

## **Superintendent's Office**

2007 was another great year for the staff at Joshua Tree National Park. Partnerships continue to expand and flourish, the safety culture is improving and support from the community continues to be strengthened.

Safety remains a constant priority and the major component of any work initiated. The Safety Committee continues to be active, including monthly meetings, ongoing safety messages being distributed to all park staff, and safety stand down days scheduled and carried out. On site safety inspections were conducted by Safety Committee members. Job Hazard Analyses are continuously updated. Safety continues to be a part of every day life at Joshua Tree.

The Joshua Tree Initiative, introduced during 2006, continues in the park culture and embodies the concepts of personal motivation through empowerment and pride. This is evident by Mr. Ken Hornback who was accepted into the Facility Manager Trainee program, and graduated with top honors and then received a promotion with a transfer to another park. Facility Manager John Slaughter was accepted into the Train the Trainers Course and carried through with his commitment to the training by presenting several sessions. Erin Tromblay transferred with a promotion. To continue moving forward with this Initiative, the Superintendent created a Training Committee to understand what's being requested through the Individual Development Plan process, and to follow up with training opportunities to increase the number of trained employees, whether it's training for the current assignment, or training for an up and coming promotion within the park, or a transfer to another park.

Also introduced in 2006, and continued in 2007, were the Town Tours, an opportunity for the Superintendent to meet invited members of the local communities to spend a day in the park, hosted by the Superintendent. In 2007, we hosted another three tours, including local planning commission members, which seems to have paid some dividends, since the park's existence is now discussed occasionally at Planning Commission meetings when the topic of requested zoning changes is on the agenda.

The park continues to be actively engaged in the Morongo Basin Open Space Group. This group has launched itself into a focused work group, learning about wildlife corridors, sustaining quality of life in the Basin, preserving night skies and development issues. There are over 25 active members including the NPS, BLM, USF&WS, CA Fish and Game, San Bernardino County, Town of Yucca Valley, City of Twentynine Palms,

## **Safety Office**

### **Safety Committee/Safety Officer**

The safety office underwent some dynamic changes during the year of 2007. Former safety chairperson Tasha LaDoux departed her fulltime position as park botanist and collateral duty safety chairperson for a research position in the private sector. Her services to the safety office will be greatly missed. In December of 2007 park-wide elections were held for the offices of safety chairperson, treasure and training coordinator. On behalf of the superintendent, the safety

officer would like to extend a warm welcome to Laura Lentz-Mendoza, Pam Tripp and Jason Van Warmerdam to the aforementioned positions respectively.

### **Training**

Despite the shortcomings faced by the loss of the safety chairperson, the safety committee and other safety-minded employees across all divisions were able to document over 1033 employee-hours of trainings and tailgate safety sessions. This documented training includes Operational Risk Management (ORM), for all employees. The superintendent authorized 100% participation for this important cultural/behavioral based training for all employees. 98% of the employees at Joshua Tree attended the 8 hour training over two sessions in December. The other 2% are scheduled for training at Lake Mead National Recreational Area in mid-January. Requiring the 100% of the employees to receive the voluntary ORM training truly epitomizes the commitment and dedication to safety from the superintendent.

### **Inspections**

The safety office completed two inspections of each of the facilities at Joshua Tree National Park during 2007 and made recommendations to the appropriate Division Chief for corrective action. Corrective actions (e.g., securely anchoring of tall cabinets) were carried out through the year.

### **Hazard Materials/Environment**

Joshua Tree National Park has been proactive in reducing its production of hazardous waste. By utilizing "Green Boxes" for battery disposal, returning small quantities oil and vehicle batteries to the auto parts vendor, and replacing fluorescent light bulbs with environmentally friendly replacements, Joshua Tree National Park has been reclassified from a large quantity generator to a small quantity generator of hazardous materials by the Riverside County Hazmat Team. In addition to conducting operations in an environmentally friendly manner, this reclassification will also provide a cost savings to the park in annual fees paid to the county.

### **Safety Stand-down/Quarterly All Employee Safety Meetings**

Joshua Tree National Park had a safety stand-down and wellness day during 2007. A variety of safety training sessions were scheduled throughout the day. One of the wellness sessions included a Yoga class which has now become popular outside activity for several employees. Other wellness activities included the use of contract medical professionals to review the general health of employees (e.g., blood pressure and cholesterol screenings) It is anticipated that the superintendent will introduce a health and wellness program for all employees in Fiscal Year 2008.

In addition to the scheduled safety stand-down and wellness day, the Superintendent ordered the Resource Division to an impromptu safety stand-down to review the division's safety practices and training protocols. The impromptu stand-down was well received and afforded the division an opportunity to review all the Job-Hazard-Analyses for all operations. The stand-down also provided valuable insight to safety gaps that needed immediate attention.

During 2007, Joshua Tree continued to hold quarterly All-Employee luncheons with the main emphasis on safety. Agenda items included safety recognition and safety messages from the superintendent and safety officer.

## **Administration Division**

The work accomplished by this team is staggering in quantity and complexity as it continues to increase as we move forward in these ever changing times. Of importance this year and in the years to come are the actions surrounding the Centennial Act. FY07 Centennial Act actions heralded an increase in park base and expanded seasonal hiring which were blended into the routine operations.

### **Human Resources**

Throughout the year, the Human Resources team continued to manage the personnel security and suitability adjudication program for all NPS positions that handle government money and worked with WASO staff to develop, write and review bulletins and policies related to human resources and suitability issues. The Human Resource Officer was successful in obtaining permanent funding for one full time career seasonal GS-5 and one part time career seasonal GS-5 Human Resources Assistant to assist with service wide adjudication. The Human Resource Officer directly supervises three full time employees and one part time employee.

Funding was requested and approved by WASO to renovate and enlarge the human resource office space to address the space needs for the staff and security files. The FY08 Fee Adjudication budget plan was submitted and approved. More than 2,000 background investigations were adjudicated and processed. Joshua Tree continues to process and adjudicate background investigations for the Mojave National Preserve, issue cases for Lake Mead NRA and all NACI's for the Harpers Ferry Center. The JOTR staff provided adjudication assistance for WASO this past year. One employee spent a week in WASO and followed through with additional assistance to WASO throughout the adjudication process.

Joshua Tree National Park was one of the first park sites to begin using e-QIP, the Electronic Questionnaires for Investigations Processing. Use of the new system has resulted in an decrease in time necessary to complete the background investigation process.

The Human Resource Officer at JOTR drafted the "Mojave Desert Network Centennial Recruitment and Staffing Implementation Plan" for the Desert Managers Group. The plan was approved and implemented in a manner that allowed for hiring to begin in mid-May to accommodate the Centennial hires in the busy fall/winter visitor use season. Working closely with the Servicing Personnel Offices within the network, a team was formulated to evaluate applications and prepare certificates for all seven parks.

The JOTR Human Resource Officer was instrumental in the development and planning of a proposal for the most efficient operation (MEO) addressing Human Resources operations for the network. The plan has been approved and steps are currently being implemented to initiate the plan.

In addition to servicewide and network responsibilities, the HR program at JOTR continues to provide park staff and managers with professional support in all areas of human resources, i.e., classification of positions, updating of the park position management plan, employee relations, staffing and placement, benefits, pay administration, ethics, etc. The team implemented several

new processes over the past year, including all employees must complete the PIV forms prior to EOD, and new processes were set in place to notify/approve employees, volunteers, interns, contractors and cooperators with clearance for IT access and building access.

As of September 30, 2007, the number of encumbered permanent positions in the targeted occupational series 0025, 0193, 0301, 1010, 1015, and 1640 was 18. Ten, or 56 percent, met the definition of diverse employees. All park employees have performance standards linked to strategic and annual goals.

The HR staff continues to participate in park wide functions. They actively participated in the successful coordination of the 25<sup>th</sup> Anniversary of the Joshua Tree Search and Rescue Team (JOSAR). They also provided assistance for the Desert Manager's dinner, the park VIP recognition dinner, and the park holiday celebration dinner.

### **Information Technology Services**

IT services assisted in the relocation of the Resources Management Division to a government residence located at Indian Cove Campground. Relocation included replacing 250 feet of telephone cable for additional phone lines, the establishment of a LAN (Local Area Network) in the residence for 13 computers and a NAS (network attached storage) device. The vacated building's internal network, telephone and alarm wiring was removed and recycled.

In support of a photovoltaic panel research project coordinated by the Maintenance Division, IT services established an analog telephone line to allow the reporting and remote access of the test site.

In the arena of sharing resources within the Mediterranean & Mojave Network, the park IT Specialist conducted an onsite visit to GRBA to inspect the condition of the wireless bridge system that provides telephone and internet services to the Visitor Center and training room located in Baker, Nevada. This check and the verification of network capability of the Lehman Caves Headquarters area will set the groundwork for the upgrade of the park telephone system to VOIP (Voice over Internet Protocol) late in FY08.

During fire season, the IT Specialist was called out to San Bernardino County Dispatch to create an Expanded Dispatch for the Grass Valley and Malibu fires.

### **Procurement, Contracting, and Accountable Property**

Disposal of excess IT property (102 items) was completed through the Dell Asset Recovery system. Replacement of dated computers included the park server and 13 desktop/laptop computers.

Two excess vehicles were disposed of through General Services Administration (GSA). The property report was updated and is current, correct, and in compliance with applicable rules and regulations.

The park took an opportunity to transfer three excess trailers to the local military base, Marine Corps Air Ground Combat Center. Other real property issues dealt with the remaining house at

Whispering Pines being published per the Stewart B. McKinney Act. It has subsequently been approved for disposal in FY08.

The park Contracting Officer assisted the regional contracting office, on the Acquisition and Agreements Management Review (AMR) team, in auditing Lake Mead NRA. Other assistance was provided to the regional contracting office in supporting other parks throughout the region with their procurement and interagency agreement needs.

### **Budget/Finance**

This year's Servicewide Comprehensive Call (SCC) was accomplished through joint collaboration within the park's management team. The park had a cleaner database from prior years' work and is hoping for positive results especially in one of the more complex funding requirements within the SCC: FLREA with a focus of deferred maintenance.

Base funding for fiscal year 2007 was \$4,381,000. Outside the more routine fund sources of repair/rehabilitation and cyclic maintenance, FLREA (Fee Demonstration Program) and Federal Lands Highway Program, the National Fire Management Program Center approved Burned Area Rehabilitation funding (BAR) and accounts were set up for Central and West Complex BAR projects. In 2006 BAER funding was requested and approved. The added complexity of BAR funding put a workload on budget personnel although the flip side was that funds were provided to fill the voids where needed.

The Budget Analyst has been fulfilling more of the basic park wide budgeting than in prior years due to the Administrative support vacancies within the park which caused gaps in the budget programming and planning areas.

Employee housing rentals generated \$28,684.59. Even though WASO housing funds provided half of the cost of repairs, a large portion of housing funds went to the repair of the Cottonwood duplex caused by a pipe bursting due to freezing temperatures.

### **Facility Management**

FY07 turned out to be another year of growth for the facilities management division, not only in projects and programs but also in personal and professional development.

This was a banner year in funding for the park from the various regional programs including Repair and Rehabilitation, (R&R), Regular Cyclic Maintenance, (RCM), Environmental Management Program, (EMP) and Fees. The reason for the great successes realized was a result of superior planning and staging of the various projects for funding. During the Servicewide Comprehensive Call of last year the maintenance division staged projects well beyond the normal allocations of the past, positioning the park to accomplish many projects with program dollars that other parks could not spend. JOTR became the "go-to" park for the RCM program, helping the region to meet facility improvement goals as documented by reduced FCI's park wide. Some major accomplishments included obligating \$615,874.34 in Regular Cyclic funding, \$648,059.00 in Repair & Rehab funding, and over \$300,000.00 in Fee funding to address deferred maintenance throughout the park.

Once again, JOTR proved its leadership role throughout the NPS (actually within ALL federal land management agencies) as the alternative energy example. JOTR partnered with Sanyo and SunWize to install an experimental 6kW grid-tied PV system at the headquarters complex at virtually no cost to the park or the NPS. The park realizes the energy savings the system produces and the partners have a means to develop the cutting edge PV technology. A truly WIN-WIN situation! Additionally, JOTR took the lead to establish communications with Southern California Edison (SCE), to discuss the development of a centralized “solar farm” which will provide 100% of the power utilized by the National Parks serviced through SCE. When developed, the system will save the NPS over \$600,000 annually. A beneficial byproduct of these meetings was the acquisition of 25kW in PV panels donated by SCE to Death Valley and Channel Islands. The system at DEVA will be the first grid-tied system at that park.

The Facility Manager, John Slaughter, was selected as one of two individuals in the Pacific West Region to be awarded scholarships to attend the Crucial Conversations “Train-the-Trainer” program. This program focuses on vital communication skills and how to present the material in a classroom setting. As noted in the NPS Director’s message about the training survey, communication was the number one skill recognized as needing improvement in the NPS. John joined the PWR employee development team to develop a training schedule for the region. He presented the training four times in FY07 at LAME, YOSE, OLYM and JOTR. Over 100 employees of the PWR benefited from the training, 22 from JOTR alone, including the entire management team. JOTR plans to continue the training in-house until all of the JOTR staff possesses these vital skills. Also in 2007, our Trails Foreman, Ken Hornback not only completed the Facility Managers Leadership Development Program but was awarded the top honors in this inaugural graduating class. JOTR added one more leader to the ranks of the NPS.

The following departmental reports outline the in-house accomplishments as well as documenting the “Buddy-Park” leadership role that JOTR has provided to many parks both inside and outside the Mojave Network.

### **Buildings and Utilities**

This first project consisted of removing and replacing asphalt shingle roofs on the Black Rock Maintenance Office and the Cottonwood Maintenance Office and replacing them with metal pan preformed roof material. The roofs had exceeded their expected life cycle by numerous years. The sustainable metal roofs have proven to be an ideal material for the harsh desert environments.

This next project consisted of maintenance to building exteriors on the Cottonwood Maintenance office and the Cottonwood Interpretation Office. The Cottonwood Maintenance office has been in disrepair for a number of years. Water blasting to the siding on this structure cleaned off the old peeling water based paint that was incorrectly installed in previous years. Repair of laps and accent trim ensured a water and rodent proof structure. Also repaired in this project was the roof mounted evaporative cooler relocated to a ground unit and a new staircase installed built with plastic lumber products. With the help of the cyclic roofing project at the same time this asset is now in very good condition.



Finished Cottonwood Maintenance Office

The Cottonwood Interpretation Office was built underneath an original steel canopy dating to the mid to late 1960's. The walls were built with cinder block and wood framing structure. This project rebuilt the dilapidated wood framing, and replaced the out of date windows and doors. The structure was then covered with a three part stucco process.



Cottonwood Interpretation Office Before



Cottonwood Office After

### Recreational Fee Funds

The replacement of the park's Resource Management trailer was started with removal of the obsolete triple wide trailer in February by an outside contractor. Excavation of the area was filled with compactable soil in June. Forming, plumbing, electrical, and interior grading, along with the start of steel matting was completed in the fall of 2007.



Resource Trailer



New Building Foundation.

Another project that was underway in 2007 was to remove an asphalt roadway and construct a visitor patio with walks, retaining walls and planters. Retaining walls and some side walks have been installed. The project is continuing with determination of native fauna that will be planted along the visitor walks and view shed areas.



Retaining walls



Removed Asphalt Area

### ONPS Projects

- The Joshua Tree B&U crew helped out Devils Postpile National Monument with a roof replacement project. Wood shake shingles were removed and replaced with preformed metal pan roofing.
- The Joshua Tree B&U crew also helped out Death Valley National Park with a LED hybrid lighting replacement project that consisted of replacing incandescent fixtures on walkways and porches.
- The Cottonwood septic system for the Maintenance Yard and housing complex failed the first part of the year. Upon inspection it was discovered that the original leach field was

assembled with clay pipe in 8” sections. They had moved apart from each other letting roots and dirt to fill up the lines. The piping was uncovered, removed and replaced with up to date perforated pipe and cover.



Roots in Pipe



Perforated Pipe with Gravel Bed

- The America’s Best Idea Exhibit (ABI) was awarded a showing in the Joshua Tree Visitor Center during the late spring and early summer. Buildings and Utilities staff had a rather tight time frame to remove the existing exhibits and install the ABI exhibit. The crew came together and accomplished the task against very unfavorable odds.



- B&U assisted SunWize Technologies and Sanyo/Japan with the installation of a 6 KW experimental high heat photovoltaic system. Site work and infrastructure upgrades were installed by the B&U crew.



## Roads Department

### Repair and Rehab Funding

The Road Crew worked on repairing the road entering Whispering Pines in FY07 in preparation for the FY 08 fiscal year R&R project. In FY08, two of the 3 structures will be removed and the area where the structures stood will be rehabilitated with native vegetation. In FY07, we encountered areas of asbestos contamination in those sites and as a result had to have the area tested and asbestos removed. Habryl Environmental was the firm responsible for the testing and removal of the Asbestos from the site. This was accomplished over a period of one month and the area is now safe for removal of said structures.

The Road Crew was awarded funding for the stabilization of the road shoulders Park Route 11 from mile marker 25.3 to 26.3 in the Smoke Tree Wash area. 10,560 linear feet of road shoulder was armored with Class 2 and 3 rip rap rock followed by class 2 road base and compacted to stabilize asphalt road edge and reduce the potential of undermining of the roadway in the event of flash flooding.



The Road crew constructed and delineated 5 new parking spaces park wide to accommodate the new Wayside exhibits.



The Keys view road project is a 5.5 mile 4 R Reconstruction and re-alignment project. It is currently ongoing and should be completed by Mid November.



## Roads Partner Projects

In early spring 2007, the facility manager at MOJA Steve Carlson had requested assistance in repairing 4 miles of damaged roadway in Mojave National Preserve from flash flooding that occurred the prior winter.

The road crew was dispatched for approximately one week to help with that project. They graded dirt roads and installed drainage culverts in key areas to help reduce erosion in those areas.

The road crew completed an Entrance Road Repair project at Devil's Postpile National Monument. This project performed much needed cyclic maintenance to the only entrance road into the National Monument. The project was phased into two components, culvert/drainage maintenance and chip seal. Culvert repair, crack sealing, and drainage was performed as a partnership project utilizing the JOTR Roads crew. The chip seal was completed using the PWR IDIQ contractor Hardrives Construction.



## Trails Department

### Cyclic, Operational, and Fee Funded Projects

- The crew performed cyclic and operational maintenance to 26.4 miles of trail. They cleaned, maintained or repaired 116 waterbars. They installed an additional 47 soil waterbars and 16 stone waterbars. The crew trimmed brush and encroaching vegetation on 42,000 linear feet of trail corridor and removed 3 downed trees. The crew also redefined the tread on 13000 linear feet of trail treadway. They restored the outslope and trail edges on 1160 linear feet of trail and repaired 284 sq. ft. of stone retaining wall. The crew repaired and maintained 126 stone steps/checkdams. They also replaced 15

degraded signs and removed 2 signs that were no longer needed. The crew realigned six minor sections of trail totaling 480 linear feet. The operational work performed consisted of brushing, tree removal, cleaning of waterbars, minor repair of trail structures, tool and equipment repair, and administrative duties.



### **Repair & Rehab**

- **Lost Palms Oasis Trail-** The crews redefined tread on 10000 linear feet of trail and brushed the entire 4.5 mile trail corridor. They installed 64 stone steps/checkdams for a total of 148 sq. ft. of rockwork. The crew restored the outslope to 5300 linear feet of trail tread and placed 10 directional signs along the route. They also repaired 32 soil waterbars and installed 10 new soil and 7 new stone waterbars along the trail. The crew repaired 22 sq. ft. of stone retaining wall and constructed another 46 sq. ft. of new wall along trail edges. They constructed one rip-rap drain section for a total of 12 sq. ft. of stonework. The crew realigned or rerouted 2 minor reroutes totaling 200 linear feet. The crew will use the California Conservation Corps to repair the remainder of the trail during the 2007, 2008 winter season.



**Cottonwood Spring Nature Trail-** The crew removed 30 tons of degraded asphalt tread material, 200 linear feet of non-compliant handrail, and 6 tons of degraded concrete and stone retaining wall. They also removed two non functional culverts and placed 8 tons of fill material to reduce the grade on the trail. The crew constructed 400 sq. ft. of stone retaining wall and installed 2 new galvanized culverts. They also constructed 64 sq. ft. of stone rip-rap and installed one rubble wall along the trail edges. The crew replaced one trailside bench with a new ADA compliant bench made from recycled plastic lumber. The placed 600 linear feet of 2”x 6” recycled plastic lumber border to define the trail edges and installed 260 linear feet of ADA compliant handrail. The crew placed 32 tons of soil stabilizer material and compacted it to provide a smooth walking surface. They also constructed 5 stone steps at the base of the trail for a total of 40 sq. ft. of rockwork.



## **Division of Resource and Visitor Protection**

The Division of Visitor and Resource Protection continued to manage the park's law enforcement, fire, emergency medical, search and rescue, fee collection, campground management, and Special Use programs, backcountry and wilderness recreational use. The Division started out the year by hosting the 25<sup>th</sup> anniversary of Joshua Tree's Search and Rescue (JOSAR) program.

Approximately 50 past and current team members attended along with 3 individuals that have been rescued by the team over the past 25 years.

The division continued to work closely with BLM, Forest Service, mutual aid law enforcement agencies, the Assistant U.S. Attorney's Office, and the U.S. Magistrate Judge, to provide emergency response in the park and with cooperators. We continued our efforts to reduce reptile poaching with the cooperation of the U.S. Fish & Wildlife Service and California Department of Fish & Game. The staff worked on the development of a *Service First* Agreement with the BLM and San Bernardino National Forest which encompasses interagency programs for fire and dispatch. The staff was also able to negotiate a Memorandum of Understanding with the San Bernardino County Sheriff's Department.

During 2007, the park's Search and Rescue Coordinator position (Scott Fischer) became vacant after he transferred to Mesa Verde, and one of the other patrol rangers (Jan Lemons) filled in for the duration of the year. Ranger Eric Paul transferred to Canyonlands on a lateral transfer.

### **Archeological Sites**

Rangers routinely conducted backcountry patrols, monitoring and observing archaeological sites. There were five incidents of damage to archaeological resources documented; no citations were issued for damage.

### **Disturbed Lands**

The staff coordinated the clean up of three dump sites with approximately 365 pounds of trash and two recreational trailers being hauled out of the backcountry. The Ranger Division investigated 82 incidents of resource damage from off road vehicle use.

### **Employee Safety**

The Visitor and Resource Protection, (VRP) staff participated in the park's safety program by attending safety training sessions, serving as a member on the park's safety committee, distributing safety messages via All Employee emails, and identifying safety issues and correcting them when necessary.

The staff continued to implement service-wide medical standards testing in accordance with DO-57. Ranger Division employees in identified arduous positions participated in a physical fitness program, including commissioned employees and fire fighters. Commissioned employees participated in physical fitness testing, using the FLETC standard test of the PEB.

The Physical Fitness Coordinator (collateral duty) provided assistance in developing the park's first "Health and Wellness Program" which included drafting policy that applied to non-LE and non-fire employees which outlined their participation in a voluntary fitness program.

The Lost Horse District Ranger (Dan Messaros) serves as the park's aviation program coordinator and assisted the Resource Management Division on several projects as the Aviation Manager.

The staff participated in the Operational Leadership training which is being adopted by the Pacific West Region for risk analysis. This process was used in preparing for a high risk project with a contract tow truck operator. The contractor was included in the analysis process resulting in a safe outcome.

### **Fee Program and Special Park Use Permit Program**

The Fee Program was combined with the Special Use Program with one program manager providing supervision for both. The visitor use assistant positions full performance level was upgraded to GS-5 for providing public education and information on regular and recurring basis. The Fee Program collected \$2.4 million at the entrance stations, visitor centers and campgrounds. During 2007, the park's fee collection program staffed the entrance stations and campgrounds throughout the year, including working in teams during traditional peak traffic times. Staff administered the NPS camping reservation system and continued to coordinate and implement policies related to the Federal Land's Recreation Enhancement Program.

The National Parks' campground reservation system was changed to a new contractor during 2007. During the beginning of the contract with the new company, there was considerable difficulty getting the program up and running at the national level. Because Joshua Tree is a winter park, the timing of this inadequate transition created significant upheaval for our park staff for several weeks. The Fee Supervisor handled the transition with constant communication with WASO Fee Office staff and park staff. On a positive note, fee staff was pleased to be able to provide photo documentation of all campgrounds in the park to be placed on the contract reservation website. These photos assist visitors in selecting a site for their overnight stay.

Activities within the park's special use program issued and monitored over 68 Commercial Use Authorizations, 59 commercial filming permits, and 40 Special Use permits, including permits for weddings and special events. Park staff monitored 69 days of filming with all permits complying with the NEPA process

### **Fire**

The park's fire program continued to participate in the California Desert Fire Zone Organization. The Engine crew exhibited excellent performance at the combined NPS and BLM Readiness Review in May. The fire program was able to hire an Assistant Fire Management Officer (AFMO), Steve Elenburg during the fire season. The AFMO provided support to both the Black Rock fire crew and the Mojave NP fire crew. The Engine Captain (Shad Murphy) transferred to a Department of Defense assignment, and his vacancy was backfilled with a detailee, and remained vacant at the end of FY07 & CY07.

Locally, there were very few fire calls. The Engine crew responded to and provided support to cooperators during the October fire storms in Los Angeles, San Diego and Orange counties.

### **Threatened Species**

Visitor protection monitored critical desert tortoise habitat, and conducted specialized patrol operations targeting wildlife violations. The Rangers responded to 66 natural resource violations.

### **Visitor Satisfaction**

The Division of Resource and Visitor Protection provided high visibility patrols in all park campgrounds, picnic areas, and public areas daily, addressing all disturbances, complaints, and visitor conflicts. Patrols were provided in campground areas well into the evening and early morning hours on every weekend, and during the week during months of traditionally high visitation. Additionally, Protection rangers responded after hours to assistance calls initiated from the Hidden Valley & Indian Cover Emergency Phones, or from the Federal Interagency Coordination Center, (FICC). Rangers responded to approximately 700 incidents in 2007.

In 2007, the Resource and Visitor Protection Division continued to foster relationships with the climbing community by promoting stewardship and the “Leave No Trace” outdoor ethic through a special program called “Climber’s Coffee”. Climber’s Coffee is a morning activity where rangers are available to meet with climbers to explain locations of climbing routes, climbing conditions or regulations.

### **Visitor Safety**

Rangers maintained high profile road patrols, conducting traffic enforcement aimed at reducing the number of motor vehicle accidents. Rangers responded to over 16 requests for emergency medical services, and 24 requests for rescues. The park incurred 1 fatality in 2007 when a park visitor was scrambling on rocks, fell and sustained a fatal head injury.

The park’s SAR team has a total of 45 members (10 NPS staff and 35 volunteers) who trained once a month and attended a 4 day Basic SAR course. The volunteers provided approximately 8000 hours of support and training time.

The division staff continued to maintain compliance with the national EMS policy. All staff has been issued “white cards.” The National Registry Test was administered and the Ranger staff completed requirements for National Registry status.

Two rangers attended the annual EMS refresher hosted by Death Valley NP. Sufficient additional training was provided to allow all park EMTs to maintain their certifications, and CPR was available to employees and volunteers in all park divisions and training in basic first aid was provided to staff.

The Ranger Division continued to support all of the mountaintop radio repeater sites. The Park Radio Coordinator supported several other divisions with technical support.

The staff continued to work with the Riverside County Sheriff’s Department on their communication project with a goal of providing coverage in the park for their deputies and fire units and to explore potential interoperability with the rangers’ radio units.

**Visitor Understanding**

High profile patrols were regularly conducted in areas with traditionally high visitor use. Educational contacts continued to be a priority in climbing areas.

**Visitor Use Statistics**

In 2007, the park welcomed 1,298,957 visitors for a 3.01 increase in the park’s visitation from 2006. There were 4,739 overnight stays in the Backcountry and a total of 197,060 campground stays.

**Wilderness**

Staff continued to chair the Wilderness Steering Committee, and continued implementation of the Backcountry Management Plan. The committee includes members from all park divisions, charged with park wide coordination of wilderness projects and conducted 5 minimal tool analyses for the park.

**Division of Interpretation and Education**

The Division of Interpretation and Education provides personal and non-personal interpretation of the area’s natural and cultural resources to the public. It coordinates the park’s cooperating association and concessions management activities as well as the environmental education, special emphasis, Volunteers-in-Parks, and Student Conservation Association programs. The division manages information services through formal, ranger-conducted interpretive programs and the operation of three park visitor centers. The Division carries out projects and activities involving a variety of non-personal services media such as museum and outdoor exhibits, publications, websites, and electronic media. In support of the Superintendent’s office, Interpretation conducts Joshua Tree’s media relations and public information programs. The park interpretive staff also provides outreach activities including off-site programs, special events, and youth programs. Through an ongoing interagency partnership, Joshua Tree National Park hosts and oversees an extensive public and education outreach initiative about the threatened desert tortoise in support of the Desert Managers Group and the federal desert tortoise recovery program.

**Visitor Services:**

Visitor Centers: Interpretation staffs and operates three visitor centers, the Oasis Visitor Center, Joshua Tree Visitor Center, and Cottonwood Visitor Center. Black Rock is operated by the park fee collection staff. Total VC attendance in 2007 was 266,911, an increase of over 68,203 from FY06. Much of this increase can be explained by the first- full-year operation of the Joshua Tree Visitor Center. Attendance at the Cottonwood and the Oasis visitor centers actually declined in 2007, perhaps due to dry conditions and lack of wildflowers as much as the impact of the new visitor center.

<b>Table 1, Visitor Center Attendance, 2006-2007</b>		
	<b>2006</b>	<b>2007</b>
Black Rock	5,302	7,725
Cottonwood	88,706	85,399

Joshua Tree	11,264	103,478
Oasis	93,436	70,309
Total	198,708	266,911

Ranger Programs: With the need to staff a new, busy visitor center 365 days a year, reallocation of interpretive ranger staffing led to a decline in the number of programs offered to the public. Loss of an approved fee project forced us to use park base funds to meet our visitor center staffing obligations, and this cut fairly deeply into the other types of visitor services we were able to offer. Traditional ranger programs, roving, off-site programs and special events all experienced declines from 2006 as shown in Table 2. Education programs and students served increased due to a *Parks As Classrooms* grant that allowed for funding of an additional student intern in the spring.

<b>Table 2, Visitor Programs, 2006-2007</b>				
	2006		2007	
	# of Programs	# of Contacts	#of Programs	# of Contacts
Ranger programs	678	18,812	594	10,601
Roving	3,812		1,774	
Community Programs	5	270	3	178
Special Events	4	2,085	2	530
Education Programs	611	19,264	640	22,514
Total	1,298	44,243	1,236	35,587

Non-Personal Services- Phase 1 of the park's waysides were installed save for those affected by the highway reconstruction on the Keys View Road. All Phase 2 wayside exhibits and hardware were produced and delivered to the park in 2007. These exhibits, as well as those for the Keys View Road, will be installed in 2008 through a separate fee project.

The park's unigrid folder underwent a complete redesign with new text in 2007. A team from the Harpers Ferry Center visited the park in May, 2007 to initiate work on the project. The new folder will have an expanded B6 format, as opposed to the current folder's B4 format. A final review and park comments were submitted at the close of the fiscal year with a planned delivery of the new folder scheduled for November/December, 2007.

Joshua Tree hosted the America's Best Idea exhibit at the Joshua Tree Visitor Center. This exhibit, curated by Yosemite National Park and supported financially by the American Parks Network, featured panoramic photos by photographer Stan Jorstad and text panels on each of America's 58 national parks. A special event hosted by the Joshua Tree Chamber of Commerce and JTNPA was held in early June to promote the exhibit. Approx. 26,000 people toured the exhibit between April 20 and the end of July before it was shipped to Sequoia National Park. Park staff spent several weeks coordinating, installing, and packaging the exhibit for its next destination.

Joshua Tree received FY07 Exhibit Cyclic funds to replace worn out trail signs on the Botanical Walk Trail at the Cottonwood Visitor Center. Interpretive Ranger Caryn Davidson spearheaded the

project. A contract for sign production was let late in FY07 with delivery of more than 100 plant name signs planned for early 2008.

The park began work on a Long Range Interpretive Plan working with Harpers Ferry interpretive planner Paul Lee. Paul made two visits to the park to identify planning issues and receive input from park staff. A draft plan was delivered to the park late spring, 2007 with the final document scheduled for completion in 2008.

The Division of Interpretation was involved with three other significant planning efforts in 2007. A park Core Operations process was inaugurated in spring, 2007 with a Core Operations workshop held in June. Significant staff time was devoted to developing core operations data and recommendations during the summer.

The park also began planning for implementation of the Centennial Initiative and the Interpretation Renaissance. A staffing and budget plan for Centennial Initiative base funding was developed and recruitment for Centennial Initiative positions was begun late in FY07 with the first positions to come on board early in FY08.

Education- Apart from its heavy involvement with the Desert Tortoise Outreach program, the Joshua Tree Education Program undertook development and implementation of a new science program called *Saving the Ancients*. Funded with a 2007 *Parks As Classrooms* grant, the program involved a partnership with the SummerTree Institute and created a program designed to raise student awareness of native plant longevity and the importance of saving native plant communities. The program is dedicated to helping save long-lived, native desert plants, while improving the environment for people and wildlife. Its goal is to create awareness and encourage desert stewardship by encouraging people to save, salvage and sample ancient native plants in their communities.

The Education staff also coordinated the National Park Service presence in California at the California Science Teachers Association annual conference in Palm Springs in October, 2006. More than 950 teachers were contacted at this event and a field trip to the park was also conducted for CSTA conferees.

Of the more than 22,000 students taking part in the Education program this year, 11,000 were Morongo Unified School District students who attended 238 programs. Participation by other local school districts in the Coachella Valley was over 10,000 students in 331 scheduled programs.

Desert Tortoise Outreach- Joshua Tree took the lead on behalf of the Desert Managers Group in the launching of a major California desert-wide public education and outreach program about the threatened desert tortoise. Funded entirely by grants from the National Fish & Wildlife Foundation, the California State OHV Commission, U.S. Fish & Wildlife Service, the Riverside Community Foundation, Wal-Mart, and the Joshua Tree National Park Association, this multi-faceted project produced a wide variety of media and outreach products to reach an estimated audience of 2.36 million people in FY07. Desert Tortoise Outreach Coordinator Anne Staley, Education Specialist Lorna Lange, Education Ranger Caryn Davidson, and Chief of Interpretation Joe Zarki contributed substantial amounts of time to support of this project, an effort involving dozens of park partners and other agency cooperators. The Education staff coordinated the development and testing of

prototype traveling trunks designed to bring the desert tortoise to the classroom. Production-version trunks will be completed and fabricated in 2008. One important element of the project was a sociological survey on human knowledge and attitudes about the desert tortoise designed and conducted under contract by the Dr. Jerry Vaske of the Human Dimension of Natural Resources program at Colorado State University. The survey was conducted and completed in 2007. The Joshua Tree National Park Association took the lead on the development of a desert tortoise merchandise program that was featured in a presentation to the Desert Managers Group in May. Apart from the \$56,000 received from the National Fish & Wildlife Foundation, more than \$239,000 in partner monetary and in-kind contributions were documented in the course of the project. The Desert Tortoise Outreach Program will continue to be a major focus for the park for at least the next 2-3 years.

Staffing Issues- Interpretation re-described the Visual Information Specialist position (GS-1084). This resulted in an upgrade for the position from GS-9 to GS-11.

Interpretation announced the vacant Cottonwood interpreter position. We received a certificate of eligibles for this position late in the fiscal year.

We announced and filled three temporary NTE 1-year Park ranger positions to help with visitor center staffing.

Park Volunteer Program- The Joshua Tree National Park Volunteers-in-Parks program recorded 26,299 volunteer hours for FY 2007. Among the many noteworthy organizations and sponsored service groups taking part in the park volunteer program were Friends of Joshua Tree, Climb Smart, the Andromeda Society, Morongo Basin Conservation Association, Tortoise and Rescue Club of the Coachella Valley, University and High School Students, Scout Troops, Church Groups, and the United States Marines. Their contributions amounted to the equivalent of 12.6 additional full-time employees for the park.

Joshua Tree Search and Rescue (JOSAR) volunteers participated in training and operations activities totalling 8,233 hours. Some individual JOSAR team members put in over 1,000 hours in FY 2007. The park's Volunteer Equestrian Team was near their maximum member count throughout the year, and seven Student Conservation Association interns contributed 4,331 hours on a variety of resource management and public contact activities. Joshua tree's Artist-in-Residence Program visiting artists contributed inspiring works of art to the park as well as volunteer hours. Two student interns working with the park Education program put in over 500 hours and received their *America The Beautiful* Volunteer Pass.

The annual Joshua Tree National Park Audubon Christmas Bird Count celebrated its 40<sup>th</sup> year of volunteer-driven operation, and two annual counts for the North American Butterfly Association brought in VIP's to assist our staff in maintaining these yearly wildlife inventories. National Public Lands Day and Earth Day gave the public and the staff time to reflect on the kindness and generosity of our volunteers. Dedicated individual volunteers also rove campgrounds and trails and assist in park visitor centers. Campground hosts provide a first line operational presence in several park campgrounds. The popular Keys Ranch historic site benefits from volunteer caretakers who assist with site security and general upkeep and volunteer horticulturists assist in the care of the

Ranch, and volunteer monitors assist photographers and NPS interpretive rangers at the Ranch. At the Arid Lands Nursery volunteer gardeners get down and dirty assisting in the propagating and care of seeds, seedlings and plants. The annual Volunteer Appreciation Dinner in March at the Joshua Tree Community Center was a big success with over 150 people in attendance.

Recognition- Joshua Tree National Park was fortunate to be awarded the first Pacific West Region *Excellence in Interpretation Award* in August, 2007. A team of park interpreters was nominated for the award by Chief of Interpretation Joe Zarki. Cindy VonHalle, Anne Staley, Sandra Kaye, Pam Tripp, Melanie Spoo, and Dar Spearing were recognized for their work on designing, producing, and installing a series of exhibits for the new Joshua Tree Visitor Center in the spring of 2006. Cindy VonHalle received the award on behalf of the park from Regional Director Jon Jarvis at the PWR Interpretive Renaissance Conference at Santa Monica Mountains NRA in August, 2007.

## **CULTURAL RESOURCES**

### **Archeology**

The park's archeological technician conducted numerous small projects in fiscal year 2007. The inventory report and site records for the Pinto Basin Road project, the Forty-nine Palms Canyon project, and the soil mapping projects were completed. Preliminary planning and mapping work was conducted prior to a site stabilization that took place at two sites in November 2007. The technician also worked with the structural stabilization crew from Tumacacori NHP and backfilled certain functions for the park's cultural resources manager.

In July 2006 the Central Complex and the Western complex fires burned in the park and some of the archeological fieldwork and reports were done in fiscal year 2007. Two reports documenting the in-house work were completed. Also, Sonoma State University, Anthropological Studies Center staff completed a Burned Area Emergency Rehabilitation report for four sites, which documents extensive condition assessments, mapping, surface artifact collection, and limited subsurface "scrapes".

Work on the park's Archeological Overview and Assessment continued under a Task Agreement with Sonoma State University, Anthropological Studies Center.

The park's cultural resources manager spent nine weeks assisting Death Valley National Park with their archeology program, as they were temporarily without an archeologist. An analysis of the program was conducted and based on the results several project funding statements were written. A Damage Assessment Report was also written for a site that was looted at Death Valley.

### **Cultural Landscapes**

Fieldwork on the Heximountain (a.k.a. Silver Bell/Golden Bell) cultural landscape was completed by Regional staff and a final draft report has been written.

### **Historic Structures Stabilization**

The historic preservation crew from Tumacacori NHP, under the direction of David Yubeta, conducted four historic structures stabilization projects at National Register listed or eligible sites in Joshua Tree National Park. The crew was supplemented by Robert Clyde from JOTR.

Keys Ranch: As an emergency project the old failing roofing paper was removed the Museum/Storehouse and replaced with felt and a granulated surface cap sheet. Later in the year the preservation team began the originally intended work at the ranch, specifically on windows that had broken or missing panes and missing window trim. The crew also repaired missing wood and metal elements of the machine shed and added a second coat of lime plaster to the rebuilt walls of the adobe fireplace ruin. In addition, a small contract to conduct IPM work at the ranch was awarded, focusing on the main house and the south school house.



Crew removing old Museum/Storehouse roof.



Museum/Storehouse with new roof.

Ryan Ranch: The historic preservation crew conducted preservation treatment on the bunkhouse ruins. The adobe ruin was stabilized by adding a two-coat lime plaster finish to the walls, as had been previously accomplished at the main house. Lime plaster was "patinized" or antiqued to subdue the wall color and blend with the natural surrounding landscape.



Ryan Ranch adobe bunkhouse before, with lime plaster, and with patination.

El Sid: Three residential structures were the focus of this stabilization project. The interiors of these structures were sprayed with a 15% bleach solution and massive amounts of 1980's debris removed for disposal by the park. All three structures were re-roofed, one with tin and the two with granulated surface rolled roofing. Windows were screened with steel mesh and wood elements repaired and/or replaced. The car port at the "Junction House" was re-built to aid in bracing the structure. Minor work was done on a machine shed and the mill. Two trailers were hauled off by Bailey's Auto Repair.



Junction House before, during, and after stabilization work.



Lower dual roof house before and after stabilization work.



Moser Cabin before new roof.



Moser Cabin with new roof.

Pinyon Mt. Historic Mining District: Dry laid stones were restacked at Pinyon Well and Henson Well sites to add integrity to the structures keep the stones from becoming strewn around. The crew also cleaned vegetation from the interior of the rooms and around the perimeters. Water and Portland cement mortar in a dry state was carried about two miles to the Henson Well wilderness site, mixed, and the masonry water tank repaired.



Crew restaking rocks at Henson Well historic structure.



Cistern at Henson Well after stabilization.

### **Historic Studies**

The Sonoma State University, Anthropological Studies Center, was contracted to edit the Historic Resources Study for the lands added to the Park in 1994, as well as the related National Register of Historic Places nominations and site records. The report was edited, as much as funding allowed, and the resultant document was sent to the Regional Office for completion and eventual publication.

### **Museum Collections**

In fiscal year 2007 cataloging continued with 978 archeological and 633 natural history objects (mostly herbarium specimens) entered into the Automated National Catalog System database.

There were 21 research requests from within the park and 51 research requests from outside of the park that were addressed.

Aside from her regular duties at Joshua Tree National Park and as Curator of Record for Mojave National Preserve our museum curator assisted Lake Mead National Recreation Area and Chaco Culture National Historic Site with specific museum needs.

A cooperative project with the Industrial Heritage and Archaeology Program at Michigan Technological University resulted in the systematic identification and mapping of objects within a portion of the Keys Ranch cultural landscape. An assessment of artifact conditions was also provided and prioritized recommendations for preservation of the objects presented. The resultant document is entitled "An Inventory and Assessment of the Historic Cultural Assemblage at Keys's Desert Queen Ranch, Joshua Tree National Park."

### **Paleontology**

The services of the San Bernardino County Museum, Geologic Sciences Division, were secured under a Task Agreement to conduct geologic mapping and cyclic prospecting of paleontological deposits in the Pinto Basin.

## Vegetation Management

### Center for Arid Lands Restoration

The Center for Arid Lands Restoration propagated plants for park road reconstruction projects, for cultural site rehabilitation, for Burned Area Rehabilitation (BAR) and for contracts with Fort Irwin and the Bureau of Land Management. The nursery currently has two full-time SCA volunteers. A research project to determine viability and germinability of Joshua Tree National Park native plant species was initiated.

### Federal Highways

Vegetation staff worked closely with the Federal Highways Administration and Park Roads crew to mitigate impacts to vegetation while reconstruction of the Key's View Road corridor occurred from May to November. More than 150 trees, shrubs and grasses were moved out of the path of construction and into adjacent undisturbed areas. These plants were watered and monitored throughout the summer. Plants that could not be salvaged were stockpiled as vertical mulch and will be used to restore obliterated areas in spring 2008. A task agreement was established with UC Riverside to write soil health assessment and soil restoration protocols to improve revegetation success on highways projects, and in other disturbed areas.



**Joshua Tree Salvage, Keys View Road 2007**

### Invasive Species

Invasive species management was an important component of the year's work. Eight sites located near Park Assets (as identified by PMIS 119282) were surveyed and treated for Tamarisk. In addition, many other locations where Tamarisk had previously been found were surveyed and treated, and all data were entered into a geospatial database. Park roads were routinely patrolled for Sahara Mustard (*Brassica tournefortii*) and London Rocket (*Sisymbrium*

*altissimum*). In late spring, several garbage bags of London Rocket were removed from the roadside between Geology Tour Road and Hidden Valley Campground. Starting in December, large quantities of Sahara Mustard were removed from the Pinto Basin. All weed locations and management actions were incorporated into a geospatial database to track spread rates and efficacy of management. Volunteer groups again provided an invaluable labor force.



**Invasive Weed Eradication along Park Boulevard, Spring 2007**

## **Restoration**

### **Cultural site rehabilitation**

Sites at Squaw Tank and Indian Cove Picnic areas were closed to prevent ongoing degradation to cultural resources. Closure involved outplanting nearly 200 plants from the Center for Arid Lands Restoration, placement of boulders, fencing and signs to delineate the sites, and trail construction to improve access at Squaw Tank. Verde Valley High School volunteers allowed us to finish this work in record time.



**Verde Valley High School Student Volunteers at Squaw Tank**

**Climb Smart Social Trails Closure**

Approximately 80 volunteers from Climb Smart 2007 helped close social trails and delineate access routes at Hall of Horrors climbing area.



**Climb Smart 2007 Volunteers**



**Clear Access Routes Climb Smart 2007**

### **Rock Climbing**

Preliminary work on a study to document resource impacts caused by bouldering activities in the Park commenced. This study will determine whether and how an increase in bouldering accompanying the publication of Robert Miramonte's *Complete Guide to Bouldering in Joshua Tree* is impacting cultural and natural resources in the Park. Information from this project will be incorporated into a brochure to be disseminated to the bouldering/climbing community. Vegetation staff members have initiated discussions with relevant parties to recharge the process of producing a Climbing Management Plan for the Park.

## **WILDLIFE MANAGEMENT**

### **Desert Tortoise**

Park wildlife staff continued and expanded the desert tortoise monitoring project in 2007. This project tracks wild tortoises by using radio transmitters from which a host of data is recorded. Currently, 14 tortoises have been tagged and monitored from Cottonwood through the Pinto Basin & Wilson's Canyon, and from the North to the West Entrance. The data continues to be collected to provide insights on the tortoises' home range, behavior and the potential effect of newly constructed road curbing on their movement.



The mitigation measures used to protect the desert tortoise during the construction of the Key's View Road were successful as no tortoises were affected or "taken" during the construction. 198 people that worked on the project attended a mandatory training (provided by park wildlife staff) that covered such topics as; the life history of tortoises, contributing factors to the species decline and measures that are to be taken to ensure that no tortoises would be harmed during construction.

Joshua Tree NP is collaborating with Dr. Carlos Crocker studying urolith presence in wild desert tortoises. This study started in the spring of 2007 and is primarily located in the Pinto Basin. Crocker's study involves the taking of radiograph photos of the tortoises to determine if they have the large calcite deposits, or uroliths, in their bodies. Dr. Crocker's hypothesis involves the investigation of urolith presence and size and how they may relate to non-native plant species in the tortoises' diet.

### **Ravens**

Ravens are known predators of the endangered desert tortoise and have seen dramatic increases in numbers since the development and urbanization of the Mojave Desert.

In response to this growing problem and to aid in the recovery of the endangered tortoise, the park has continued to cooperate in the preparation of a raven management plan for the Desert Manager's Group.

In the spring of 2007 the park conducted a raven survey with the help of Rich Gerston (Joshua Tree NP volunteer). The project showed a dramatic correlation between visitor use areas and raven presence. In other words, a person is over four times likely to see a raven at a visitor use area compared to a relatively similar low visitor use area. This study showed the need to reduce the attraction of ravens to these visitor use areas. Figuring that food supplementation from garbage was one of the principle reasons for this attraction, the park purchased and is currently installing animal proof dumpsters at various locations in the park to try and reduce the amount of garbage available to the wildlife in the park.



*Animal Proof Dumpster*

### **Guzzlers**

The guzzler study continued to use motion detection cameras to monitor wildlife usage of the guzzlers in the park. New color cameras have been installed alongside the older black & white image cameras to compare quality and sensitivity. The color cameras have provided us with a marked improvement on image quality.



**Stubbe Springs**



**Rattlesnake Spring Guzzler**

## PHYSICAL SCIENCES

### Air Quality

Air quality monitoring continued year round at the Black Rock & Cottonwood air stations and during the summer months at Pinto Wells. This is the second season for data collection at the Pinto Well air station. The Pinto Wells site is slated for monitoring next summer to round out the third season of data collection near the proposed Eagle Mountain Landfill. Joshua Tree's air quality monitoring program underwent audits from both the California Air Resources Board and the Environmental Protection Agency. Both audits passed in very high standings and reflect the high level of commitment by the superintendent, staff and volunteers.

### Abandoned Mine Land Program (AML)

The Joshua Tree's AML program expanded this year this to include mine safing at Lake Mead National Recreational Area (LAME). Three complex mine openings were closed at LAME utilizing a minimum number of staff. Assistance in the way of design, prefabrication, air support/logistics and installation brought \$50,000.00 back into the Joshua Tree's AML program. The revenue from LAME will be used to provide training, purchase materials/ equipment, and helicopter support for mine safing projects in 2008 at Joshua Tree National Park.

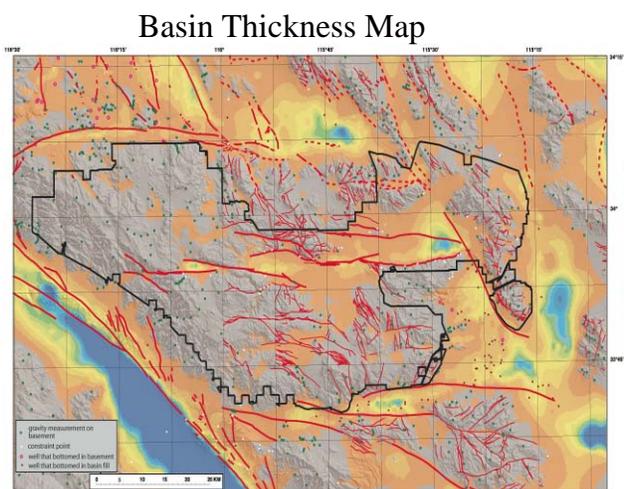
Joshua Tree's mine safing program was audited by the Office of the Inspector General (OIG) in June 2007. The OIG audit centered on the performance and accomplishments of the AML program to date. With a total of 26 openings closed (as of FY2007), the development of the AML program including tool equipment and developing a funding partner with the State of California, the audit has had a favorable outcome.



In FY 2007 the AML Program complete a comprehensive inventory of hazardous mine openings. The inventory began in 2006 and was completed in September of 2007. This comprehensive inventory includes photographs, documentation of site visitation, dimensions and the documentation of features. The information collected over the past two years will be entered into a nationwide database coordinated through the Geologic Resource Division in Denver Colorado.

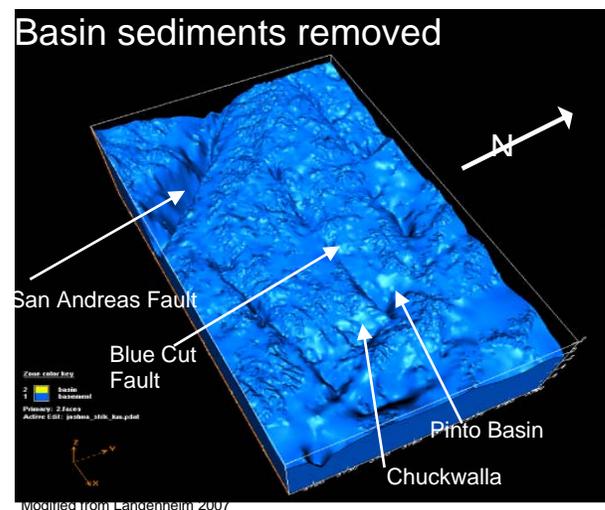
## Groundwater Program

In 2006 and 2007 the physical science branch coordinated with the U.S. Geological Survey (USGS) to complete a gravity mapping project in the Pinto Basin and other areas throughout the park. In 2007 the USGS produced a gravity map that was used to estimate basin thickness. The map was used to delineate the sediment filled basins below the surface of Joshua Tree National Park that have the potential for groundwater storage. Characterizing the shape of the basins was the first critical step in understanding groundwater dynamics throughout the park. In conjunction the work completed by the USGS, 2007 was the first year in collecting groundwater potentiometric surface data (depth-to-water) at all existing well locations throughout the park.



Gray represents the mountains; red to dark blue represent the basins from shallow to deep respectively.

From V. Langenheim 2007



Modified from Langenheim 2007

The information from potentiometric surface will be used to calculate the expected volume of groundwater that may potentially lie in subsurface aquifers (basins). The final phase of this study (currently unfunded) will be to conduct seismic profiling that will reveal any subsurface confining layers or faults that act as barriers to groundwater movement (aquifers). Future analysis may include the development of a water budget (rate of withdrawal vs. rate of recharge) for well usage at the Cottonwood Visitors Center. Understanding the dynamics of this critical resource will be vital in managing and preparing for any future climate change.

## Night Sky Program

In 2007 Joshua Tree's physical science branch joined the night sky team headed by Chad Moore at Bryce Canyon. As a satellite team, Joshua Tree National Park will be able offer assistance to network parks and local agencies in developing baseline data relating to anthropogenic light

pollution. In addition to updating park's baseline data the new imagery will depict the effects of light pollution resulting from increased development throughout the Morongo Basin and Coachella Valley.

Presented below is a 360 degree image taken from Keys View in 2005 by Dan Duriscoe, night sky team member at Death Valley National Park. Light colored regions depict areas of light pollution; dark blue regions depict areas of dark night skies. In 2008 the physical science branch will re-photograph the several areas of the park including Keys View for comparative analysis.

