



2017 Bottomless Lakes State Park Management Plan

ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT - STATE PARKS DIVISION



Bottomless Lake State Park
Management Plan
2017

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2/20/2017

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Abbreviations

ADA Americans with Disabilities Act

BLM U.S. Department of the Interior, Bureau of Land Management

DGF New Mexico Department of Game and Fish

EMNRD New Mexico Energy, Minerals, and Natural Resources Department

FY Fiscal Year

NMDOT New Mexico Department of Transportation

NMED New Mexico Environment Department

NM New Mexico

RV Recreational Vehicle

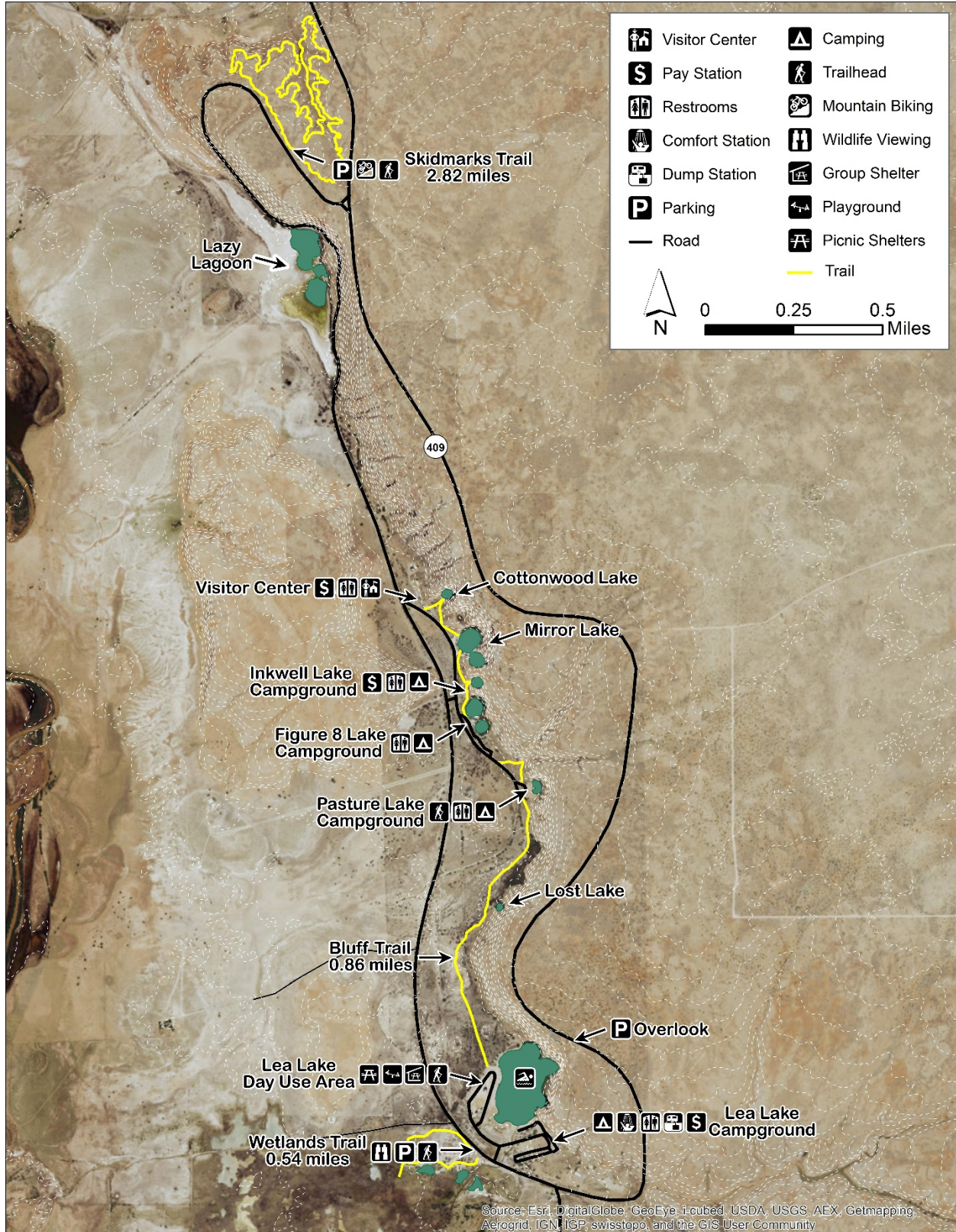
SLO State Land Office

SPD Energy, Minerals and Natural Resources Department, State Parks Division

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The State Parks Division and
Bottomless Lakes State Park Mission:
Protect and enhance natural and cultural resources,
provide first-class recreational and education facilities and
opportunities, and promote public safety to benefit and enrich
the lives of visitors.



| Key Facts | |
|--------------------------------|---|
| Park established: | 1933 |
| Park Management Area: | 1,570 acres |
| Leased from SLO: | 313.85 acres |
| Owned by SPD: | 1,256.15 acres |
| Total Campsites: | 45 |
| Sites with Electric and Water: | 32 |
| Park Employees (full-time): | 5 |
| Law Enforcement Officers: | 3 |
| Seasonal Staff: | 5 Lifeguards 2 Park Technicians 2 Park Laborers |
| Park Elevation: | 3,460'-3,670' |
| County: | Chaves |

INTRODUCTION

Park Description

Bottomless Lakes State Park (Park) is in Chaves County, approximately 8.5 miles south of East 2nd on State Road 409. The Park is approximately 13 miles southeast of Roswell, 75 miles north of Carlsbad and 80 miles west of the Texas border. The most prominent feature of the Park is the chain of eight lakes, which are formed by sinkholes. Swimming, camping, fishing, hiking, biking, and boating are the most popular activities in the Park.

Park History

The lakes at the Park have been well-known in the region since the 1800s, when the area was a popular stopover along the Goodnight-Loving Trail. People have told numerous stories about the lakes since then. Cowboys who could not find the bottoms of the lakes with their weighted ropes tied together are credited with giving the lakes the name "Bottomless". Other stories include how objects lost in the lakes have turned up in Carlsbad Caverns and of how a horse drowned in one part of Figure Eight Lake but was pulled up out of the other. There have also been stories of people vanishing in the lakes never to be seen again.

The Park is New Mexico State Parks' (SPD) oldest state park and was founded on November 18, 1933 by the Commissioner of New Mexico Public Lands upon the recommendation of the State Scientific Commission. The reason the Scientific Commission recommended that the area become a park was because the area was "of scientific interest by reason of the fact that: upon said lands are situated a series of lakes of unusual depth in proportion to their diameters, formed by collapse caverns in a gypsum formation in an artesian area and should be preserved for the use and pleasure of the people of the State of New Mexico".

Shortly after the creation of the Park, around 200 men from all over the country who were a part of the Civilian Conservation Corps (CCC) began construction on the Lea Lake Pavilion and adjacent water tower.

The stone structures are still in use today and are classic examples of the structures that the CCC built. The visitor center, which is at the north end of the Park, was constructed in 1978 and renovated in 2003.

PARK ASSESSMENT

PARK RESOURCES

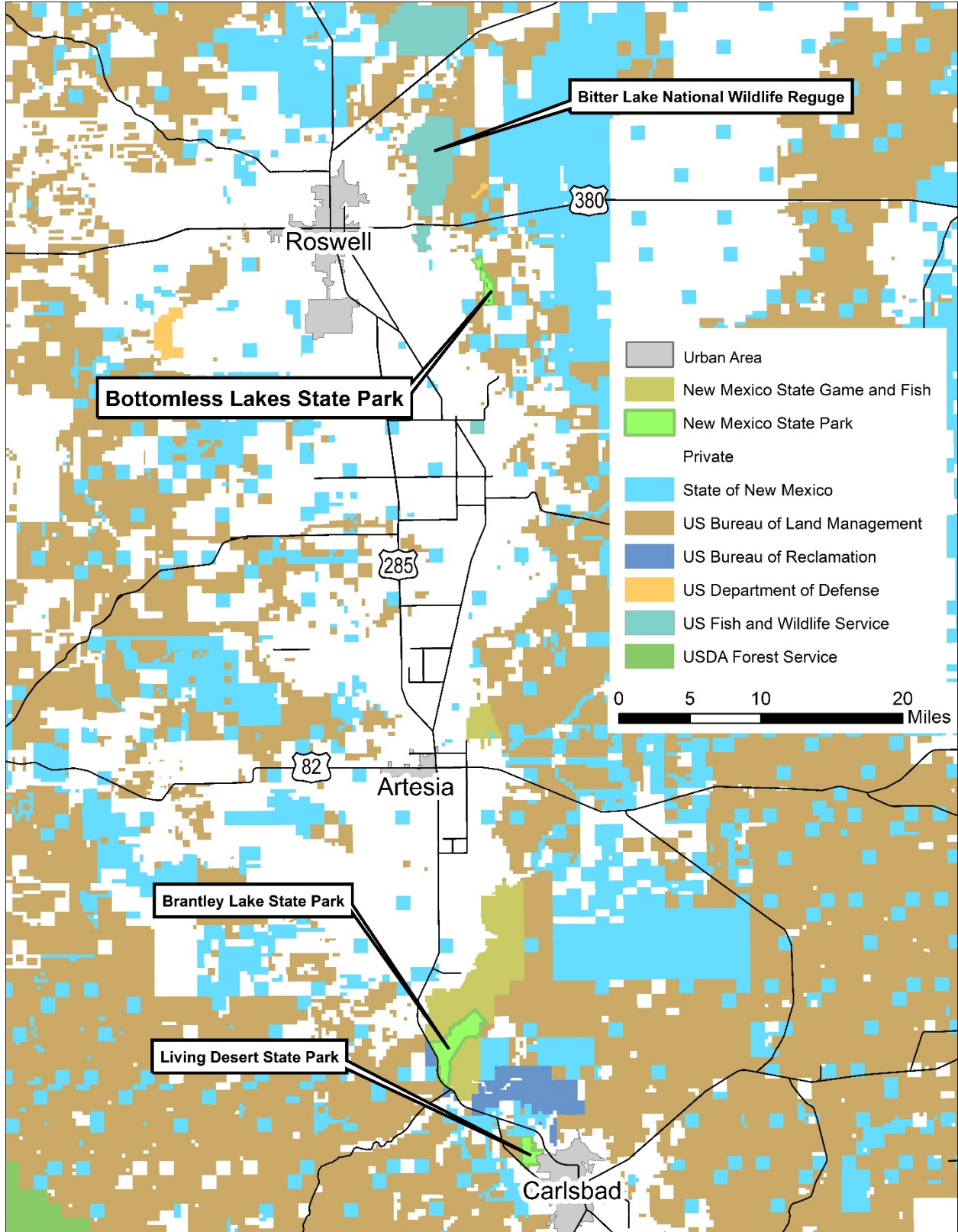
Land

Regional Setting

The Park is comprised of approximately 1,570 acres in southeastern New Mexico. Nearby outdoor recreation attractions include the Bitter Lakes National Wildlife Refuge, Brantley Lake State Park, Living Desert Zoo and Gardens State Park and numerous recreation opportunities within the City of Roswell. Lincoln National Forest is over 60 miles to the west, and Carlsbad Caverns and Guadalupe Mountains National Park are over 100 miles south of the Park.

The City of Roswell has a population of around 48,600, with a population growth rate of approximately 7.3% since 2000. Chaves County has a population of approximately 65,900 and had a growth rate of approximately 6.7% over the same period.

| Climate Data for Bottomless Lakes State Park | |
|---|--------|
| Average maximum temperature in January | 57.1° |
| Average maximum temperature in July | 96.0° |
| Average minimum temperature in January | 20.8° |
| Average minimum temperature in July | 63.7° |
| Record High (June 28, 1994) | 114° |
| Record Low (January 8, 1969) | -22° |
| Average annual precipitation | 12.67" |
| Average annual snowfall | 7" |



Natural Resources

Geology

Between 286 and 248 million years ago, southeastern New Mexico, including the area that is now the Park, was covered by a shallow ocean. When the ocean disappeared, it left behind a formation of carbonates, gypsum, limestone, sandstone, siltstone, and dolomite, which became known as “the San Andres Formation.” The San Andres Formation was covered up by what became known as “the Artesia Group,” which consists of gypsum, limestone, sandstone, siltstone, and shale. The red sandstone cliffs throughout the Park are typical of the Seven Rivers Formation that is a part of the Artesia Group. The Seven Rivers Formation is responsible for what are known as “Pecos diamonds.” Pecos diamonds are quartz-like crystals found in the area that formed as low-temperature solutions came into contact with the gypsum beds over long periods of time and replaced the gypsum with silica. Some Pecos diamonds can be viewed in the visitor center. On top of the Artesia Group lie Quaternary river and alluvial deposits consisting of clay, silt, sand, and gravel, which were deposited by the Pecos River at a time when it flowed to the east of its current location.

The geology that is visible in the Park consists of the Quaternary river and alluvial deposits and the 230-million-year-old rocks of the Permian Artesia Group, but the geology underneath the Park, which cannot be seen by visitors, defines the area. Deep in the San Andres Formation, oil and gas was formed as ancient marine creatures decomposed. The oil and gas were trapped by the layers of shale, sandstone, and limestone. Visitors can see pump jacks tapping these resources near the Park and throughout the region.

The San Andres Formation is also responsible for the creation of the lakes. Underground water has slowly dissolved the carbonates in the San Andres Formation, which were left over from a time when southeastern New Mexico was covered by a shallow ocean. The water underground also mixes with a byproduct of the oil found deep within the formation and creates hydrogen sulfide and sulfuric acid. These chemicals in the water help to dissolve the carbonate to create underground caves and caverns. Eventually these caves and caverns collapse and create the sinkholes that form the lakes. Lake-in-the-Making, which is between Cottonwood Lake and Mirror Lake, is an example of a sinkhole that has not quite reached the water table. This process is seen in the vicinity of Lea and Cottonwood Lakes as well.

The water that has dissolved the carbonates becomes nutrient-rich. When gypsum dissolves calcium sulfate is released into the water. Calcium sulfate is a particularly bitter-tasting salt that makes the ground water in the area unpalatable and is the source of the name for Bitter Lake National Wildlife Refuge. When the ground water reaches the surface because of flow fluctuation or precipitation and then evaporates it leaves behind a white crust, which can be seen in several areas in and around the Park.

Water Resources

The largest of the eight lakes is Lazy Lagoon, which has a surface area of around 26 acres. Although Lazy Lagoon looks very shallow in some areas, there are three sinkholes beneath the surface. One of the sinkholes is 90 feet deep. The smallest of the lakes is Lost Lake, which is only 0.1 acre.

Devil’s Inkwell, which is named for its steep sides and dark waters, is around 140 feet in diameter but is 32 feet deep. Figure Eight Lake is two separate lakes that form a figure eight shape. Cottonwood Lake is

adjacent to the visitor center and is 20 feet deep, with a surface area of 0.52 acre. It is named for a large cottonwood tree that used to grow by its banks. Mirror Lake is two separate lakes that become one, when the water level is high enough. The southern portion has a surface area of 0.7 acre, and the northern portion has a surface area of 1.9 acres. Mirror Lake is formed by three sinkholes, the deepest of which is 40 feet. Pasture Lake is south of Figure Eight Lake and is the shallowest of the lakes at 18 feet deep. It has a surface area of 0.76 acre.

Lea Lake is the second largest lake and is the only lake where swimming and boating are allowed. Lea Lake is formed by three sinkholes, one of which is 90 feet deep, and the Lake has a surface area of 17 acres. A spring in the lake produces 2.5 million gallons of water a day, some of which flows into a canal and on into the wetlands across the street. Lea Lake was named after Joseph Lea, who was a Civil War veteran, a rancher, and an early settler in the Roswell area.

In 2007 NMED tested the water in Lea Lake and Figure Eight Lake. The results showed the Lakes were highly saline, particularly Figure Eight Lake. Conductivity, which is a way to measure the salinity of water, was found to measure nearly 11,000 units per centimeter in Lea Lake and nearly 35,000 in Figure Eight Lake. In comparison, conductivity at Heron and El Vado Reservoirs measured between 187 and 214 units per centimeter during the same testing period, which are more typical measurements for water bodies in the state. The conductivity is a result of the dissolved carbonates in the water, which requires that any surface or ground water in the area be treated and desalinized to make it palatable.

In addition to the lakes, part of the Park is also a Ramsar Designated Wetland, known as the Roswell Artesian Wetlands. The Convention on Wetlands, which took place in 1971 in Ramsar, Iran, and became known as the Ramsar Convention, established criteria for the designation of important wetlands around the world. Criteria for Ramsar designation are that the wetland must have a unique hydrology; have unique plants or animals; support regionally rare plants or animals; provide refuge during adverse conditions; support 20,000 migratory water birds; support 1% of a water bird population; contain unique fish; contain a fish spawning or feeding area; and support a population of non-avian wetland-dependent animals.

The wetlands included under the Ramsar designation are one of the most biologically significant wetlands in the entire Chihuahuan Desert and support species that are found nowhere else in the world.

Vegetation

The Park is in the Chihuahuan Desert Basins and Playas ecoregion. The plant communities within the Park are significantly influenced by the salinity of the water and soils. Salt grass (*Distichlis spicata*), alkali bulrush (*Scirpus paludosus*), pickleweed (*Salicornia begelovii*), iodine bush (*Allenrolfea occidentalis*), and alkali sacaton (*Sporobolus airoides*) are all common in the low areas and typically grow in salty soils. Willow (*Salix sp.*), tamarisk (*Tamarix ramosissima*), mesquite (*Prosopis sp.*), and fourwing saltbush (*Atriplex canescens*) are typical of the adjacent areas. Creosote bush (*Larrea tridentate*), tarbush (*Flourensia cernua*), acacia (*Acacia greggii*), gyp grama (*Bouteloua breviseta*), yucca (*Yucca elata* and *Yucca glauca*), and many species of cacti are common in the surrounding uplands.

The Pecos sunflower (*Helianthus paradoxus*), sometimes called the puzzle flower, is a federally listed threatened species and is found within the Park. The sunflower looks similar to the common sunflowers growing throughout New Mexico, however it has narrower leaves, fewer hairs on the stems and leaves,

and smaller flower heads (see cover photo). The Pecos sunflower also blooms later in the year than other sunflowers and grows in saturated, salty soils. The flower only grows in two dozen known locations in the desert wetlands of west Texas and New Mexico.

Wright's marsh thistle (*Cirsium wrightii*) is also present in the vicinity, and the Park may have suitable habitat for the plant. This thistle is a candidate species for listing as an endangered species. The thistle can grow to be eight to 10 feet tall. Like the Pecos sunflower, it also grows in saturated, salty soils. It grows in only eight known locations in the State.

Tamarisk (also known as salt cedar) is present throughout the Park. The tree is an invasive species that can often out-compete native species for resources. In an effort to combat invasion by tamarisk, the USDA released the tamarisk leaf beetle along the Colorado River and in the Texas panhandle over a decade ago. Since then, the beetle has become widespread throughout New Mexico and was found near the Park in 2013. Its presence in the Park was widespread in 2014, but there were few beetles present in the summer of 2015. The beetle defoliates the tamarisk trees, and after repeated defoliation, they will eventually die.

In 2008, the U.S. Army Corps of Engineers initiated an aquatic habitat restoration project in the vicinity of the outflow area of Lea Lake. The project goals emphasized restoring the native aquatic ecosystem found in the area. One main task associated with those goals was to eradicate tamarisk in a 43-acre area to allow for native plants to recolonize and for the existing wetlands to further recharge. The initial treatment was implemented in 2008, and a retreatment of sprouts occurred in 2011-2012. The Army Corps of Engineers conducted a third treatment in the fall of 2016.

Wildlife

The wetlands at the Park support 24 fish species, which makes it the most diverse area for fish in the entire State. The Park also hosts at least 352 bird species, 57 mammal species, 62 amphibian and reptile species, and over 100 varieties of dragonflies and damselflies. The continent's largest dragonfly (*Anax walsinghami*), which can grow to five inches, is found in the Park, as is the continent's smallest damselfly (*Ischnura hastata*), which grows to be around one inch.

The Roswell springsnail (*Pyrgulopsis roswellensis*), Koster's springsnail (*Juturnia kosteri*), and Noel's amphipod (*Gammarus desperatus*) are unique to the Roswell Artesian Wetlands and are found nowhere else in the world. They are relict species, which are species that persist as a remnant of a larger population from an earlier time. These springsnails and the amphipod are representatives of species that lived in the Permian seas millions of years ago. They are federally-listed endangered species.

In addition to the springsnails and amphipod, the wetlands and the surrounding areas are home to the Pecos pupfish (*Cyprinodon pecosensis*), Mexican tetra (*Astyanax mexicanus*), Pecos Gambusia (*Gambusia nobilis*), Pecos bluntnose shiner (*Notropis simus pecosensis*), greenthroat darter (*Etheostoma lepidum*), Pecos assiminea (*Assiminea pecos*), wrinkled marsh snail (*Stagnicola caperata*), Blanchard's cricket frog (*Acris crepitans blanchardi*), arid land ribbon snake (*Thamnophis proximus diabolicus*), least shrew (*Cryptotis parva*), interior least tern (*Sterna antillarum*), Lesser Prairie-chicken (*Tympanuchus pallidicinctus*), piping plover (*Charadrius melodus*), Sprague's pipit (*Anthus spragueii*), and northern Aplomado falcon (*Falco femoralis*), which are all either listed by the state or federal government as threatened or endangered species.

Many water birds visit the Park including sandhill cranes (*Grus Canadensis*), American coots (*Fulica Americana*), snow geese (*Chen caerulescens*), Ross's geese (*Chen rossii*), Canada geese (*Branta Canadensis*), northern pintails (*Anas acuta*), mallards (*Anas platyrhynchos*), green-winged teal (*Anas carolinensis*), American wigeon (*Anas Americana*), northern shoveler (*Anas clypeata*), and ring-billed gulls (*Larus delawarensis*).

Some of the more notable mammals that occur within the Park are mule deer (*Odocoileus hemionus*), pronghorns (*Antilocapra americana*), bobcats (*Lynx rufus*), coyotes (*Canis latrans*), raccoons (*Procyon lotor*), porcupines (*Erethizon dorsatum*), jackrabbits (*Lepus californicus*), and the Pecos River muskrat (*Ondatra zibethicus*).

Cultural Resources

People have been in the Pecos Valley for perhaps as much as 13,000 years. Paleoindians from the Clovis culture, who hunted large animals such as mammoth and now-extinct species of bison, were the first to come to the area and were largely hunter-gatherers. The Clovis culture was followed by the Folsom culture, which was also a nomadic or semi-nomadic culture.

The Pleistocene glaciers that covered much of North America began to retreat around 10,000 years ago, and by 7,500 years ago a warmer climate allowed for a shift in cultures to what is known as the "Archaic period". People in the area during this period relied increasingly on smaller game animals and plants. Artifacts from this time-period might include matates, stone tools, and dart points for atlatls. Shallow pithouses started to appear in the area around this time. Late in the Archaic period (around 3,800 to 1,300 years ago), people in the area began planting maize and practicing agriculture.

During the Ceramic period (AD 750-1350), Pueblo-style architecture and pottery from the Jornada Mogollon culture are present in the area, particularly to the west of the Pecos River. The Jornada Mogollon culture was influenced by the Puebloan cultures to the north and west. It is likely that more sedentary cultures, such as the Jornada Mogollon, and more mobile groups to the east shared resources in the area over centuries.

Beginning in the mid-1500s, Apaches, particularly Mescalero Apaches, started to dominate the area. They were followed by the Comanche. Coronado was the first European to explore eastern New Mexico in the mid-1500s, although his exact route is unknown. The Spanish sent parties through the area sporadically after that time in an attempt to trade with the Native Americans on the plains. The plains tribes in southeastern New Mexico at this time included Apaches, Comanches, and Kiowas. The predominance of plains tribes in the area discouraged permanent European settlement there until the mid-1800s.

The Homestead Act of 1862 promoted settlement in the West, and many homesteaders came to the area as a result of the act, but the lack of water made farming difficult. The Goodnight-Loving Trail came through the area in 1866. It was a popular route with cattle ranchers in the southwest, and cattle ranching was the first major economic activity in the area. Farming increased once artesian water was discovered in 1890, allowing people to irrigate. With the arrival of the railroad in 1894 and the discovery of artesian water, Roswell's population increased rapidly. The production of oil and natural gas in the area in mid-1900s spurred another increase in population.

Archaeologists have found stone flakes that are the result of tool making, fire-cracked rocks from hearths or roasting pits, and some brownware ceramics in the vicinity of the Park. Most of the cultural resources found in and around the Park are from after the 1880s and are related to farming and ranching. The most prominent historic sites in the Park are the Lea Lake Pavilion and water tower, which the CCC built in 1933 and 1934. The CCC also built smaller stone structures throughout the Park.

A comprehensive archaeological survey has not taken place within Park boundaries, but it is likely that additional prehistoric and historic sites are present.

RECREATION

Camping and Day Use

Camping is popular at the Park, which has 37 developed campsites to the southeast of Lea Lake. Thirteen of the sites are reservation sites, and 32 of the sites have electric hookups. A dump station for RV waste is available near the entrance of Lea Lake. The campground next to Lea Lake also has a group shelter. Visitors can find 10 additional campsites near the lakes to the north, but these sites do not have any utility hookups.

The Park has 24 day-use sites that have picnic shelters with tables and grills. There is also a group shelter that visitors can rent, a volleyball court, and a shaded playground.

Events and Interpretation

The Bottomless Lakes Triathlon has taken place at the Park since 1984 and is one of the oldest triathlons in New Mexico. In 2015, 148 people participated in the event. The triathlon takes place in July and consists of a 400-meter swim, a 14-kilometer bike ride, and a 4-kilometer run.

In September, the Park hosts the Tour de Ocho Millas, which is a bicycle race of anywhere between eight and 62 miles, depending on a rider's ability and ambition. In 2015, there were 69 participants. The race is named after an eight-mile car race around the Park's loop road that took place for three consecutive years in the mid-1960s.

The Bottomless Bubblefest takes place over Labor Day weekend. The event features "dive poker," which involves tossing two decks of weighted cards into Lea Lake, and divers compete for the best five-card hand.

School groups come to the Park from all over southeastern New Mexico to learn about the wetlands and the geology of the area. Teachers have access to an education guide for the Park, which is part of the State Parks Outdoor Classroom Program.

Fishing

The New Mexico Department of Game and Fish (DGF) stocks fish in the lakes at the Park depending on the water quality from year to year. Lakes that have been stocked in the past include Cottonwood Lake, Devil's Inkwell, Pasture, and Lea Lake. The lakes are considered winter trout waters and are stocked between November 1st and March 31st. No trotlines (also known as trawl lines) or fishing with baitfish are allowed.

Swimming, Boating, and Scuba Diving

Swimming, boating and scuba diving are allowed in Lea Lake only. There is a roped-off area for swimmers, and during the summer lifeguards are on duty during popular times. The Park rents paddle boats and paddle boards to visitors, and people can bring their own non-motorized boats, or boats with motors up to three horsepower, to the lake, as well. Between mid-June and September, flows from the spring at the bottom of the lake clear the waters, and visibility can be as much as 75 feet. The site near the springs is known as Mecca, and when the water is clear, it appears as if the diver is under a giant turquoise dome. Divers can spot Mexican tetras and Pecos pupfish along with other species. Diving flags are mandatory, and all divers must dive in pairs.

Trails

The Park has three designated trails. Skidmarks Trail is 2.8 miles long and is considered a beginner to intermediate trail for mountain biking. It was designed by a former park ranger, who was an avid mountain biker. The trail complies with International Mountain Bicycling Association guidelines. Some people come to the Park just to bike on this trail.

The Bluff Trail is approximately 0.86 miles from its start at Pasture Lake down to Lea Lake. The trail takes visitors past Lost Lake on the way.

The Wetlands Trail is a 0.54-mile loop trail. Approximately half of the trail is a boardwalk that takes visitors over the wetlands and to three bird blinds that overlook small lakes.

Birding

The wetlands that stretch from Bitter Lake National Wildlife Refuge to the Park are recognized by the Audubon Society as a Globally Important Bird Area (IBA). It is one of 15 Global IBAs in New Mexico that the Audubon Society has listed as a priority in the State. People from all over the world have come to the area for birding.

OPERATIONS

Park Facilities

ADA Accessibility

There is one handicap campsite that visitors can reserve at the Park. The bathhouse, comfort station, playground, a group shelter, and the visitor center are generally accessible. The boardwalk portion of the wetland trail is also accessible.

Visitor Center

The visitor center is located near the north end of the Park near Cottonwood Lake. It was constructed in 1978 and renovated in 2003. It is approximately 2,100 square feet and has an exhibit area, restrooms, and offices.

Staff Housing

Two park residences are located just to the north of the visitor center and another residence is near Lea Lake. Two of the modular homes were constructed in 1999, and one was constructed in 1996. The homes are all 1,456 square feet. The home adjacent to Lea Lake has not been lived in for several years.

Maintenance Shop

The shop was constructed in 1994 and is 3,000 square feet. The facility has a fenced yard, two covered bays and three-and-a-half interior bays. The paddle boats and boards that the Park rents to visitors are stored outside in the shop yard during the winter.

Bath House and Comfort Station

The bath house adjacent to the Lea Lake Pavilion was originally built in the mid-1980s and rebuilt in 2003. There is also a comfort station located at the east side of the campground, which was built in 1999. This comfort station is intended for use by campers.

Utilities

The Park currently gets its water from the City of Roswell. SPD owns, and is responsible for, the water pipeline running from a meter off of East 2nd Street/State Highway 380. The line is approximately 9.5 miles long and travels through NMDOT right-of-way, county right-of-way, BLM right-of-way, and two private ranches before reaching the Park. SPD currently has agreements in place with the owners of both ranches for a right-of-way easement through their properties in exchange for water from the pipeline. Once the pipeline reaches the visitor center, it goes another 1.5 miles to Lea Lake.

| Utility Providers | |
|-------------------|---|
| Water | City of Roswell |
| Electricity | Central Valley Electric Cooperative |
| Propane | Cortez Gas |
| Solid Waste | Removed by Park staff and taken to landfill |
| Wastewater | Septic tanks and leach fields within the Park |
| Telephone | CenturyLink |
| Internet | Southwestern Wireless |

Park Management

Staffing

The Park has five full-time employees. The park superintendent, park ranger supervisor, and park ranger are all law enforcement officers. The Park also has a park technician and plant operations specialist, who is also the regional water technician. In the summer the Park typically has two seasonally-employed park technicians, two laborers, and five life guards.

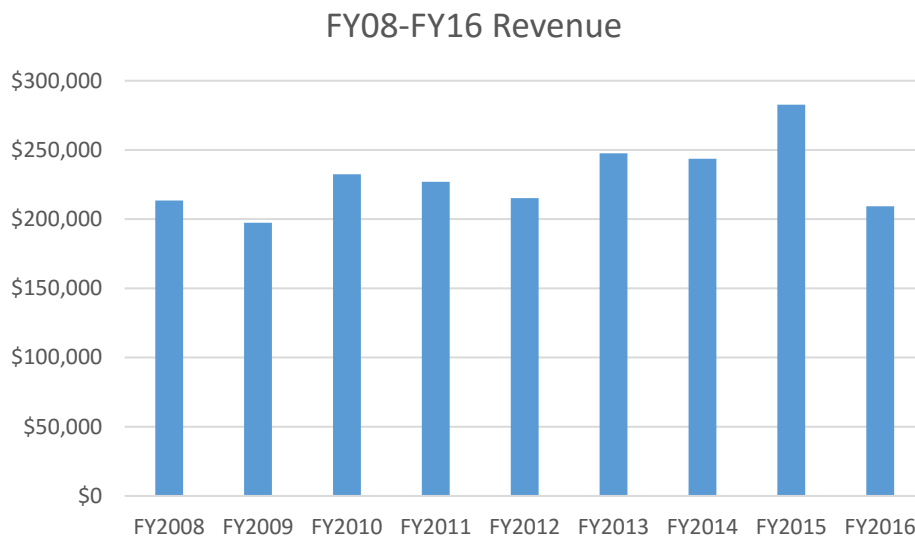
Partners and Concessions

The Park has not had a Friends group since 2012 and does not have a concessionaire. The Park rents out paddle boards and paddle boats, which brings in an average of \$42,000 a year.

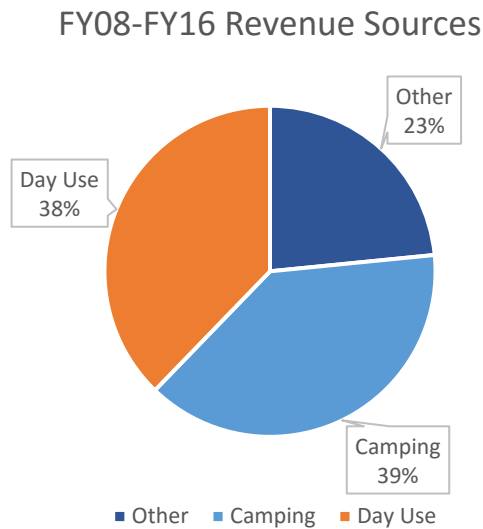
Volunteers

The Park typically has two sets of camp hosts at Lea Lake in the summer months. Park volunteers may perform tasks such as welcoming visitors at the visitor center, conducting routine maintenance, hosting interpretive programs, and lending help when the Park is hosting events and groups.

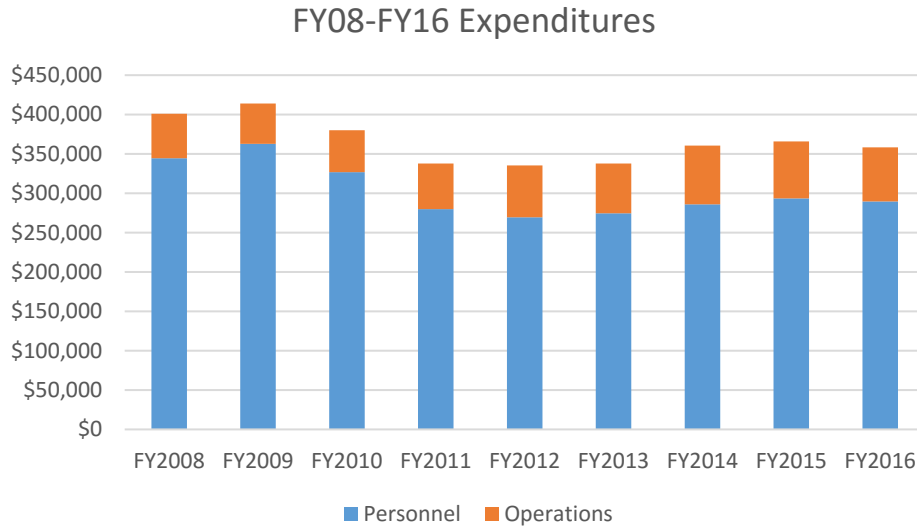
Budget



Revenue for the Park has trended up slightly over the last eight years despite relatively stable visitation numbers. The increase in revenue may be attributed to more people paying daily fees rather than purchasing an annual pass.

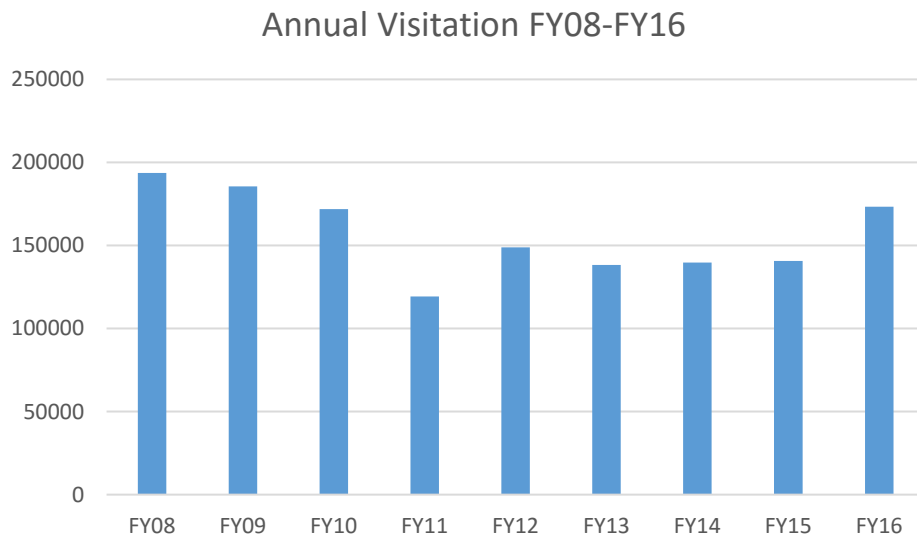


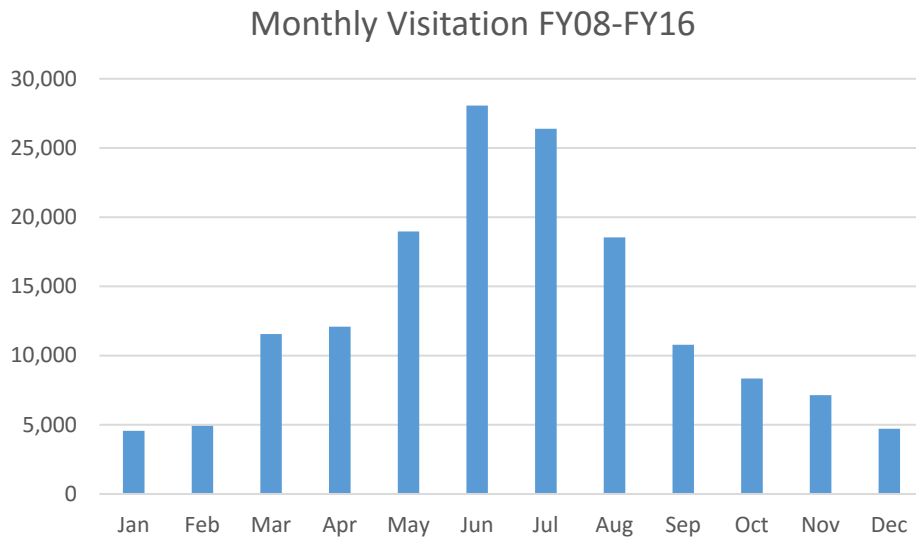
The Park makes an annual average of around \$42,000 on paddle boat and paddle board rentals, which accounts for the majority of the “other” revenue source.



Visitation

The oil and gas industry in the area experienced a boom in recent years, but production has decreased as oil prices have dropped over the past year or two. It is uncertain what effect this will have on the economy, population, and visitation in the area.





The Park is extremely popular in the summer months, and visitation drops off as soon as school is back in session in August.

RECOMMENDATIONS

ISSUES AND RECOMMENDATIONS

Issues are concerns, problems, threats, or opportunities. The issues were raised by SPD staff, stakeholders, partner organizations, or by the public. Not all issues will result in an action. Some issues may be beyond SPD's control, or may not be a priority during this planning period. The issues are listed in the categories that correspond to this plan's organization.

The proposed actions (shown with ➤) are also listed in the "Action Plan" following this section. After the public comment period, the final action items will be prioritized using the criteria developed in the Strategic Operations and Sustainability Plan (SOS). Some actions will require further research, evaluation, planning, or design before they can be implemented. Each action is contingent upon available funding and other resources, and there is no guarantee that it will be feasible or that it can be funded and implemented in the proposed timeframe.

Resource Recommendations

Other parks, such as the Rio Grande Nature Center and Mesilla Valley Bosque, have successfully held "BioBlitz" days to get a more complete picture of their natural inventory. BioBlitzes invite knowledgeable volunteers and professionals to participate in a day or two of cataloging species.

- Evaluate flora and fauna in the Park by holding a BioBlitz.

The U.S. Army Corps of Engineers is likely to complete its involvement in the aquatic habitat restoration project within the next two years. As a result, SPD will become responsible for keeping up with the tamarisk control in the wetlands area, which may require additional training and equipment.

- Ensure that the Park has the capacity to manage invasive species once the U.S. Army Corps ends their involvement in the wetland restoration project.

Recreation Recommendations

The Park currently has three trails, the Bluff Trail, the Wetlands Trail, and the Skidmarks Trail. The trails are not connected but it would be possible to connect the Skidmarks Trail to the Bluff Trail by creating a new trail on top of the ridge overlooking the lakes. This would enable hikers and bikers to travel from one end of the Park to the other while offering beautiful views of the valley and lakes below. It may also be possible to create a loop trail spanning the length of the Park.

- Identify areas for potential trails and create new trails in the Park.

Disc golf has experienced a surge in popularity over the last 10 years. Adding a disc golf course near the day use area at Lea Lake would be a popular attraction for the Park and would add to the options of outdoor recreation activities.

- Add an 18-hole disc golf course near the Lea Lake day use area.

Thirty-two of the 35 campsites at Lea Lake have electric service, but only 11 of these sites have 50-amp electric service. Most late-model RVs need 50-amp service, otherwise electric breakers can trip or there can be surges and drops in voltage. SPD should install 50-amp pedestals at the rest of the campsites to better serve visitors.

- Add 50-amp electric pedestals to the sites at the Lea Lake Campground.

ADA Accessibility

There is currently only one ADA-accessible campsite in the Park. To provide better service to people of varying abilities, the Park should add two additional ADA sites and upgrade the existing ADA site in the Lea Lake Campground. SPD may consider creating an ADA site at the Inkwell Campground since no sites near the smaller lakes are currently ADA accessible.

- Create two additional ADA camping sites and upgrade the existing ADA site at the Park.

The group shelter in the day-use area near Lea Lake does not have ADA access. The group shelter in the campground, which does have ADA access, is used mostly by people camping. SPD should make the group shelter at the day-use area ADA accessible. The day-use area does not currently have ADA accessible picnic sites, either. SPD should upgrade a few of the picnic sites to provide picnicking opportunities to people of varying physical abilities. SPD should also make the water hydrant at the Lea Lake playground ADA accessible.

- Make the group shelter, water hydrant at the playground, and several of the picnic sites at the day-use area ADA accessible.

The day-use area at Lea Lake does not have a restroom, and people picnicking or playing in the area must walk some distance to the nearest restroom facilities on the other side of the lake. If people are using the picnic sites at the north end of the day use area, this walk is over 350 yards. People with mobility issues may find this particularly inconvenient because they would have to get into and out of a vehicle to visit the restrooms. SPD should construct either ADA-accessible vault toilets or ADA accessible spots for portable toilets in the day-use area.

- Create ADA accessible restroom facilities in the day-use area.

Facilities Recommendations

SPD currently gets its water from the City of Roswell via a 9.5-mile-long water pipe, which was installed by SPD. SPD is responsible for the maintenance of the pipe. SPD appears to be losing water somewhere along the pipeline and has received large water bills. SPD needs to identify and resolve the problem. SPD is in the process of replacing the water line.

- Identify the cause of, and resolve, the Park's water-use problem.

The comfort stations at Lea Lake and the Lea Lake Campground need new lighting and other repairs.

- Make necessary upgrades to the comfort station at the Lea Lake and the Lea Lake Campground.

Many school classes visit the Park throughout the year to learn about wildlife, wetlands, and geology. The visitor center has no seating outside the Park office and is too small to host most of these groups. The weather is often not good enough to host these groups outside during the school year. The Park should have a classroom facility that can accommodate school classes and serve other functions. The building could be rented out for group events, and the Park could host interpretive events there, too.

- Construct a multi-purpose building.

The Lea Lake Pavilion and adjacent water tower is the Park's most recognizable feature. The 80-year-old structures need occasional upgrades and repairs to keep them from deteriorating. The water tower currently needs some repairs to address cracking in the rockwork that is characteristic of CCC buildings. The Lea Lake Pavilion needs to have plexiglass panels replaced in the bay door facing the lake, some

exterior wood repaired or replaced, and the cement walls surrounding the picnic tables removed or replaced. The doors and windows of the water tower and pavilion also need to be either replaced or upgraded.

- Make needed repairs to the Lea Lake Pavilion and water tower.

The Park maintenance shop was built in 1994 and has received only minor upgrades since then. SPD should make improvements to the shop including adding an evaporative cooler and laundry facilities for camp hosts. The shop should also be expanded to shelter the paddle boats and paddleboards in the off-season and accommodate some equipment that is currently exposed to the elements.

- Expand and make upgrades to the Park shop.

Currently, Park staff park their vehicles and some equipment near the volunteer sites to the north of the visitor center, which leaves the vehicles and equipment exposed to the elements. SPD should construct a carport that can cover five to six vehicles.

- Construct a carport behind the visitor center.

Bottomless Lakes Road and the entryway to Lea Lake are in poor condition and currently pose a safety hazard to bikers and pedestrians. NMDOT is responsible for the repairs on Bottomless Lakes Road and is aware of the problems. NMDOT has also indicated that they may be willing to pave the entryway to Lea Lake during the repaving process.

- Work with NMDOT to repave Bottomless Lakes Road and the Lea Lake entrance area.

Management Recommendations

The Park has not had a Friends group for years. Friends groups can help the Park by raising funds, volunteering on projects, helping with events, and helping staff with tasks during busy times.

- Create a Friends group for the Park.

The Park needs more interpretive signs, particularly in the area near the Wetland Trail.

- Add more interpretive signs at the Park, particularly in the area around the Wetland Trail.

ACTION PLAN

| Action | Score | Cost Estimate |
|--|-------|-------------------|
| Make needed repairs to the Lea Lake Pavilion and water tower. | 13 | \$120,000 |
| Create a friends group for the Park. | 12 | \$0 |
| Ensure that the Park has the capacity to manage invasive species once the U.S. Army Corps ends their involvement in the wetland restoration project. | 11 | TBD |
| Work with NMDOT to repave Bottomless Lakes Road and the Lea Lake entrance area. | 11 | \$0 |
| Identify the cause of, and resolve, the Park's water use problem. | 10 | \$383,000 |
| Create additional ADA camping sites at the Park. | 9 | \$90,000 |
| Make the group shelter, water hydrant at the playground, and several of the picnic sites at the day-use area ADA accessible. | 8 | \$76,000 |
| Make necessary upgrades to the comfort station at the Lea Lake Campground. | 8 | \$40,000 |
| Expand and make upgrades to the Park shop. | 7 | \$150,000 |
| Evaluate flora and fauna in the Park by holding a BioBlitz. | 6 | \$0 |
| Add 50 amp electric pedestals to the sites at the Lea Lake Campground. | 6 | \$60,000 |
| Construct a carport behind the visitor center. | 5 | \$130,000 |
| Add interpretive signs to the areas around the lakes. | 3 | \$32,000 |
| Add an 18-hole disc golf course near the Lee Lake day use area. | 2 | \$15,000-\$20,000 |
| Construct a multipurpose building in the vicinity of Lea Lake. | 2 | TBD |
| Create ADA accessible restroom facilities in the day use area. | 2 | \$70,000 |
| Identify areas for potential trails and create new trails in the Park. | 0 | TBD |

| Bottomless Lakes Action Item Score Sheet | | | | | | | |
|---|-------------------|---------------------|--------------------|------------|--------------------|---------|-------|
| Evaluate flora and fauna in the Park by holding a BioBlitz. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 0 | 0 | 2 | 1 | 0 | 3 | 0 | 6 |
| Identify areas for potential trails and create new trails in the Park. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| -2 | -1 | -1 | 2 | 0 | 2 | 0 | 0 |
| Add an 18-hole disc golf course near the Lee Lake day use area. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| -1 | 0 | -2 | 2 | 0 | 2 | 1 | 2 |
| Add 50 amp electric pedestals to the sites at the Lea Lake Campground. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 1 | 1 | 0 | 1 | -1 | 2 | 2 | 6 |
| Create additional ADA camping sites at the Park. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 0 | 3 | 0 | 1 | 1 | 2 | 2 | 9 |
| Make the group shelter, water hydrant at the playground, and several of the picnic sites at the day-use area ADA accessible. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 0 | 3 | 0 | 1 | 1 | 2 | 1 | 8 |
| Identify the cause of, and resolve, the Park's water use problem. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 3 | 0 | 2 | 0 | 2 | 0 | 3 | 10 |
| Ensure that the Park has the capacity to manage invasive species once the U.S. Army Corps ends their involvement in the wetland restoration project. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 2 | 2 | 3 | 1 | 2 | 0 | 1 | 11 |
| Make necessary upgrades to the comfort station at the Lea Lake Campground. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 2 | 1 | 0 | 0 | 1 | 2 | 2 | 8 |
| Construct a multipurpose building in the vicinity of Lea Lake. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| -2 | 0 | -1 | 2 | 0 | 3 | 0 | 2 |
| Make needed repairs to the Lea Lake Pavilion and water tower. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 3 | 2 | 3 | 1 | 0 | 1 | 3 | 13 |
| Expand and make upgrades to the Park shop. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 2 | 0 | 0 | 1 | 2 | 1 | 1 | 7 |
| Construct a carport behind the visitor center. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 2 | 0 | 0 | 0 | 2 | 0 | 1 | 5 |
| Create ADA accessible restroom facilities in the day use area. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| -2 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| Create a friends group for the Park. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 2 | 0 | 1 | 3 | 2 | 1 | 3 | 12 |
| Work with NMDOT to repave Bottomless Lakes Road and the Lea Lake entrance area. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| 0 | 3 | 0 | 1 | 2 | 2 | 3 | 11 |
| Add interpretive signs to the areas around the lakes. | | | | | | | |
| Maintenance | Safety/Regulatory | Resource Protection | Revenue Generation | Efficiency | Visitor Experience | Urgency | Total |
| -1 | 0 | 1 | 0 | 0 | 2 | 1 | 3 |

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