21.55	21.54	21.38	21.36	21.34
Loop trail (northernmost location)	21.46	21.45	21.43	21.38	21.36	21.32
Church	21.57	21.51	21.56	21.44	21.45	21.43

Recorded 4/6/16, 21:00-21:30; clear, no wind.

Quarai						
Site	SQM Reading # 1	SQM Reading # 2	SQM Reading # 3	SQM-L Reading # 1	SQM-L Reading # 2	SQM-L Reading # 3
VC parking lot	21.34	21.29	21.29	21.24	21.18	21.23
Loop trail (at bridge intersection)	21.45	21.48	21.49	21.23	21.22	21.21
Spanish Corral Trail (at bench)	21.35	21.28	21.25	21.23	21.19	21.17
Church	21.57	21.57	21.60	21.39	21.38	21.40

Recorded 4/5/16, 21:00-21:40; clear at first, light wind with stronger gusts, clouding later.

Gran Quivira						
Site	SQM Reading # 1	SQM Reading # 2	SQM Reading # 3	SQM-L Reading # 1	SQM-L Reading # 2	SQM-L Reading # 3
VC parking lot	21.57	21.53	21.56	21.45	21.44	21.42
Mound 7	21.47	21.47	21.47	21.41	21.39	21.38
Church	21.49	21.49	21.49	21.44	21.43	21.43
Employee housing area	21.53	21.53	21.54	21.44	21.43	21.44

Recorded 4/4/16, 21:15-21:45; clear, little to no wind.

Data Summary

Unit	SQM average
Abo	21.51
Quarai	21.41
Gran Quivira	21.51

Total **Monument** average = **21.48** magnitudes per square arcsecond

Other Assessments

Members of the Lake County Astronomical Society (LCAS) (Lake County, IL) have been stargazing at the Monument since 1986. They have assisted with the Monument's annual star party since 2009.

In 2011 LCAS member John Smith recorded the following data at Gran Quivira (Smith 2016):

Date	SQM median	Visual limiting magnitude	SQM-L median	Visual limiting magnitude	Conditions
4/29/2011	21.67	6.47	21.71	6.49	Clear sky; no Milky Way
4/30/2011			21.50	6.38	Clear sky; Milky Way low, 20-30 degrees up
5/2/2011	21.69	6.48	21.73	6.49	Clear sky; no Milky Way

Note - The higher values documented in 2011 may be attributed to better viewing conditions; there has been no development in the area that would have degraded the night sky quality.

John Smith rated the skies at Gran Quivira as a Bortle class 2 rating.

Long Term Monitoring

The Monument's management team and staff are committed to collecting long-term sky quality measurements and photo documentation.

The Monument owns two Unihedron Sky Quality Meters and has created a data collection form to support long-term data collection and reporting. Staff will collect data at each of the Monument units at least once per year. The park will also collect photo data once per year from one or more locations, in partnership with visiting astronomers.

Visitor Experience

Night Sky Interpretation at Salinas Pueblo Missions National Monument

Salinas Pueblo Missions National Monument is a day-use park with operating hours of 9:00am-5:00pm. No NPS staff are present on-site after hours at the three Monument units. Nighttime public access is provided through regularly scheduled night sky events and programs.

The solitude, remoteness, and arid landscapes of Salinas Pueblo Missions National Monument make it an ideal place for stargazers, amateur astronomers, and astrophotographers. The Monument is dedicated to enhancing these experiences for visitors, using interpretation and public education to increase awareness and heighten visitor connection to the night sky. The Monument conducts at least four night sky events per year.

Typical night sky programming includes:

- Annual star party at Gran Quivira, in partnership with Lake County Astronomical Society, Magdalena Ridge Observatory, New Mexico Tech, and the Very Large Array (VLA)/National Radio Astronomy Observatory.
- Night sky interpretive programs at Abo and Quarai.
- Occasional interpretive talks and telescope viewing opportunities using volunteers.
- Promoting youth involvement in astronomy through presentations at local elementary schools and via the Night Sky Junior Ranger booklet.
- A poster displayed in each of the Monument's four visitor centers discussing dark skies and the prevention of light pollution.
- Information on the Monument's website about the importance of night skies.
- Sales items at the Monument's bookstores that promote night sky protection and interpretation.

Press releases and event invitations are sent to media and other contacts in Albuquerque, Santa Fe, Socorro, and Belen; the Monument's mailing list; and are posted on the Monument's website as well as other organization's websites (New Mexico True, Chamber of Commerce, etc.).

Event Schedule

Public night sky events held during the one-year period prior to application (July 2015-July 2016) included:

- July 17, 2015: Evening fireside program at Manzano State Park
- October 10, 2015: Gran Quivira Star Party
- May 21, 2016: Full moon (blue moon) program and tour of the Abo ruins
- June 20, 2016: Full moon summer solstice at Quarai

As part of the lighting project implemented at the park, meetings (open to and attended by the public) were conducted with the Town of Mountainair Town Council on May 3, 2016; the Manzano Mountain Arts Council on May 10, 2016; and the Mountainair Chamber of Commerce on May 11, 2016.

Public night sky events scheduled for the remainder of the federal fiscal year (FY16) from August 2016 to September 2016 include:

- August 2, 2016: Stargazing (new moon) at Gran Quivira.
- August 12, 2016: Perseid Meteor shower viewing at Gran Quivira.

- September 30, 2016: Gran Quivira Star Party

Event flyers are presented as examples on the next several pages.

Future Plans

Future plans for night sky programming include:

- Collaborate with Manzano Mountains State Park to offer night sky programs at Quarai and at the state park, and encourage them to adopt night sky-friendly lighting practices.
- Partner with The Albuquerque Astronomical Society on astronomy programs and events.
- Partner with the Manzano Mountain Art Council on arts programs related to the area's night skies.

Salinas Pueblo Missions

National Park Service
U.S. Department of the Interior

Salinas Pueblo Missions
National Monument



Gran Quivira Star Party

Friday, November 25, 2011

beginning at 4:45 pm

A fun and educational guided night sky viewing opportunity with astronomers and telescopes provided.

Much of our modern world veils the night sky with glare from artificial light, but the same exquisitely visible night sky viewed by the Ancients can still be enjoyed at Gran Quivira.



We recommend that you come early to view the ruins and museum before the Star Party. With easy to follow signs, Gran Quivira is located 25 miles South of Mountainair on NM Highway 55 at mile-marker 37. It will be a cold night, so a warm coat, gloves and hat will be minimum attire, with multiple layers recommended. Hand-warmers and thermoses with warm drinks are also recommended. Bring binoculars if you have them.

Depending on participant interest, the Star Party should be concluded by 10:00 pm.

This presentation is free in partnership with the Very Large Array/NRAO, New Mexico Tech and the Magdalena Ridge Observatory.

For more information, contact Salinas Pueblo Missions National Monument at (505) 847-2585, or visit the park website at

www.nps.gov/sapu.



FREE

FREE

EXPERIENCE YOUR AMERICA™

The National Park Service cares for special places saved by the American people so that all may experience our heritage.



Join us for the Full Moon on May 21, 2016 at Abó Ruins.



It will be a “Night of Legends” with:

- Rock Art Tour 6-7:30 pm
- Ruins Tour with Full Moon Rising
Photography 7:30-8:30 pm
- Campfire Program 8:30-9:30 pm

**National Park Service
Salinas Pueblo Missions National Monument**



Celebrate Summer Solstice with us at the Quarai Ruins on June 20, 2016 when Quarai will have extended hours (open from 5am-9pm).



Our early opening provides a special opportunity for sunrise photography. Join a Ranger for either an early morning or evening nature walk (morning walks leave the visitor center at 6:00 and 10:00 am; evening walk leaves the visitor center at 7pm).
For more information call Bethany Burnett at 505 847 2770



Gran Quivira Star Party Series Part 2:
Perseid Meteor Shower
Friday, August 12, 2016
Extended hours: 9am-midnight



With its 360 degree views and dark skies, the Gran Quivira Ruins will provide a spectacular backdrop for viewing the Perseid Meteor Shower. This year, the Perseids will be in “outburst,” meaning that the meteors will appear at double the normal rates (we could see 150 and possibly even 200 meteors per hour). Don’t miss this amazing evening!

- Sunset Missions Tour (meet at the GQ Visitor Center at 7pm)
- Perseid Program (9pm at the GQ Visitor Center)
- Telescopes

For more information, call Bethany Burnett at 505-847-2770

2 Lighting



Ruins and Stars at Gran Quivira
Photo credit: David Schneider

Overview

Salinas Pueblo Missions National Monument is a day-use park with operating hours of 9:00am-5:00pm. The three sites are situated in rural areas with adjacent residential development (large lot/ranches). No NPS staff are present on-site after hours at the three Monument units. Therefore, nighttime outdoor lighting is used for securing the Monument property, but all outdoor lights are motion sensor activated. Occasionally (4-6 times per year), the park is open after dark for special programs, primarily astronomy programs.

Security of the Monument is important, but we are also trying to protect and promote dark night skies by having all after-hours nighttime outdoor lighting on motion sensors. The majority of the Monument contains no artificial lighting. To this end, the three units of the Monument have artificial light only where deemed necessary. Outdoor lights are located at the visitor centers at each of the three units, and at the employee housing area at Gran Quivira. Outdoor lights are triggered by motion that is detected and allows NPS staff or emergency responders to know when people are in the Monument after it is closed.

Total Lights in the Monument	Lights in Compliance with LMP	Lights not in Compliance with LMP
19	19 (100%)	0

Lighting Inventory

This lighting inventory was completed by Monument staff in March 2016 and is organized by the three units of the monument (see tables that follow). “Before” and “after” photos of the lighting fixtures are included and illustrate the results of the lighting improvements made in the Monument (described below). All outdoor lights (a total of 19) in the Monument are dark sky compliant fixtures.

Restoration Project

After the lighting inventory was completed in March 2016, the Monument staff met to evaluate the results and discuss potential changes and mitigation measures. Experts with the NPS Colorado Plateau Dark Sky Cooperative and the International Dark-Sky Association were consulted in the selection of new lighting fixtures. In May 2016 seventeen (17) light fixtures were replaced with a dark sky compliant fixture (including installing fully-shielded fixtures with more energy efficient bulbs). Two (2) lights were removed because they were determined unnecessary; and two (2) new lights were added. This project, at a cost of \$3,000, brought all nineteen (19) of the Monument’s outdoor lights (100%) in compliance with the Monument’s LMP and resulted in an improvement of the Monument’s night sky quality.





This lighting project is publicly visible and is highlighted and interpreted to the public as part of our night sky programs. In addition, the results of the night sky quality inventory were shared with the Town of Mountainair Town Council (May 3, 2016), the Manzano Mountain Art Council (May 10, 2016), and the Mountainair Chamber of Commerce (May 11, 2016), and the conservation of dark night skies were, and will continue to be, discussed with these groups.

This “restoration project” meets the criteria included in the IDA Dark Sky Park Designation Guidelines as follows:

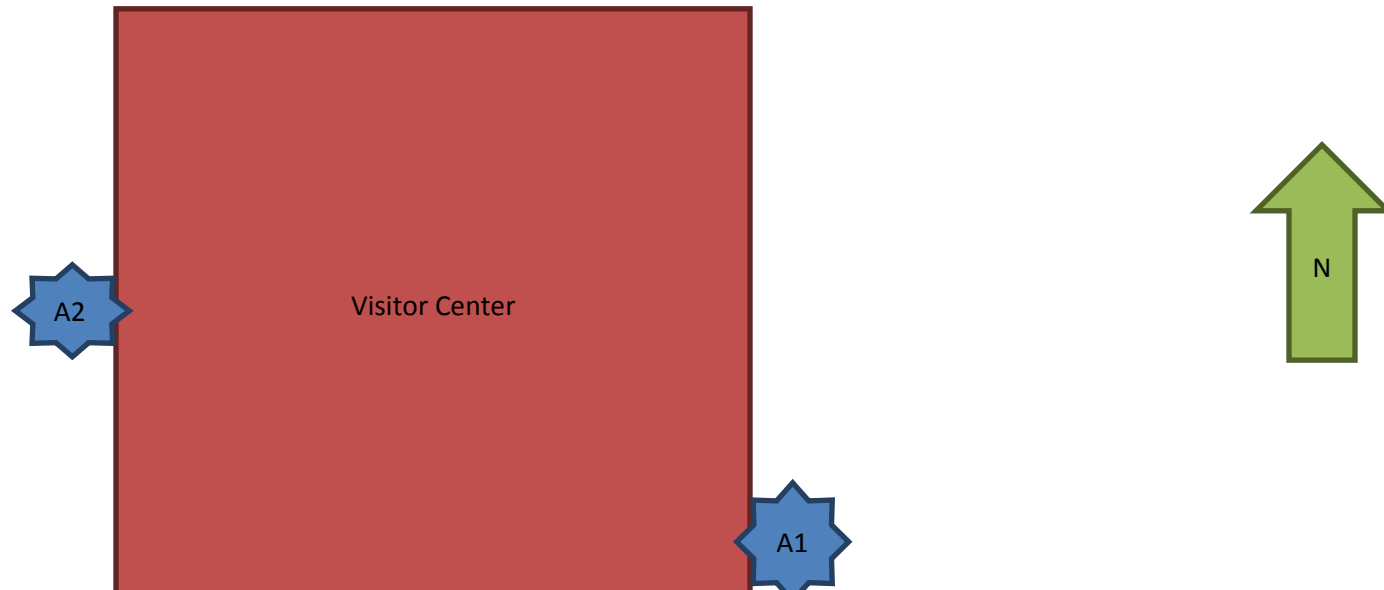
- Criteria 1: A Monument-wide lighting retrofit project was completed, is publicly visible, and is interpreted by NPS park guides at the sites.
- Criteria 2: The lighting retrofit project included three external partners (Town of Mountainair, Mountainair Chamber of Commerce, and Manzano Mountains Art Council).
- Criteria 4: The results of the night sky quality assessment were shared with the above-named partners and the public was educated through this process.

Night sky darkness and the quality of night sky public programming are not adversely affected by the new outdoor lights. Although the lights include motions sensors, the distance of the lights to the location of public activities is such that the lights are not triggered. The lights can also be fully disabled if necessary.





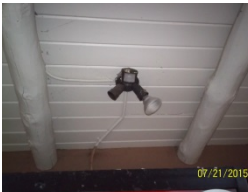


Abo Lighting Inventory

Location	Light Ref. #	Photo - BEFORE	Photo - AFTER (current, existing lights)	Fixture Description	Application	Fully-Shielded?	Type (Motion sensor, dusk to dawn)	Special Purpose (<500 lumens)?	Conforms with LMP?
Visitor Center	A1			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	East side After-hours security	Yes	Motion Sensor	No	Yes
	A2			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	West side After-hours security	Yes	Motion Sensor	No	Yes

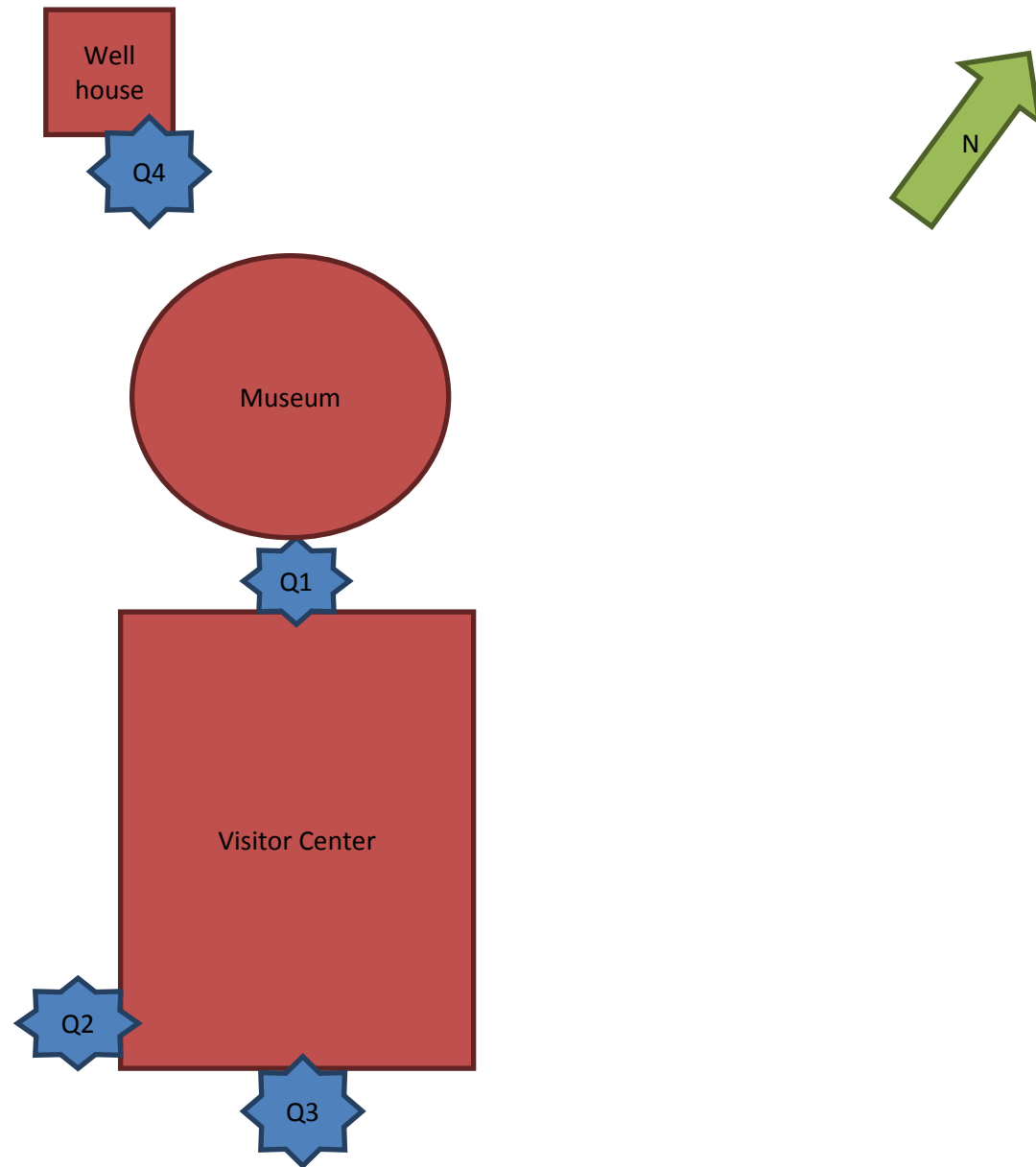
Location of Lighting at Abo










Quarai Lighting Inventory

Location	Light Ref. #	Photo - BEFORE	Photo - AFTER (current, existing lights)	Fixture Description	Application	Fully-Shielded?	Type (Motion sensor, dusk to dawn)	Special Purpose (<500 lumens)?	Conforms with LMP?
Visitor Center	Q1			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	North side After-hours security	Yes	Motion Sensor	No	Yes
	Q2			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	West side After-hours security	Yes	Motion Sensor	No	Yes
	Q3			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	South side After-hours security	Yes	Motion sensor	No	Yes
Well House	Q4	n/a (new fixture)		Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	South side After-hours security	Yes	Motion sensor	No	Yes

Location of Lighting at Quarai

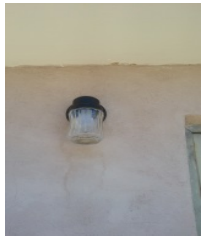



Gran Quivira Lighting Inventory

Location	Light Ref. #	Photo - BEFORE	Photo - AFTER (current, existing lights)	Fixture Description	Application	Fully-Shielded?	Type (Motion sensor, dusk to dawn)	Special Purpose (<500 lumens)?	Conforms with LMP?
Visitor Center	GQ1			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	West side After-hours security	Yes	Motion sensor	No	Yes
	GQ2			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	North side After-hours security	Yes	Motion sensor	No	Yes
	GQ3			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	East side After-hours security	Yes	Motion sensor	No	Yes
	GQ4			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	South side After-hours security	Yes	Motion sensor	No	Yes

									
Restroom	GQ5			Halo RL56 Series, recessed LED baffle-trim with motion sensor accessory (9.4 watts; 600 lumens; 3000K)	West side Overhead entry light	Yes	Motion sensor	No	Yes
Employee Housing Area	GQ6 RES 12			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	North side Front door entry light	Yes	Motion sensor	No	Yes
	GQ7 RES 12			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	North side After-hours security	Yes	Motion Sensor	No	Yes
	GQ8 RES 12			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	South side Back door entry light	Yes	Motion sensor	No	Yes

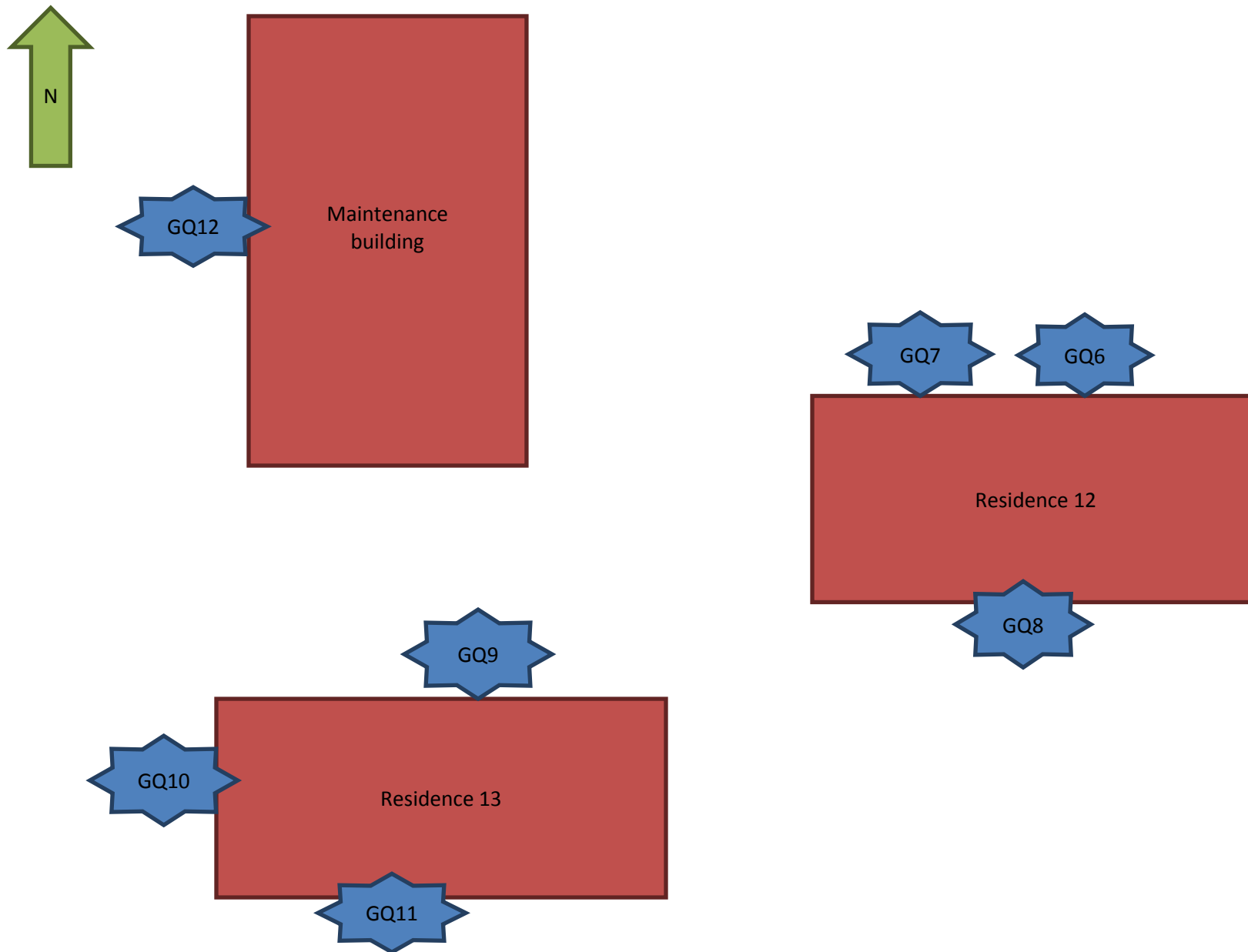
	GQ9 RES 13			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	North side Front door entry light	Yes	Motion sensor	No	Yes
	GQ10 RES 13			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	West side After-hours security	Yes	Motion sensor	No	Yes
	GQ11 RES 13			Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	South side After-hours security	Yes	Motion sensor	No	Yes
Maint. building	GQ12	n/a (new fixture)		Juno, AccuLite MSL2, LED Mini Security Light (11 watts; 663 lumens; 3500K)	West side After-hours security	Yes	Motion sensor	No	Yes

Well House	GQ13			Barrow LED (7 watts; 440 lumens; 3000K)	East side Door entry light	Yes	Manual switch	No	Yes
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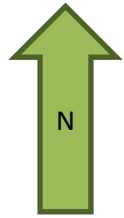
Location of Lighting at Gran Quivira (visitor center)



Location of Lighting at Gran Quivira (employee housing area and maintenance building)



Location of Lighting at Gran Quivira (well house)



3 Management Documents



Ruins and Stars at Gran Quivira
Photo credit: David Schneider

NPS Law and Policy

An assortment of laws and directives at the federal and park level serve as guidelines for Salinas Pueblo Missions National Monument in its mission to protect natural night skies. From the 1916 Organic Act to the 2006 NPS Management Policies, the federal government has laid out a basis for the idea of protecting night skies. In addition to these, the Director's Call to Action Report 2012 Action 27 reaffirms the National Park Service's support towards the protection of dark sky resources. The Foundation Document of Salinas Pueblo Missions National Monument provides further guidance and direction for protection of the Monument's night skies.

National Park Service Organic Act

The Organic Act was passed in 1916 to protect and manage the national park lands of the United States. The act protected the ecological and scenic values within federal lands, under which falls dark sky resources.

"The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

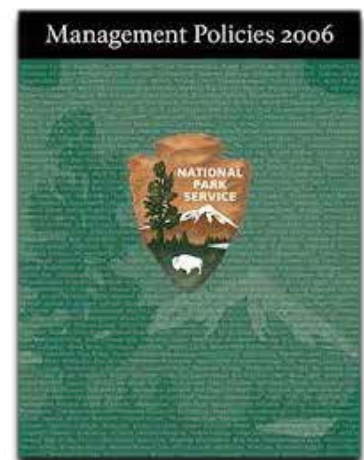
National Park Service Management Policies (2006)

This service-wide document of management policies provides the National Park Service with required and recommended actions to manage programs and parks. Included within is a Lightscape Management policy, which lays out specific guidelines and recommendations for the use and management of outdoor lighting.

4.10 Lightscape Management

"The Service will preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human caused light....The stars, planets, and earth's moon that are visible during clear nights influence humans and many other species of animals, such as birds that navigate by the stars or prey animals that reduce their activities during moonlight nights.

"Improper outdoor lighting can impede the view and visitor enjoyment of a natural dark night sky. Recognizing the roles that light and dark periods and darkness play in natural resource processes and the evolution of species, the Service will protect natural darkness and other components of the natural lightscape in parks. To prevent the loss of dark conditions and of natural night skies, the Service will minimize light that emanates from park facilities, and also seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the night scene of the ecosystems of parks. The Service will not use artificial lighting in areas such as sea turtle nesting locations where the presence of the artificial lighting will disrupt a park's dark-

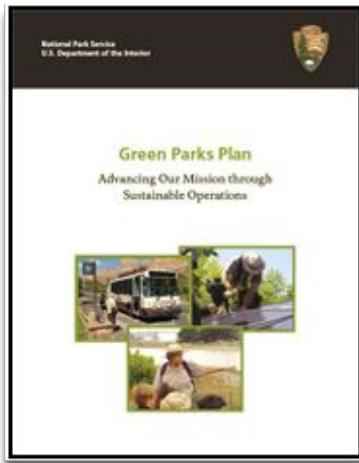


dependent natural resource components.

“The Service will:

- restrict the use of artificial lighting in parks to those areas where security, basic human safety, and specific cultural resource requirements must be met;
- use minimal-impact lighting techniques;
- shield the use of artificial lighting where necessary to prevent the disruption of the night sky, natural cave processes.”

NPS Green Parks Plan (2012)



The Green Parks Plan is a long-term strategic plan for management of NPS operations in a sustainable manner.

“The NPS will minimize the impact of facility operations on the external environment. Outdoor experiences can be adversely affected by facility operations. Exterior lighting can reduce dark night sky quality and vehicle traffic can diminish the natural silence and sounds of an ecosystem. Reducing the impact of NPS operations on the environment will improve the visitor experience and protect natural and cultural resources through the preservation of night skies, natural sounds, water quality, ecosystems, and viewsheds.

Objectives

- 1: The NPS will reduce light pollution from park facilities with the goal of dark night sky preservation.
- 2: The NPS will minimize sound pollution in the outdoor environment.
- 3: The NPS will ensure that all facilities and operations are sustainably integrated into the park landscape to minimize impact on the natural and cultural environment.”

Night Sky Management

Natural Sounds and Night Skies

“America’s national parks contain many cherished treasures; among them are captivating natural sounds and awe-inspiring night skies. The joy of listening to the quiet symphony of nature or the beauty of seeing the Milky Way stretching overhead have become rare experiences in our lifetimes, but they can still be found in many of our national parks. Natural sounds and natural darkness, though often overlooked, are essential in keeping our national treasures whole. They are magnificent in their own right, but also inspirational to the visitors who come to national parks, vital to the protection of wilderness character, fundamental to the historical and cultural context, and critical for park wildlife.

“The Natural Sounds and Night Skies Division uses science, engineering, and technology to understand and better manage these spectacular resources. We pioneer innovative techniques to measure the impact of noise and light pollution, develop new approaches to safeguard natural sounds and natural darkness, and identify management solutions to restore these public resources.

“The Natural Sounds and Night Skies Division works to protect, maintain, or restore acoustical and dark night sky environments throughout the National Park System. We work in partnership with parks and others to increase scientific understanding and inspire public appreciation of the value and character of soundscapes and star-filled skies. We welcome your interest in learning about these sublime resources of our national parks and the efforts you can take to help us preserve them for future generations. Whether it’s simply talking a little softer or turning off an outdoor light, you too can make a difference in the protection of these vital resources. Most of all, we encourage you to experience for yourself the natural soundscapes and lightscapes of your national parks.”

A Call to Action (2012)

The NPS Director’s *A Call to Action* report is a guideline for employees and partners that contains specific goals and measurable actions, and charts a path towards unified goals.

“Starry, Starry Night: Action 27

Lead the way in protecting natural darkness as a precious resource and create a model for dark sky protection by establishing America’s first Dark Sky Cooperative on the Colorado Plateau in collaboration with other federal agencies, partners, and local communities.”



Although Salinas Pueblo Missions National Monument is not located on the Colorado Plateau, the Colorado Plateau Dark Sky Cooperative seeks to support other parks in achieving the goal of night sky protection and education and promotes the Starry, Starry Night project goals as applicable to all NPS units. The overarching goal is to engage stakeholders in a collaborative effort to celebrate the view of the cosmos, minimize the impact of outdoor lighting, and ultimately restore natural darkness to the area. International Dark Sky Park designation for the Monument would help advance this goal

Monument Management Documents

Salinas Pueblo Missions Foundation Document (September 2014)

The Foundation Document for Salinas Pueblo Missions National Monument functions as a “formal statement of its core mission that will provide basic guidance for all planning and management decisions.”

In Fundamental Resource or Value: Preserved Cultural Landscape, it is recognized that, “Modern visitors highly value the largely unchanged cultural landscape, to include structures and infrastructure, vegetation, viewsheds, and the pristine **night skies** and natural sounds...” . (pg. 9)

The trends and threats for night sky values are identified in this document and include increases in light pollution from urban area domes as well as large scale energy development in the region.

Opportunities identified include working with community and Monument neighbors on sustainable lighting practices, increasing educational and interpretive programs on the importance of dark night skies, and working with astronomers and local schools to document and promote dark night skies as a resource.

New Mexico Night Sky Protection Act

In 1999, New Mexico enacted the Night Sky Protection Act [74-12-1 to 74-12-10 NMSA 1978]; *its purpose is to regulate outdoor night lighting fixtures to preserve and enhance the state's dark sky while promoting safety, conserving energy and preserving the environment for astronomy.* One of the first of its kind in the U.S., the Night Sky Protection Act makes dark skies a priority in New Mexico for the health of its people, wildlife, and economy.

The act requires that outdoor lighting be fitted with shielding that directs light downward, rather than upward or laterally. The act allows present lighting to remain throughout its useful life, but requires the installation of conforming lights whenever replacement would normally occur, so that any economic burden is limited or avoided altogether. The law also allows local communities to enact more stringent local ordinances. The New Mexico Night Sky Protection Act takes important steps to stop continued increase in light pollution while the bright stars are still among the things that make New Mexico the “Land of Enchantment.”

The Monument's Lighting Management Plan

Introduction

A natural lightscape is one that is free of light pollution. Spilled light or wasted light are phrases that describe the misuse of outdoor lighting, especially in a natural or protected environment such as a national park. The term light pollution has commonly been used to emphasize the concept that anthropogenic light in the naturally dark environment is indeed a pollutant with undesirable ecological consequences, not just a nuisance. There are many good reasons to eliminate light pollution in national parks, including:

- The preservation of natural lightscapes (the intensity and distribution of light on the landscape at night) will maintain the nocturnal scotopic (vision under low light conditions) environment within the range of natural variability. Excursions outside this natural range may result in a modification to natural ecosystem function, especially to systems involving the behavior and survival of nocturnal animals. The natural night sky is therefore one of the physical resources under which natural ecosystems have evolved.
- The scenery of national park areas does not just include the daytime hours. A natural starry sky absent of anthropogenic light is a key scenic resource, especially in parts of the Southwest.
- The history and culture of many civilizations are steeped in interpretations of night sky observations, whether for scientific, religious, or time-keeping purposes. As such, the natural night sky is an important cultural resource, especially in areas where evidence of aboriginal cultures is present.

The remote location of Salinas Pueblo Missions National Monument within the high desert of central New Mexico allows for pristine night skies that are relatively free of light pollution. The Monument believes that preserving the natural night sky is an integral part of the resource protection performed at this park unit, and is committed to the ongoing conservation of this important cultural, natural, and scientific resource. Through responsible lighting management and night sky interpretation and public education, the Monument will continue to preserve natural night skies for this and future generations.

Purpose and Goal

The purpose of this Lighting Management Plan (LMP) is to provide guiding principles, lighting guidelines, and standards and best practices for the use of artificial outdoor lighting in the Monument in order to preserve the fundamental resources and visitor experience of this special place. The LMP was developed to conform to the goals and requirements of NPS Management Policy 4.10— Natural Lightscapes. This LMP is the official outdoor lighting policy of the Monument. It has been codified as a park Standard Operating Procedure (SOP) and was approved by the park Superintendent on August 31, 2016.

The goal of this LMP is to provide for the safety of NPS staff and the security of NPS facilities without any significant impact on the night skies of the Monument.

Guiding Principles

The following principles will be followed:

- Providing light for visitor and staff safety in commonly used developed areas, as well as for building security purposes, will be achieved while protecting the natural environment from light pollution. Decisions on lighting necessary for employee and visitor safety must be made by considering factors such as the expectation of permanent artificial lighting, existing safety hazards (such as tripping, falling, criminal activity, and wildlife), type of tasks performed, frequency of those tasks or use level, and available alternatives.
- Energy efficiency should be a goal for all outdoor lighting, as it lessens the Monument's carbon footprint. An important distinction here, however, is that – especially with new LED technology - an energy efficient light is not necessarily a night-friendly light.
- Long term sustainability in the operation and maintenance of outdoor lighting solutions should be maximized. The total lifecycle cost should be weighed in a sustainability assessment. In many cases, the lower wattage requirements of a lighting installation designed to preserve night skies makes that installation more economical than the traditional alternatives over the life of the products.
- Outdoor lighting will be sensitive to the impact upon wildlife. The addition of artificial light into a park setting will alter nocturnal habitat, and the impact may reach beyond the bounds of the developed area. Parameters of direct light intensity, scattered light intensity, light color, light timing and duration are all important considerations for wildlife.
- External threats to the natural lightscape within the parks will be addressed, primarily by setting a leadership example for surrounding communities. NPS management policies put a positive responsibility upon superintendents to partner, to the extent possible, with these communities to protect the natural environment of parks. Part of this effort is to provide examples of outdoor lighting Best Practices for the public. This requires that outdoor lighting in parks be held to a high standard, that the existing lights incorporate these principles, and that park facility lighting is interpreted to visitors and the surrounding community.

Lighting Guidelines

The guiding principles can be distilled into four main lighting guidelines:

1. Artificial light should exist only where deemed necessary.

2. Artificial light should exist at a minimum practical level.
3. The area of illumination should be restrained to the area judged necessary.
4. Duration of illumination should be similarly restrained to a practical and required area.

Lighting Standards and Best Practices

All exterior lighting in the Monument shall be designed to eliminate light trespass, minimize glare, and use an intensity, color, and duration that will preserve the natural darkness as much as possible.

NPS Management Policies direct parks to use artificial light on an “only as needed” basis and to minimize impact whenever possible. Merely shielding a light does not necessarily constitute lightscape, wildlife, or night-sky friendliness; especially if that light is unnecessary in the first place. Even when a light is necessary, the incorporation of a timer, motion sensor, or switch can greatly reduce its impact. The mitigation of outdoor lighting impacts upon the environment is best accomplished by addressing six parameters of lighting.

1) Warranting- Light only WHERE you need it

- a. Lighting installations should be placed only where uses dictate.

2) Controls- Light only WHEN you need it

- a. Rather than defaulting to a dusk-till-dawn operational cycle, lighting controls should be designed to minimize the amount of time the light is on while still fulfilling the need met by installing the light at that spot in the first place.

3) Shielding- Direct light DOWNWARD

- a. No fixture should emit light above the horizontal. In most cases, beams of light should be restricted even further. Lights should be directed downward and shielded.

4) Spectrum- Select LAMPS that minimize negative impacts

- a. Humans and many other animals are most sensitive to blue/white light. Most evening lighting goals can be achieved using warmer temperature lighting, which decreases the disruption to wildlife (including insects), maintains the human ability to adapt to low light conditions, and decreases sky glow. Amber or yellow light sources are preferable, both to limit attraction by insects and to reduce sky glow. Light sources should be chosen for energy efficiency, long life and low maintenance.

- b. The color tint (correlated color temperature, or CCT) of white light is measured in Kelvins (K), a scale in which warm-toned white light has smaller values (1800-3000K) and cold-toned light has larger values (5000K and higher). Between 3000 and 5000K, light is said to be “neutral” in tone. The common incandescent lamp is 2700K. Lights should be selected with warm colors, such as amber (not to exceed 3000K). Any fixtures that exceed 3000K must be limited in duration of operation and utilize motion sensors to activate the light only when needed.

5) Intensity- Use the minimum AMOUNT of light necessary

- a. Lights should only exist in the minimum amount necessary. Any fixtures used in continuous overnight operation that exceed 500 lumens should be fully shielded.

6) Efficiency- Select the most energy EFFICACIOUS lamp and fixture

- a. Energy efficiency should be considered when choosing lighting. Standard bulbs should be compact fluorescent (CFL), which are low-wattage, or light-emitting diodes (LED).

7) Monitoring- Make sure lights are **WORKING PROPERLY**

a. Evaluate and monitor lighting performance to ensure that fixtures are calibrated and working properly. Utilize the Monument's maintenance work order system to annually inspect and adjust lighting as needed.

Fortunately, due to the small scale of facilities in the three units, both extant and planned, the LMP for Salinas Pueblo Missions is generally simple. In its simplest form, the main components are:

- Lighting used to secure the Monument property should be restricted to motion sensor lights wherever possible; and these lights should be fully-shielded and use low wattage, warm-colored bulbs.
- Any light that does not have a motion sensor should be on a timer or day-time light sensor so that they operate not to exceed dusk to dawn nighttime hours; the wattage should be as minimal as practical and warm-colored bulbs should be used.
- Any light used for safety purposes (including at the employee housing area) should adhere to the standards and best practices presented on the previous page.

All future outdoor lighting will conform to these standards.

4 Letters of Support



Units of the Monument: Quarai, Gran Quivira, and Abo
NPS Photos



United States Department of the Interior
NATIONAL PARK SERVICE
SALINAS PUEBLO MISSIONS NATIONAL MONUMENT
PO Box 517
Mountainair, New Mexico 87036



In Reply Refer To:
A38-21

April 20, 2016

International Dark-Sky Association
3223 North First Avenue
Tucson, AZ 85719-2103

Dear IDA Board of Directors:

I am writing in support of Salinas Pueblo Missions National Monument's application for Dark Sky Park designation. Located in a remote setting in central New Mexico, the Monument enjoys outstanding viewsheds and night skies. These resources contribute to the rich cultural landscape that is present here and is so important to the Monument's mission.

The Monument's management plans recognize dark skies as a fundamental resource, one which is key to preserving the Monument's natural and cultural heritage. Facilities and lighting are limited so as not to compete with the grandeur and context of the ruins and to limit impacts to the night sky, which is so important to our stewardship of this area. Public interpretation and education programs involving night skies have been going on here for over 30 years, in partnership with organizations such as the Lake County Astronomical Society, New Mexico Tech, Magdalena Ridge Observatory, and the Very Large Array/National Radio Astronomy Observatory. We are expanding public night sky programming this year in honor of the NPS Centennial anniversary. Finally, we recently completed a significant lighting project replacing every outdoor light in the Monument, bringing us to 100% compliance with the standards included in our lighting management plan.

I am pleased to present this application to you and I look forward to your favorable consideration. Thank you.

Sincerely,

Patrick Malone
Acting Superintendent





Colorado Plateau Dark Sky Cooperative

2282 S. West Resource Blvd

Moab, UT 84532

February 26, 2016

VIA ELECTRONIC COPY ONLY- NO HARD COPY TO FOLLOW

Board of Directors
International Dark-Sky Association
3223 North First Avenue
Tucson, Arizona 85719-2103

Dear IDA Board of Directors:

The Colorado Plateau Dark Sky Cooperative is pleased to support the Salinas Pueblo Missions National Monument (SAPU) International Dark Sky Park nomination. The Monument is located in one of the most remote regions in the continental U.S., and offers an exceptional, unfettered view of the dark night skies over central New Mexico. The dark skies of SAPU have immense value to astronomical viewing, cultural resources, and wildlife conservation in the region. The Lake County Astronomical Society has been coming to SAPU for 30 years (since 1986). For the last 7 years, SAPU has been partnering with Lake County Astronomical Society, New Mexico Tech, Magdalena Ridge Observatory, and the Very Large Array/ National Radio Astronomy Observatory to host astronomy events that are free to the public. In addition, SAPU International Dark Sky Park designation would assist in the conservation of dark night skies in neighboring Cibola National Forest and Seville National Wildlife Refuge. SAPU represents some of the darkest skies that are easily accessible to the urban populations of the Albuquerque area.

Situated on the dark edge of the Colorado Plateau, SAPU is taking lighting, conservation, and educational steps to fulfill the mission of the NPS Call To Action #27, Starry Starry Night. This voluntary initiative forms America's first Dark Sky Cooperative, and links communities, tribes, businesses, state/federal agencies, and citizens in a collaborative effort to celebrate the view of the cosmos, minimize the impact of outdoor lighting, and ultimately restore natural darkness to the area. SAPU International Dark Sky Park designation would bring further awareness and legitimacy to night skies conservation in the Four Corners region.

We fully support the efforts of the Salinas Pueblo Missions National Monument as they seek designation of the Salinas Pueblo Missions International Dark Sky Park. Such efforts to conserve dark skies will benefit park visitors, nearby communities, and future generations. Should you have any questions, please contact Nate Ament at 435-719-2349.

Sincerely,



Nate Ament

Colorado Plateau Dark Sky Cooperative Coordinator



Lake County Astronomical Society

March 18, 2016

International Dark Sky Association
3223 North First Avenue
Tucson, AZ 85719-2103

Dear IDA Board of Directors:

We are writing in support of Salinas Pueblo Missions National Monument's application for Dark Sky Park designation. This Monument enjoys outstanding views of the night sky due to its location in a remote setting in New Mexico.

Members of the Lake County Astronomical Society have been coming to the Monument for thirty years to observe and photograph deep sky objects under incredibly dark skies. Since 2009 we have been partnering with the National Park Service to host a star party at the Monument, as well as presenting talks and programs at local schools.

Under these skies free of light pollution, we have been able to view many objects that are normally inaccessible to our telescopes elsewhere. Our trips to the Monument began in 1986 with a quest to see Comet Halley under the best possible circumstances, and since then we have taken advantage of the opportunity to view other comets, many of which were quite faint, plus challenging objects such as asteroids. Of course, our observing has included many other sights as well. It's possible to see objects such as M33 and Omega Centauri with the naked eye, and our home galaxy, the Milky Way, takes on an awesome appearance with both stars and nebulosity in abundance. Other things that characterize this site are the visibility of the faint zodiacal light and the naturally occurring night airglow created by charged particles from the sun reacting with the Earth's atmosphere. Certainly these are measures of a night sky free of man-made light pollution and airborne contaminants.

We amateur astronomers find this site truly inspiring. In our estimation, the Salinas Pueblo Missions National Monument's recognition as a Dark Sky Park is important and deserved, and we encourage you to approve their application.

On behalf of the Lake County Astronomical Society, we are sincerely:

A handwritten signature in cursive script, appearing to read "Greg Lutes".

Greg Lutes

A handwritten signature in cursive script, appearing to read "Jack Kramer".

Jack Kramer

Town of Mountainair

Gateway to Ancient Cities

Mayor
Chester Riley

April 22, 2016

Town Councilors
Larry Zamora
Juanita Carrillo
Peter Nieto
Adrian Padilla

Town Clerk
Suzan Brazil

Clerk-Treasurer
Kathy Anglin

Billing Clerk
Phyllis Royce

Police Chief
Robert Chung

Officers
Milton Torrez
Terry Whatley
Alfredo Turrieta

Animal Control
Deavon Kayser

Motor Vehicle Dept
Gloria Luna

Municipal Judge
Marion Riley

Utility Supervisor
Richard Torres

Utility Crew
David Torres
Daniel Archuleta
Carl Archuleta

Fire Chief
Wayne Jones


Patrick Malone
Acting Superintendent
Salinas Pueblo Missions National Monument
Mountainair, New Mexico 87036

Dear Patrick Malone,

As Mayor of Mountainair I am sending you this letter of support for your endeavor of applying for your Dark Sky Park. I understand that the common heritage of a natural night sky is rapidly becoming unknown to the newest generations. In fact, millions of children across the globe will never see the Milky Way from their own homes. Before the advent of electric light in the 20th century, our ancestors experienced a night sky brimming with stars that inspired science, religion, philosophy, art and literature including some of Shakespeare's most famous sonnets.

I wish you the best on behalf of the Town of Mountainair with making this possible for all.

Sincerely,


Chester Riley,
Mayor of Mountainair

May 10, 2016

International Dark-Sky Association
3223 North First Avenue
Tucson, AZ 85719-2103

Dear IDA Board of Directors:

I am writing in support of Salinas Pueblo Missions National Monument's application for Dark Sky Park designation. Located in a remote setting in central New Mexico, the Monument enjoys outstanding viewsheds and night skies. These resources contribute to the rich cultural landscape that is present here and is so important to the Monument's mission, as well as to the people of the Estancia Valley.

The Manzano Mountain Art Council (MMAC) has been in existence for over 20 years and we have been partnering with the National Park Service (NPS) for over seven years. The relationship we have with them is important to a thriving arts community and to the livelihood and well being of the area. We look forward to expanding on our partnership with the Monument. We have already discussed some ideas for developing night sky-related arts activities and events.

The Monument's recognition as a Dark Sky Park would be an exciting thing for the community and for our sustained partnership with the NPS.

I encourage you to approve their application. Thank you.

Sincerely,



Anne Ravenstone
President, MMAC Board of Directors

Manzano Mountain Art Council
101 East Broadway, Suite 504
Albuquerque, New Mexico 87102

Mountainair Chamber of Commerce
PO Box 595
Mountainair, New Mexico 87036

May 16, 2016

International Dark-Sky Association
3223 North First Avenue
Tucson, AZ 85719-2103

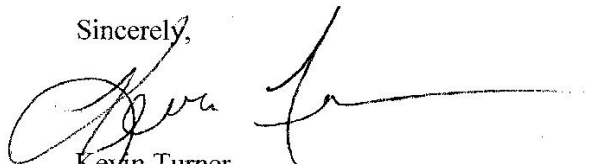
Dear IDA Board of Directors:

I am writing in support of Salinas Pueblo Missions National Monument's application for Dark Sky Park designation. Located in a remote setting in central New Mexico, the Monument enjoys outstanding viewsheds and night skies. These resources contribute to the rich cultural landscape that is present here and is so important to the Monument's mission, as well as to the people of the local area.

The Monument is an important asset to the local community here, including the business community. The National Park Service presence here draws visitors and economic development to Mountainair, which is so important to the livelihood of this community. The Monument's recognition as a Dark Sky Park will help to further the goals and vitality of Mountainair.

I encourage you to approve their application. Thank you.

Sincerely,



Kevin Turner
President, Mountainair Chamber of Commerce

References

This document drew from and is indebted to the following sources and people:

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Smith, John. 2016. Gran Quivira night sky readings from 2011. Personal communication via e-mail to Norma Pineda, NPS, dated February 23, 2016.

Contributors

Nathan Ament, NPS, Colorado Plateau Dark Sky Cooperative Coordinator

Marc LeFrancois, Chief of Facility and Resource Management, SAPU

Patrick Malone, Acting Superintendent, SAPU

Norma Pineda, Chief Ranger and Chief of Interpretation, SAPU

Randy Stanley, NPS, Intermountain Region Natural Sounds and Night Skies

Coordinator, IDA Member