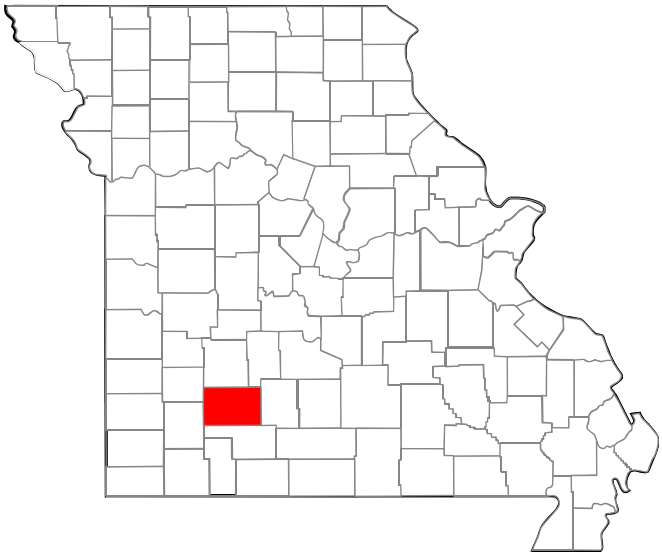
PRE-CERCLIS SITE SCREENING REPORT

Fantastic Caverns Site
Greene County, Missouri

December 8, 2019



Missouri Department of Natural Resources
Division of Environmental Quality
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I. Pre-CERCLA Screening Narrative Report

II. Pre-CERCLA Screening Checklist/Decision Form

III. Figures

Figure 1: Site Location Map

Figure 2: Groundwater Dye Trace Map

Figure 3: Sample Location Map

Figure 4: Glidewell Baptist Church Sample Location Map

Figure 5: Water Sample Location Map

IV. Photographic Log

V. Analytical Data Tables

Tables A1 – A15: Selected Analytical Results for Air Samples Collected

Table A16: Calculation of Sample/Collocated Sample Relative Percent Difference

Tables B1 – B7: Selected Analytical Results for Surface Water Samples Collected

Table B8: Calculation of Sample/Collocated Sample Relative Percent Difference

Tables C1 – C5: Selected Analytical Results for Passive Air Samples Collected

Table D: Maximum TCE Results for All Air Samples Collected

Table E: Tour Guide Exposure Data

Table F: Summary of 2016 Cave Tour Visitors

VI. Sampling and Analysis Documentation

VII. References

I. PRE-CERCLIS SCREENING NARRATIVE REPORT

Table of Contents

Introduction 1

A. Site Location & Description 1

B. Operational History 3

C. Previous Investigations 4

C1. Initial Discovery of TCE 4
C2. Litton Systems Site Reassessment 5

D. Sampling 6

D1. Surface Water 7
D2. Groundwater 7
D3. Air 8

E. Analytical Results 9

E1. Active Air Samples 9

E1.2 April 2016 10
E1.3 July 2016 10
E1.4 August 2016 to November 2016 10
E1.5 December 2016 10
E1.6 January 2017 11
E1.7 February 2017 11
E1.8 March 2017 11
E1.9 April 2017 12
E1.10 May 2017 12
E1.11 June 2017 12
E1.12 July 2017 12
E1.13 August 2017 13
E1.14 September 2017 13
E1.15 October 2017 13
E1.16 November 2017 14

E2. Passive Air Samples 15
E3. Surface Water 16
E4. Groundwater 16
E5. Quality Control Samples 17

F. Conclusions/Recommendations 17

Introduction

The Missouri Department of Natural Resources (Department), through a Cooperative Agreement (CA V997381-08) with the U.S. Environmental Protection Agency (EPA), conducted a Pre-CERCLA (Comprehensive Environmental Response, Compensation and Liability Act of 1980) Screening (PCS) at the Fantastic Caverns site in Greene County. The purpose of this investigation was to determine whether there has been a release of a hazardous substance into the environment, or a substantial threat of such a release, which may present a danger to human health and/or the environment. If such a release has occurred, the site may warrant entry onto the Superfund Enterprise Management System (SEMS), EPA's inventory of hazardous waste sites that are evaluated under CERCLA, and warrant a further assessment.

Groundwater contaminated with volatile organic compounds (VOCs) has resulted in vapor intrusion exposure risks at the Meramec Caverns commercial cave in Missouri. Following health concerns at Meramec Caverns, the Department initiated CERCLA assessments at other commercial caves in Missouri within close proximity to known VOC groundwater plume sites in order to assess potential risk to human health from contaminated cave air. The Fantastic Caverns site is a privately owned cave system open for public tours located north of Springfield, Missouri in Greene County. The Department's Superfund Site Assessment Unit initiated a PCS investigation at Fantastic Caverns on April 12, 2016.

The scope of the PCS included review of existing data, a geohydrologic summary, sampling of air and surface water, and collection of additional, non-sampling information. The investigation included fourteen site visits and sampling events between April 12, 2016 and November 8, 2017.

A. Site Location & Description

The Fantastic Caverns site (Photograph 1, Section IV) is located at 4872 N Farm Road 125, Springfield, Missouri, approximately 3 miles north of the city of Springfield. Figure 1 in Section III is a Site Location Map. The site is located in the NW ¼ of the NE ¼ of Section 33, Township

30 North, and Range 22 West. Geographic coordinates of the site as measured from the entrance to the cave with a Trimble XT Geoexplorer GPS unit are 37.288325° latitude and -93.359279° longitude. The caverns are located in a rural area north of the city of Springfield. Surrounding land use is a mix of residential, agricultural. Access to the caverns is controlled due to its use as a commercial show cave. The following information is summarized from an Abbreviated Geohydrologic Summary Report prepared by the Missouri Geological Survey Program (Bachle, 2016).

The Fantastic Caverns site lies within the Springfield Plateau of the Ozark Plateau sub-province of the Interior Highlands physiographic province of Missouri. This area is characterized by rolling upland hills with relative relief of as much as 400 feet. Surface water drainages generally extend toward the north from the site area. Soil in the area consists of a cherty silt loam complex with significant clay content. The unconsolidated materials are seasonally saturated, and the flow direction is toward the north-northwest. Mississippian-age limestone lies beneath the unconsolidated material and constitutes the Springfield Plateau Aquifer that produces up to 10 gallons per minute. The geology in the Springfield area is karstic and includes an extensive network of voids, caverns and sinkholes in the shallow bedrock and springs. Karst geology can provide selective pathways for contamination to potentially travel faster and farther than in typical saturated unconsolidated materials or intact sedimentary rock aquifers. Based upon dye traces, sinkholes that are located up to 3 miles south-southwest of the site are hydraulically connected to the Fantastic Caverns subsurface watershed. In karst geology, depending on the scale of interest, groundwater contaminant plumes can be difficult to delineate because they often do not follow a predictable pattern.

The Springfield Plateau Aquifer is known to provide water for 225 of the 496 known wells within 4 miles of the site. This aquifer is up to 120 feet thick and regional flow near the Fantastic Caverns site is towards the northwest. Depth to groundwater in the Springfield Plateau Aquifer beneath the site ranges from 60 to 120 feet. The Ozark Confining Unit lies between the Springfield Plateau Aquifer and lower Ozark Aquifer. Due to structural faulting, this confining unit may be a leaky aquitard. The Ozark Aquifer provides water for 477 of the 496 wells within 4 miles of the site including most of the public water systems. All new wells installed in the site area are required

to be cased through the Springfield Plateau Aquifer into the Ozark Aquifer.

B. Operational History

The cave, now known as Fantastic Caverns, was first described in 1862 by a farmer named John Knox. Five years later, in 1867, the cave was opened to the public for exploring (Newcomb, 2012). The first documented cave explorers were a group of women, all members of the Springfield Athletic Club. The caverns changed ownership several times over the years and was used for various purposes. During Prohibition, it was a speakeasy and was shut down after a shooting. For a few years after that it was used as a secret meeting place for local vigilante groups. At one time it was used to grow mushrooms during the Depression Era. In the 1950s the cave was named Fantastic Caverns and became a popular Route 66 attraction. Mark Trimble, owner of Shepherd of the Hills Farm near Branson, purchased the cave in 1961 and began giving jeep tours. The caverns also became a country music entertainment venue, home to the nationally broadcast Farmarama show. The Campbell family, who had managed the property since 1966, bought it in 1992. By then the current visitor center was built, and jeeps and trams were put into service. Fantastic Caverns remains a small, family-owned cave touring business today (Wanderer, 2015).

The Fantastic Caverns site consists of an explored and mapped cave system spanning a total of approximately 1 mile. The cave is open to the public for guided tours year-round. Tours last about 45 minutes and are conducted about twenty times a day on average, seven days a week (MDNR, 2016b). The toured route extends for ½ mile before the tour reaches the turnaround and continues back toward the entrance. The premier speleothem, one of the more massive features in the cave, is the Hall of Giants (Photograph 22 in Section IV). . The commercial section of the cave contains much flowstone, several sump pits, a man made bridge and a nearly 50-foot ceiling in some places. Stromatolites (fossilized algal beds), wind-bent stalactites and a great amount of cave coral are other outstanding features.

The cave is a consistent 57° Fahrenheit year round with very little seasonal temperature fluctuation. In November 2016, two airflow structures approximately 3 feet x 3 feet in size were installed at

the entrance and exit portals and a twenty-two inch ventilation shaft and fan were installed at the furthest point in the back of the cave (Photographs 12, 14 and 15). These structures were installed in an effort to mitigate trichloroethene (TCE) vapors by modifying air circulation patterns within the cave.

Fantastic Caverns is a part of the larger Smalley Cave Complex. Water flowing through the Smalley Cave Complex enters Fantastic Caverns primarily during high rain events and exits through Fantastic Caverns Spring (also known as Indian Spring), which is located approximately 500 feet northeast of the cave entrance (Figure 2 in Section III). Fantastic Caverns Spring discharges into the Little Sac River.

Cave tours are conducted year round and last 45 minutes. Data provided to the Department by the cave owner show that 24 tour guides were employed in 2016 (Fantastic, 2016). Table E provides a summary of the time each tour guide spent on tours inside the cave monthly over the course of 2016. The data range from 18 hours to 762 hours with an average of 291 hours per tour guide per year. Summaries of the number of tourists visiting the caverns for each day of 2016 are provided in Table F. The total number of tourists was 104,417 persons for the year. The most visited month was July with 20,610 visitors and the least visited was January with 1,560 (December data was incomplete).

C. Previous Investigations

C1. Initial Discovery of TCE

TCE contamination at Fantastic Caverns was initially discovered in 1981 as part of an investigation conducted by the Department into volatile organic compounds released at the Litton Systems site. That investigation included the collection of surface water from the stream in Fantastic Caverns, the potable water supply at the caverns, and the Little Sac River bordering the Fantastic Caverns property (MDNR, 1981). TCE was detected at 7.0 µg/L in the cavern stream, 4.9 µg/L in the potable water and 20.8 µg/L in the Little Sac River sample. Sampling at Fantastic Caverns was also conducted in 2001 as part of an investigation conducted by a consultant working for the Springfield-Branson National Airport (MDNR, 1981 & Baysinger, 2003). In response to a release of 1,600 gallons of jet fuel at the airport on September 20, 2001, airport management

retained the services of the Forrester Group who, working with the Department, conducted a dye trace study, sampled area springs, and monitored air inside the cave for petroleum hydrocarbons. No significant impacts from the jet fuel release were identified, however the water samples were also analyzed for TCE and that compound was detected in Williams Spring (143µg/L), Fantastic Caverns Spring (29.3 µg/L) and Spring Branch Creek near where Ritter Park Spring discharges (5.2 µg/L). These springs are shown in Figure 2. Dye tracing indicated a direct hydraulic connection between the airport area and William Spring, with dye showing up in the spring the same day as the first significant rain event following placement of the dye in a sinkhole near the airport. Low flow conditions prevented assessment of a connection between the airport and Fantastic Caverns Spring. An attempt was made to monitor cave air in Fantastic Caverns using a portable photoionization detector, but it was unsuccessful to the high humidity in the cave. The Department concluded that the source for TCE detected in the springs was the Litton Systems Superfund site.

The Litton Systems Inc. site (EPA ID: MOD007152903) is the location of a facility that manufactured printed circuit boards between 1969 and 2007. Operations included metal plating and degreasing of parts using TCE. The facility is located in Springfield near the airport and is approximately 3 miles south of Fantastic Caverns. Metals and VOCs, including TCE were released to soil and groundwater at the Litton Systems Inc. site from past manufacturing and waste disposal practices. A number of CERCLA assessments were conducted by EPA and the Department between 1980 and 1993 when a Site Inspection report prepared by a EPA contractor concluded that the site scored above 28.5 using the Hazard Ranking System, making it eligible for placement on the National Priorities List (NPL) (Jacobs, 1993). Litton entered into a Consent Agreement with the Department in 1993 to conduct assessment and remediation work at the site, and this work has been ongoing since that time. The EPA deferred proposal of the site for the NPL and archived the site in SEMs since the site was being addressed through the Consent Agreement.

C2. Litton Systems Site Reassessment

Following detection of TCE in area springs in 2001, the Department requested that EPA dearchive the Litton Systems Inc. site in SEMS so that a CERCLA Site Reassessment

investigation (SR) could be initiated (MDNR, 2006). The objective of the SR was to further investigate off-property impacts from the facility release. The SR included collection of surface water and sediments from area springs, groundwater from 105 drinking water wells in the area, and air near Williams Spring and two locations inside Fantastic Caverns.

TCE was detected in 13 drinking water wells in the area with the highest concentration of 11.6 µg/L measured in a well located 2.5 miles northeast of the Litton Systems site (MDNR, 2006). Surface water samples were collected from Ritter West Spring, Williams Spring, Fantastic Caverns Spring and from water flowing through the Fantastic Caverns complex (Figure 2). TCE was detected in Ritter West Spring (6.81 µg/L), Williams Spring (12.5 µg/L) and Fantastic Caverns Spring (0.82 µg/L). TCE was detected in air near Williams Spring (300 $\mu g/m^3$) and in Fantastic Caverns cave air from an area under the Second Bridge (150 $\mu g/m^3$) (Table A1). No background samples were collected; therefore, the data was not used to document a release of hazardous substances to the cave air.

The Missouri Department of Health and Senior Services (MDHSS) evaluated the risk posed by air contamination at Fantastic Caverns (Carleson, 2006). MDHSS compared the results to EPA residential screening levels for indoor air (commercial/industrial air screening levels were not available at that time). The residential air screening levels were exceeded, however, since workers and visitors would be exposed less frequently and for shorter durations, MDHSS also compared to acute and intermediate screening levels available at that time. These values were not exceeded and the locations with detections of TCE were not in areas where exposure was likely to occur. MDHSS concluded that there was not a significant risk to workers and visitors at Fantastic Caverns based on the information available at the time.

D. Sampling

The Department conducted fourteen sampling events as part of the PCS investigation: April 12, 2016; July 13, 2016; December 2, 2016; January 5, 2017; February 2, 2017; March 2, 2017; April 6, 2017; May 11, 2017; June 7, 2017; July 18, 2017; August 16, 2017; September 13, 2017; October 11, 2017 and November 8, 2017. Sampling media included cave air (active and passive samples), outdoor air, groundwater, and surface water (MDNR, 2016b). Locations of all samples

are shown in Figures 3, 4 and 5 of Section III and in the Photographic Log in Section IV.

The services of the US Geological Survey (USGS) were retained to conduct measurements of air flow patterns, humidity and temperature inside the cave (USGS, 2016). This data was collected to provide a better understanding of the airflow dynamics and VOC transport in the cave system, to refine the conceptual site model and to provide information that may be useful in designing an abatement system in the cave if necessary.

D1. Surface Water

Surface water samples were collected from water flowing through the cave, from Fantastic Caverns Spring and from drip pools inside the cave. Samples were collected on December 2, 2016; February 1, 2017; April 5, 2017; May 11, 2017; June 7, 2017; September 12, 2017; and October 11, 2017. The drip pools may have naturally held water historically, but are currently maintained for aesthetic purposes by filling with water from an on-site well. Following the April 2017 sampling event, no further sampling was conducted at the pools. Inside the cave, water samples were collected from the Lower Passage stream where water enters the cave from the Smalley Sinkhole Complex. A sample container was lowered from the Second Bridge to collect the samples. Samples were collected at this location during the April, May, June and September sampling events. During the October 2017 sampling event, there was no water flowing in the Lower Passage stream, but a sample was collected from a pooled area further back to the east in the passage. A sample was collected at Fantastic Caverns Spring where water exited the cave during the April, May and June 2017 sampling events.

Water samples were collected by immersing two pre-preserved 40ml VOA vials directly in the water body. Surface water samples were submitted to the Environmental Services Program laboratory in Jefferson City and analyzed for VOCs by EPA Method 8260B.

D2. Groundwater

On March 9, 2018, samples were collected from the non-transient non-community water well located at the Glidwell Baptist Church, 5801 N Farm Road 141. The well is located approximately 2 miles northeast of Fantastic Caverns and is shown in Figure 4. A sample was collected prior to

purging the well, and a post-purge/post-purge duplicate sample was collected after allowing the well to run for 2 minutes. Water samples were collected by holding two pre-preserved 40ml VOA vials directly under the outside spigot nearest to the wellhead. The samples were analyzed for VOCs by EPA SW-846 Method 8260B.

D3. Air

Visitors are driven through the cave in propane-fueled trams. The 45-minute tour stops several times in the cave to view the features. Nine of these tour stops were selected as locations for repeated air sampling; Back of Cave Turnaround, First Bridge, Second Bridge, Hall of Giants, Stalactite, Auditorium, Underground Classroom, Photo Station, and Gift Shop. Sampling locations are shown in Figure 3. During the first sampling event in April 2016 cave air samples were collected over a 24 hour period using 6L SUMMA canisters. All subsequent active cave air samples were collected over an 8-hour period to be reflective of a typical workday. The SUMMA canisters were placed within the breathing zone by either setting them on a feature in the cave or suspending them from a tripod (Photographs 5 & 6 in Section IV). An outdoor air sample was collected approximately 30 feet south of the main cave entrance, in an area expected to be beyond the influence of the cave.

Stationary 8-hour time-integrated samples collected from specific locations in the cave may not be representative of actual exposure patterns experienced by the public or tour guide staff since cave tours only spend brief periods of time at each cave feature. Therefore, during the December 2016 sampling event, a personal air monitoring sample (PAM) was collected. A 6L SUMMA canister was placed inside a tour guide backpack and taken on 5 tours. This was to simulate a tour guide's potential exposure while giving tours throughout a typical day during this time of year based on information obtained by the cave owner. The SUMMA was set for a 5 hour flow rate and was opened only during the duration of each tour. PAM samples were also collected during the May, June, July, September, October and November, 2017 sampling events. During these six sampling events, PAM samples were collected using an 8-hour collection time to be reflective of a reasonable maximum exposure time for a typical workday. The SUMMA was opened at the beginning/entrance of the first tour given and remained open for a consecutive 8 hours. Between tours, the SUMMA was placed in the visitor's center where employees remain until the next tour.

The SUMMA was closed at the end of the work day

During five sampling events, Radiello® activated charcoal passive diffusion samplers were deployed at four locations in the cave and at an outside background location. Passive diffusion samplers were used to assess long term exposure to TCE in the cave. Each passive diffusion sampler was deployed at the same location where an active cave air sample was collected. The passive diffusion samplers were deployed between 14 and 28 days.

Cave air samples were analyzed for VOCs by EPA Method TO-15 Modified SIM (active samples) and EPA Method TO-17 Modified (passive samples) by Eurofins Air Toxics Inc. Laboratories in Folsom, California.

E. Analytical Results

Sampling documentation and full analytical results are provided in the Sampling and Analysis Section VI, and summaries are provided in Section V; Table A-1 through A-15 (active samples), Table D (maximum TCE results), Tables B-1 through B-8, and Tables C-1 through C-5 (passive samples).

Air sample results were compared to the current EPA VISL health-based benchmarks for a commercial exposure scenario using a carcinogenic risk level of 1 $x10^{-5}$ and a hazard quotient of 1 for non-cancer effects (USEPA, 2018). The VISL benchmark for TCE's non-cancer effects is 8.8 $\mu g/m^3$. EPA Region 7 has identified a level of 6 $\mu g/m^3$ based acute short-term health effects, and therefore, results were compared to this lower more conservative value (Peterson, 2016, Gulliford, 2018). However, it is notable that these two benchmark values for TCE are not significantly different and only two sample results out of nearly 200 fell in between the two.

E1. Active Air Samples

Several VOCs were detected in the active cave air samples over the various sampling events including a number of different chlorinated ethenes and petroleum hydrocarbons. Based on the known release of TCE at the Litton Systems Inc. site and established connection between that source area and the cave, the primary contaminant of concern at the cave is TCE and its daughter products. TCE was the only contaminant detected in the cave air at concentrations of potential

health concern. Therefore, the following discussion is limited to sampling results for TCE.

E1.2 April 2016

On April 12, 2016, 24-hour time-integrated SUMMA canister samples were collected from the same two locations as the initial 2004/2005 cave air samples (Back of Cave Turnaround and Second Bridge). Table A-2 is a summary of the results showing that TCE and several VOCs were detected in the cave air at both of these locations, but all concentrations were below the health-based screening benchmarks. No background outdoor air samples were collected; therefore, the data was not used to document a release of hazardous substances to the cave air.

E1.3 July 2016

On July 13, 2016, 8-hour time-integrated cave air samples were collected from the Turnaround Area located in the back of the cave and an area near the first bridge known as the Sink Hole Area. A background outdoor air sample was collected outside the cave on the hill near the cave entrance. Results summarized in Table A-3 show that TCE and several VOCs were detected in the cave air samples. The TCE concentration was 61 $\mu g/m^3$ at the Turnaround Area and 88 $\mu g/m^3$ at Sink Hole Area (Table A-3). These concentrations were significantly above background, establishing a release of TCE to the cave air, and they exceed the chronic and acute short-term health-based screening benchmarks for TCE. TCE was not detected in the background outdoor air sample.

E1.4 August 2016 to November 2016

The Department had limited access to the cave between August to November 2016 while the cave owner drilled a 22-inch diameter borehole at the back of the cave and installed two 3-foot by 3-foot airflow control structures in the cave entrance and exit portals. This system was installed for the purpose of modifying air flow in an effort to mitigate TCE levels inside the cave. No samples were collected during this time frame. Following the installation of this system, the Department initiated a monthly cave air sampling frequency for a one year period beginning in December 2016.

E1.5 December 2016

Following detection of TCE in the cave air at concentrations above the screening levels in the July 2016 samples, seven additional sampling locations were identified to assess contaminant

levels elsewhere in the cave. On December 2, 2016, in addition to the Turnaround, Second Bridge, Sink Hole and outdoor background areas, 8-hour time-integrated SUMMA canister samples were collected from five additional locations in the cave. These included the Hall of Giants, Stalactite, Auditorium, Underground Classroom, and Photo Station areas. TCE was detected at all of the sampling locations ranging between 0.086 $\mu g/m^3$ in the Auditorium to 0.43 $\mu g/m^3$ in the Second Bridge sample (Table A-4). Personal air monitoring samples (PAM) were also collected during the December event. A SUMMA canister and duplicate were transported through the cave by guides over the course of five cave tours spanning a 5 hour period. TCE was detected in the PAM samples at 0.16 $\mu g/m^3$ and 0.12 $\mu g/m^3$ (Table A-4). TCE was detected in the background outdoor air sample at 0.081 $\mu g/m^3$, but the result was qualified as an estimated value below the laboratory reporting limit (Table A-4). No TCE results exceeded the health-based benchmarks.

E1.6 January 2017

On January 5, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the December 2016 samples. Three additional sampling locations were identified; the Gift Shop in the Visitor's Center, Behind Desk in the Visitor's Center and the Borehole location near the cave ventilation borehole in the back of the cave. TCE results were non-detect in all of the samples except the Hall of Giants sample where 0.42 $\mu g/m^3$ was measured (Table A-5). This result is below the health-based benchmarks. TCE was not detected in the background outdoor air sample.

E1.7 February 2017

On February 2, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the January 2017 samples. All samples were non-detect for TCE, with no results exceeding health-based benchmarks (Table A-6). TCE was not detected in the background outdoor air sample.

E1.8 March 2017

On March 2, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the February 2017 samples. All samples were non-detect for TCE except in the Gift Shop (0.25 $\mu g/m^3$) and Behind Desk Visitor's Center (0.25 $\mu g/m^3$) samples (Table A-7). No results exceeded the health-based benchmarks. TCE was not detected in the background outdoor

air sample.

E1.9 April 2017

On April 6, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the March 2017 samples. A result is not available for the sample from the Auditorium location due to a malfunction of the SUMMA canister regulator. TCE was detected in the Turnaround Area (0.96 $\mu g/m^3$), Borehole (0.92 $\mu g/m^3$) Second Bridge (0.59 $\mu g/m^3$), Sink Hole (0.22 $\mu g/m^3$) and Stalactite (0.30 $\mu g/m^3$) samples (Table A-8). No results exceeded the health-based benchmarks. TCE was not detected in the background outdoor air sample.

E1.10 May 2017

On May 11, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the April 2017 samples. In addition, an 8-hour time integrated PAM sample was collected. TCE was detected in all of the cave air samples including the PAM sample (Table A-9). Concentrations ranged from 0.71 $\mu g/m^3$ in the Gift Shop sample to 4.4 $\mu g/m^3$ in the Stalactite sample (Table A-9). No results exceeded the TCE health-based benchmarks. TCE was not detected in the background outdoor air sample.

E1.11 June 2017

On June 7, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the May 2017 samples, including an 8-hour PAM sample. TCE was detected in all of the cave air samples, including the PAM sample, except at the Gift Shop and Behind Desk Visitor's Center locations. Concentrations ranged between 0.73 $\mu g/m^3$ in the Hall of Giants sample to 4.7 $\mu g/m^3$ in the Second Bridge sample (Table A-10). No results exceeded the TCE health-based benchmarks. TCE was not detected in the background outdoor air sample.

E1.12 July 2017

On July 18, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the June 2017 samples, including an 8-hour PAM sample. TCE was detected in all of the cave air samples except at the Gift Shop and Behind Desk Visitor's Center locations. Concentrations ranged between 0.27 $\mu g/m^3$ in the Photo Station sample to 3.4 $\mu g/m^3$ in the Turnaround Area sample (Table A-11). No results exceeded the TCE health-based benchmarks. TCE was not detected in the background outdoor air sample.

E1.13 August 2017

On August 16, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the July 2017 samples, except that no PAM sample was collected. TCE was detected in all of the cave air samples. Concentrations ranged between 7.9 µg/m^3 in the Photo Station sample to 84 µg/m^3 in the Turnaround Area sample (Table A-12). TCE concentrations exceeded the acute short-term health-based benchmark at all of the sampling locations where it was detected. TCE in samples collected from the Turnaround Area, Second Bridge, First Bridge and Stalactite locations also exceeded the health-based benchmark for carcinogenic risk. TCE was not detected in the background outdoor air sample.

E1.14 September 2017

On September 13, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the August 2017 samples, except that an 8-hour PAM sample was also collected. An additional sampling location (Lower Passage Floor) was identified at a lower level in the cave approximately 30 feet below the Second Bridge where water flows through an underground passage. TCE was detected in all of the samples except at the Photo Station and Hall of Giants locations. Concentrations ranged between 0.26 µg/m^3 at the Gift Shop and Behind Desk at the Visitor's Center to 530 µg/m^3 in the Lower Passage sample (Table A-13). TCE exceeded the acute short-term health-based benchmark in the Borehole (8.9 µg/m^3) and Lower Passage samples. The Lower Passage sample result also exceeded the benchmark based on carcinogenic risk. TCE was detected in the background outdoor air sample at 0.39 µg/m^3.

E1.15 October 2017

On October 11, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the September 2017 samples, including the PAM sample. Three additional locations were identified along the same cave feature where the Lower Passage Floor sample was collected in September 2017. Lower Passage #1 and Lower Passage #2 were collected from different distances east of the Second Bridge. Lower Passage #3 was collected from a location west of the Second Bridge. TCE was detected in all of the cave air samples except at the Hall of Giants and Photo Station locations. Concentrations ranged between 2.7 µg/m^3 in the Underground Classroom sample to 2,400 µg/m^3 in the Lower Passage Floor sample (Table A-14). TCE exceeded the health-based benchmark in the Turnaround Area (13 µg/m^3), Second Bridge (9.9

µg/m^3), Borehole (15 µg/m^3), Sink Hole (12 µg/m^3), Auditorium (7 µg/m^3), Lower Passage #1 (2,200 µg/m^3), Lower Passage #2 (2,200 µg/m^3), Lower Passage #3 (2,300 µg/m^3), and Lower Passage Floor samples. The Lower Passage sample results also exceeded the benchmark based on carcinogenic risk. TCE was not detected in the background outdoor air sample.

E1.16 November 2017

On November 8, 2017, 8-hour time-integrated cave air samples were collected from the same locations as the October 2017 samples, including the PAM sample. No sample was collected from the original Lower Passage Floor location. TCE was detected at the Turnaround Area, Second Bridge, Sink Hole, Hall of Giants, Underground Classroom, Lower Passage #1, Lower Passage #2, and Lower Passage #3 samples. Concentrations ranged between 0.19 µg/m^3 in the Turnaround Area sample to 18 µg/m^3 in the Lower Passage #1 sample. TCE exceeded the acute short-term health-based benchmark in the Lower Passage #1, Lower Passage #2 (16 µg/m^3), and Lower Passage #3 (13 µg/m^3) samples. TCE was measured at 0.51 µg/m^3 in the background outdoor air sample.

E1.17 2018 Sampling

Between February and December 2018, Fantastic Caverns consultants conducted stationary air and personal air monitoring inside the cave, vent shaft locations and wells. The sampling was conducted without Department oversight or advance notification. Results were provided to the Department on March 4, 2019 (Keith, 2019), and are included in Appendix D and summarized in Table A17.

All samples were collected over an 8 hour period into 6L Summa canisters and submitted to the same analytical laboratory for analysis using the same analytical method as the Department's 2016 and 2017 samples. However, only results for TCE were reported by the laboratory.

Jeep tour samples were collected by attaching two Summa canisters (sample and sample duplicate) to the front of a tour jeep and accompanied tours over the course of an 8-hour work day. During periods when no vehicles were in use, the canisters were detached from the jeep and stored in the Visitors Center. TCE concentrations exceeded the acute short-term health-based

benchmark during ten of the twelve sampling events. The maximum TCE concentration of 29 $\mu g/m^3$ was measured on August 8, 2018.

Stationary cave air samples were collected during all twelve sampling events from four locations; the Lower Passage Upstream Canyon, Lower Passage Downstream Canyon, Ventilation Shaft and Smalley Cave. The data provided to the Department did not include a map or other documentation for the specific locations of the samples beyond these descriptions. TCE was measured in the cave air during all sampling events. Concentrations exceeded the acute short-term health-based benchmark at each location during most of the sampling events. The maximum concentrations measured include 1,400 $\mu g/m^3$ (Lower Passage Upstream) 890 $\mu g/m^3$ (Lower Passage Downstream) 67 $\mu g/m^3$ (Ventilation Shaft) 4,200 $\mu g/m^3$ (Smalley Cave). The highest concentrations were measured during the months of June through October.

In addition, samples were collected from four well locations during the March, June and September events. The data provided to the Department does not include any information about how air samples were collected at the well locations, or the locational information for the wells. TCE was measured in the wells during each of the three sampling events. Concentrations above the acute short-term health-based benchmark were measured in samples labeled Calcite Well (6.6 $\mu g/m^3$), Well-FC West (6.3 $\mu g/m^3$) and Well-4843 FR 125 (110 $\mu g/m^3$) in June. Concentrations in Well-FC West and Well-4843 FR 125 samples were also above the benchmark in October.

During the December sampling event, air samples were collected from four borehole locations labeled Line 2 Borehole, Line 3 Borehole (Paradise Room), Line 6 Borehole (White's Room) and Line 7 Borehole. No further information beyond the sample names was provided regarding the specific locations of these samples. TCE was detected in the Line 3, Line 6 and Line 7 Borehole samples, but at concentrations below the acute short-term health-based benchmark.

E2. Passive Air Samples

Radiello® activated charcoal passive samplers were deployed in the cave during the December 2016, February 2017, March 2017, April 2017, and October/November 2017 sampling events. Except for the October 2017 event, samplers were located at the Turnaround Area, Second

Bridge, Hall of Giants, and Underground Classroom cave features plus at the background outdoor air location. In October 2017, samplers were deployed in the Lower Passage area and under the second bridge as part of an effort to further identify potential routes of entry of TCE into the cave. Results are summarized in Tables C1-C5 and full analytical documentation is provided in Section VI.

The December 2016 samplers were deployed for 17 days, and TCE was non-detect (<0.062 $\mu g/m^3$) at all locations. The February 2017 samplers were deployed for 14 days. TCE was detected at the Turnaround Area (0.21 $\mu g/m^3$) and the Second Bridge (0.18 $\mu g/m^3$). The March 2017 samplers were deployed for 14 days. TCE was detected at the Turnaround Area (0.18 $\mu g/m^3$) and the Second Bridge (0.17 $\mu g/m^3$). The April 2017 samplers were deployed for 14 days. TCE was detected at the Turnaround Area (1.6 $\mu g/m^3$), Second Bridge (1.6 $\mu g/m^3$), Hall of Giants (0.32 $\mu g/m^3$), and Underground Classroom (0.83 $\mu g/m^3$). TCE concentrations in all passive samplers deployed during these four events were below the health-based benchmarks. The October/November 2017 samplers were deployed at three locations in the Lower Passage and two locations beneath second bridge for 28 days. TCE was detected in all of the samples at concentrations above acute short-term health-based benchmark. All sample results except one of the Second Bridge locations also exceeded the TCE benchmark based on carcinogenic risk. The maximum TCE measured was 210 $\mu g/m^3$ in the Lower Passage Floor sample.

E3. Surface Water

Surface water samples were collected on December 2, 2016; February 1, 2017; April 5, 2017; May 11, 2017; June 7, 2017; September 12, 2017; and October 11, 2017. Results are summarized in Tables B1 through B7 and full analytical documentation is provided in Section VI. No TCE was detected in the cave pools. TCE was detected in flowing cave water samples during three sampling events, with the highest concentration of 2.0 µg/L measured on October 11, 2017, in the Lower Passage stream sample (Table B7). TCE was detected in Indian Spring in April 2016 (0.58 µg/L) and May 2017 (1.40 µg/L). All TCE concentrations measured were below the health based benchmark of 5 µg/L for surface water.

E4. Groundwater

No TCE or other VOCs were detected in the Glidwell Baptist Church drinking water well samples.

E5. Quality Control Samples

Background passive and active air samples were collected from outside the cave on the hill near the building during all sampling events except in April 2016. TCE was detected in background air during three of the events; 0.081(J) µg/m^3 in December 2016, 0.39 µg/m^3 in September 2017 and 0.51 µg/m^3 in November 2017.

A collocated pair of cave air samples were collected during eight of the sampling events. Results for TCE are summarized and compared in Table A16. Results for two of the sample pairs had a relative percent difference (RPD) between 20 and 25. The remaining sample pair RPDs were in the single digits. These data are below the 30% RPD specified in the Quality Assurance Project Plan indicating that the overall sampling and analysis precision for air samples was acceptable.

Duplicate surface water samples were collected during five sampling events. Results for TCE are summarized and compared in Table B8. Results of all sample pairs had an RPD below 30% and indicate that that the overall sampling and analysis precision for surface water samples was acceptable.

A trip blank was prepared and accompanied water sample containers to and from the field during all of the sampling events. No TCE was detected in any of the trip blanks.

F. Conclusions/Recommendations

A Pre-CERCLA Screening investigation was conducted at the Fantastic Caverns site following concerns regarding cave air quality at publically accessed caves in Missouri located near Superfund sites with known groundwater VOC contamination. Fantastic Caverns is located approximately 3 miles north of the Litton Systems Inc. site, a former circuit board manufacturing facility adjacent to the Springfield-Branson National Airport. Litton Systems is a site of known TCE contamination underlain by an unconfined karstic aquifer. Dye injected into a sinkhole

approximately 600 feet from the Litton Systems facility was detected in water discharging in Fantastic Caverns establishing a hydraulic connection between the two areas.

Fourteen rounds of cave air sampling were conducted at the cave between April 2016 and November of 2017. At eleven locations in the cave, air samples were collected monthly for a year. Additional sampling locations in the Lower Passage area were identified and sampled during October and November 2017 in an effort to identify points of TCE entry into the cave. Seven rounds of surface water sampling and one groundwater/drinking water well sample from a well two miles from the cave were also collected during the investigation. Sampling documented a release of TCE and daughter products to surface water and cave air at the site. No TCE was detected in the drinking water well. The primary contaminant of concern is TCE, and the primary exposure pathway of concern is soil exposure/subsurface intrusion pathway.

The maximum concentration of TCE measured in cave air was 2,300 $\mu g/m^3$ measured in the Lower Passage Floor area of the cave below the Second Bridge. This value exceeds the health-based benchmarks. The Lower Passage is an area of the cave connected with and adjacent to the regularly toured portion of the cave, but is not normally accessed by the public. Among air samples collected in the toured portions of the cave, the maximum TCE concentration was 88 $\mu g/m^3$ measured at the Sink Hole feature on July 13, 2016. TCE concentrations above the health-based benchmarks were measured at nine of the eleven tour route sampling locations during at least one sampling event during the investigation. These sampling results were all from stationary 8-hour time-integrated air samples.

Stationary 8-hour time-integrated samples collected from specific locations in the cave may not be representative of actual exposure patterns experienced by the public or tour guide staff since cave tours only spend brief periods of time at each cave feature. Personal air monitoring samples were collected on seven sampling events to better estimate TCE exposure for tour guides. TCE was measured in the PAM samples during six of the seven events, but never at concentration exceeding the health-based benchmarks. The highest PAM sample TCE result was 4.3 $\mu g/m^3$ measured on

October 11, 2017.

Sampling data indicates that TCE concentrations exhibit significant temporal variability. Higher TCE concentrations are generally observed between May and August and lower concentrations between September and April. Concentration differences spanned two orders of magnitude at some sampling locations over the course of the investigation. The data also indicate a high level of spatial variability in TCE concentrations throughout the cave. During the September 2017 event, TCE concentrations spanned three orders of magnitude across the various sampling locations along the tour route.

The Missouri Department of Health and Senior Services and the EPA recommended that Fantastic Caverns inform its employees about the presence of TCE in the cave and provide health information about TCE (Garoutte, 2016, Peterson, 2016 and Williams, 2017).

Due to the documented release of hazardous substances and the presence of a completed subsurface vapor intrusion pathway, the site warrants placement on SEMS, further investigation and possibly remedial actions. The responsible party for the Litton Systems Inc. site, Northrup Grumman, is working to address TCE contamination at the former manufacturing facility under an order through the Department's Superfund Cooperative Program. Northrup Grumman recently finalized an agreement with the owner of Fantastic Caverns to provide access for further investigation and mitigation of contamination in the cave (Guariglia, 2019). Therefore, the Department recommends deferring placement of the Fantastic Caverns site on SEMS and further investigation under CERCLA at this time.

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SIGNATURES

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Date: 12-8-19

II. Pre-CERCLA Screening Checklist/Decision Form

Pre-CERCLA Screening Checklist/Decision Form

This form is used in conjunction with a site map and any additional information required by the EPA Region to document completion of a Pre-CERCLA Screening (PCS). The form includes a decision on whether a site should be added to the Superfund program's active site inventory for further investigation. This checklist replaces Attachment A in the December 2016 PCS Guidance document. A current version of the PCS checklist and additional information is available at: https://www.epa.gov/superfund/pre-cercla-screening.

Region: 7 **State/Territory:** MO **Tribe:** _____ _____ **EPA ID No. (If Available)**

Site Name: Fantastic Caverns

Other Site Name(s): _____

Site Location: _____ (Street)

7 (Congressional District) Springfield (City) MO (State/Terr.) GREENE (County) 65803 - _____ (Zip+4) ☐ (No Zip Available)

If no street address is available: _____ (Township-Range) _____ (Section)

Checklist Preparer:

Michael Stroh / Environmental Scientist (Name / Title) 11/27/2018 (Date)

Missouri Department of Natural Resources (Organization) (573) 522-9902 (Phone)

1730 E Elm Street (Street) michael.stroh@dnr.mo.gov e-Mail

Jefferson City (City) MO (State/Terr.) COLE (County) 65101- 4130 (Zip+4)

Site Contact Info/Mailing Address: Russ Campbell (417) 833-2010

4872 N Farm Road 125, Springfield, Missouri 65803

CERCLA 105d Petition for Preliminary Assessment? No **If Yes, Petition Date (mm/dd/yyyy):** _____

RCRA Subtitle C Site Status: Is site in RCRA Info? No **If Yes, RCRA Info Handler ID #:** _____

Ownership Type: Private **Additional RCRA Info ID #(s):** _____

Site Type: Other **State ID #(s):** _____

Site Sub-Type: Retail/commercial **Other ID #(s):** _____

Federal Facility? No **Federal Facility Owner:** (Make selection)

Formerly Used Defense Site (FUDS)? No

Federal Facility Docket? No **If Yes, FF Docket Listing Date (mm/dd/yyyy):** _____

Federal Facility Docket Reporting Mechanism: (Make selection)

Native American Interest? No **If Yes, list Tribe:** _____

Additional Tribe (s): (Make Selection)

Additional Tribe (s): (Make Selection)

Site Description

Use this section to briefly describe site background and conditions if known or (easily) available, such as: operational history; physical setting and land use; site surface description, soils, geology and hydrogeology; source and waste characteristics; hazardous substances/contaminants of concern; historical releases, previous investigations and cleanup activities; previous regulatory actions, including permitting and enforcement actions; institutional controls; and community interest.

The Fantastic Caverns Site is located at 4872 N Farm Road 125, Springfield, MO 65803. It is a privately owned cave system open for public tours located north of Springfield, Missouri in Greene County. The Department's Superfund Site Assessment Unit initiated PCS investigations at Fantastic Caverns and five other publically visited caves as a result of concern that volatile organic compounds (VOCs) contamination in groundwater from nearby Superfund sites could migrate into the cave air and pose a risk to human health. Groundwater contaminated with VOCs has resulted in vapor intrusion exposure risks at the Meramec Caverns commercial cave in Missouri. EPA Region 7 and the Department agreed to conduct investigations at commercial caves that are in close proximity to sites with VOC groundwater plumes.

One site with VOC groundwater contamination, Litton Systems Inc. (MOD007152903), is located in Springfield,

Geospatial Information

Latitude: +37.2885
Decimal Degree North (e.g., 38.859156)

Longitude: -93.3597
Decimal Degree West (e.g., 77.036783)

Provide 4 significant digits at a minimum, more if your collection method generates them.

Except for certain territories in the Pacific Ocean, all sites in U.S. states and territories are located within the northern and western hemispheres and will have a positive latitude sign and negative longitude sign. Coordinate signs displayed above are based on the State/Territory entry on page A-1. Geospatial data tips from the PCS Guidance document are available **here**.

Point Description: Select the option below that best represents the site point for future reference and to distinguish it from any nearby sites. See additional information **here**.

- ☐ Geocoded (address-matched) Site Address
- ☒ Site Entrance (approximate center of curb-cut)
- ☐ Approximate Center of Site
- ☐ Other Distinguishing Site Feature (briefly describe):

Point Collection Method: Check the method used to collect the coordinates above and enter the date of collection. See additional information **here**.

- ☐ Online Map Interpolation
- ☒ GPS (handheld, smartphone, other device or technology with accuracy range < 25 meters)
- ☐ GPS Other (accuracy range is ≥ 25 meters or unspecified)
- ☐ Address Matching: Urban
- ☐ Address Matching: Rural
- ☐ Other Method (briefly describe below):

Collection Date (mm/dd/yyyy): 03/02/2017

POINT-SELECTION CONSIDERATIONS

- Often the best point is a feature associated with the environmental release or that identifies the site visually.
- Use the curb cut of the entrance to the site if there is a clear primary entrance and it is a good identifier for the overall location.
- The approximate center of the site (a guess at the centroid) is useful for large-area sites or where there are no appropriate distinguishing features.
- Use the geocoded address if that is the only or best option available, but if possible use something more representative for sites larger than 50 acres.

Complete this checklist to help determine if a site should be added to the Superfund Active site inventory. See Section 3.6 of the PCS guidance for additional information.	YES	NO	Unknown
1. An initial search for the site in EPA's Superfund active, archive and non-site inventories should be performed prior to starting a PCS. Is this a new site that does not already exist in these site inventories?	☒	☐	☐
2. Is there evidence of an actual release or a potential to release?	☐	☐	☐
3. Are there possible targets that could be impacted by a release of contamination at the site?	☒	☐	☐
4. Is there documentation indicating that a target has been exposed to a hazardous substance released from the site?	☒	☐	☐
5. Is the release of a naturally occurring substance in its unaltered form, or is it altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?	☐	☒	☐
6. Is the release from products which are part of the structure of, and result in exposure within, residential buildings or business or community structures?	☐	☐	☐
7. If there has been a release into a public or private drinking water supply, is it due to deterioration of the system through ordinary use?	☐	☐	☐
8. Are the hazardous substances possibly released at the site, or is the release itself, excluded from being addressed under CERCLA?	☐	☐	☐
9. Is the site being addressed under RCRA corrective action or by the Nuclear Regulatory Commission?	☐	☐	☐
10. Is another federal, state, tribe or local government environmental cleanup program other than site assessment actively involved with the site (e.g., state voluntary cleanup program)?	☒	☐	☐
11. Is there sufficient documentation or evidence that demonstrates there is no likelihood of a significant release that could cause adverse environmental or human health impacts?	☐	☐	☒
12. Are there other site-specific situations or factors that warrant further CERCLA remedial/integrated assessment or response?	☐	☒	☐

Preparer's Recommendation:

☐ **Add** site to the Superfund Active site inventory.

☒ **Do not add** site to the Superfund Active site inventory.

Please explain recommendation below:

PCS Summary and Decision Rationale

Use this section to summarize PCS findings and support the decision to add or not add the site to the Superfund active site inventory for further investigation. Information does not need to be specific but, where known, can include key factors such as source and waste characteristics (e.g., drums, contaminated soil); evidence of release or potential release; threatened targets (e.g., drinking water wells); key sampling results (if available); CERCLA eligibility; involvement of other cleanup programs; and other supporting factors. Attach additional pages as necessary.

Due to the documented release of hazardous substances and the presence of a completed soil exposure/subsurface intrusion pathway, the site warrants placement on SEMS, further investigation and possibly remedial actions. The responsible party for the contamination at Fantastic Caverns,Northrup Grumman is working to address TCE contamination at the former Litton Systems manufacturing facility under an order through the Department's Superfund Cooperative Program. Northrup Grumman is also working with the owner of Fantastic Caverns to further investigate and address contamination in the cave. Therefore, the Department recommends deferring placement of the Fantastic Caverns site on SEMS and further investigation under CERCLA at this time.

Michael Stroh	State staff/State contractor	12/06/2019
Checklist Preparer Name	**Checklist Preparer Organization**	**Date**

EPA Regional Review and Pre-CERCLA Screening Decision

Add site to the Superfund active site inventory for completion of a:

- ☐ Standard/full preliminary assessment (PA)
- ☐ Abbreviated preliminary assessment (APA)
- ☐ Combined preliminary assessment/site inspection (PA/SI)
- ☐ Inegrated removal assessment and preliminary assessment
- ☐ Integrated removal assessment and combined PA/SI
- ☐ Other: _____

Do not add site to the Superfund active site inventory. Site is:

- ☐ Not a valid site or incident
- ☐ Being addressed by EPA's removal program
- ☒ Being addressed by a state cleanup program
- ☐ Being addressed by a tribal cleanup program
- ☐ Being addressed under the Resource Conservation and Recovery Act
- ☐ Being addressed by the Nuclear Regulatory Commission
- ☐ Other: _____

Optional - Print name of EPA Site Assessor making this decision: _____

EPA Regional Approval: (Enter Date and then click this box to initiate digital signature stamp)

_____ **Date** _____

Site Description

(All text as entered on page A-2)

The Fantastic Caverns Site is located at 4872 N Farm Road 125, Springfield, MO 65803. It is a privately owned cave system open for public tours located north of Springfield, Missouri in Greene County. The Department's Superfund Site Assessment Unit initiated PCS investigations at Fantastic Caverns and five other publically visited caves as a result of concern that volatile organic compounds (VOCs) contamination in groundwater from nearby Superfund sites could migrate into the cave air and pose a risk to human health. Groundwater contaminated with VOCs has resulted in vapor intrusion exposure risks at the Meramec Caverns commercial cave in Missouri. EPA Region 7 and the Department agreed to conduct investigations at commercial caves that are in close proximity to sites with VOC groundwater plumes.

One site with VOC groundwater contamination, Litton Systems Inc. (MOD007152903), is located in Springfield, approximately 3 miles south southwest of Fantastic Caverns (Figure 3 in Section III). This site is associated with a TCE groundwater plume in that area. Dye injected into a sinkhole approximately 600 feet from the Litton Systems facility was detected in water discharging in Fantastic Caverns establishing a hydraulic connection between the two areas.

Fourteen rounds of cave air sampling were conducted at the cave between April 2016 and November of 2017. At eleven locations in the cave, air samples were collected monthly for a year. Additional sampling locations were identified and sampled during a portion of this period in an effort to identify points of TCE entry into the cave. Seven rounds of surface water sampling and one groundwater/drinking water well sample were also collected during the investigation. Sampling documented a release of TCE and daughter products to surface water and cave air at the site. No TCE was detected in the drinking water well. The primary contaminant of concern is TCE, and the primary exposure pathway of concern is soil exposure/subsurface intrusion pathway.

The maximum concentration of TCE measured in cave air was 2,400 µg/m3 measured in the Lower Passage Floor area of the cave below the Second Bridge. This value exceeds the EPA VISL of 6 µg/m3. The Lower Passage is an area of the cave connected with and adjacent to the regularly toured portion of the cave, but is not normally accessed by the public. Among air samples collected in the toured portions of the cave, the maximum TCE concentration was 88 µg/m3 measured at the Sink Hole feature on July 13, 2017. TCE concentrations above the EPA VISL of 6 µg/m3 were measured at nine of the eleven tour route sampling locations during at least one sampling event during the investigation. These sampling results were all from stationary 8-hour time-integrated air samples.

Stationary 8-hour time-integrated samples collected from specific locations in the cave may not be representative of actual exposure patterns experienced by the public or tour guide staff since cave tours only spend brief periods of time at each cave feature. Personal air monitoring samples were collected on seven sampling events to better estimate TCE exposure for tour guides and public visitors. TCE was measured in the PAM samples during six of the seven events, but never at concentration exceeding the EPA VISL of 6 µg/m3. The highest PAM sample TCE result was 4.3 µg/m3 measured on October 11, 2017.

Sampling data indicates that TCE concentrations exhibit significant temporal variability. Higher TCE concentrations are generally observed between May and August and lower concentrations between September and April. Concentration differences spanned two orders of magnitude at some sampling locations over the course of the investigation. The data also indicate a high level of spatial variability in TCE concentrations throughout the cave. During the September 2017 event, TCE concentrations spanned three orders of magnitude across the various sampling locations along the tour route.

The Missouri Department of Health and Senior Services and the. EPA recommended that Fantastic Caverns inform its employees about the presence of TCE in the cave and provide health information about TCE (Garoutte, 2016, Peterson, 2016 and Williams, 2017).

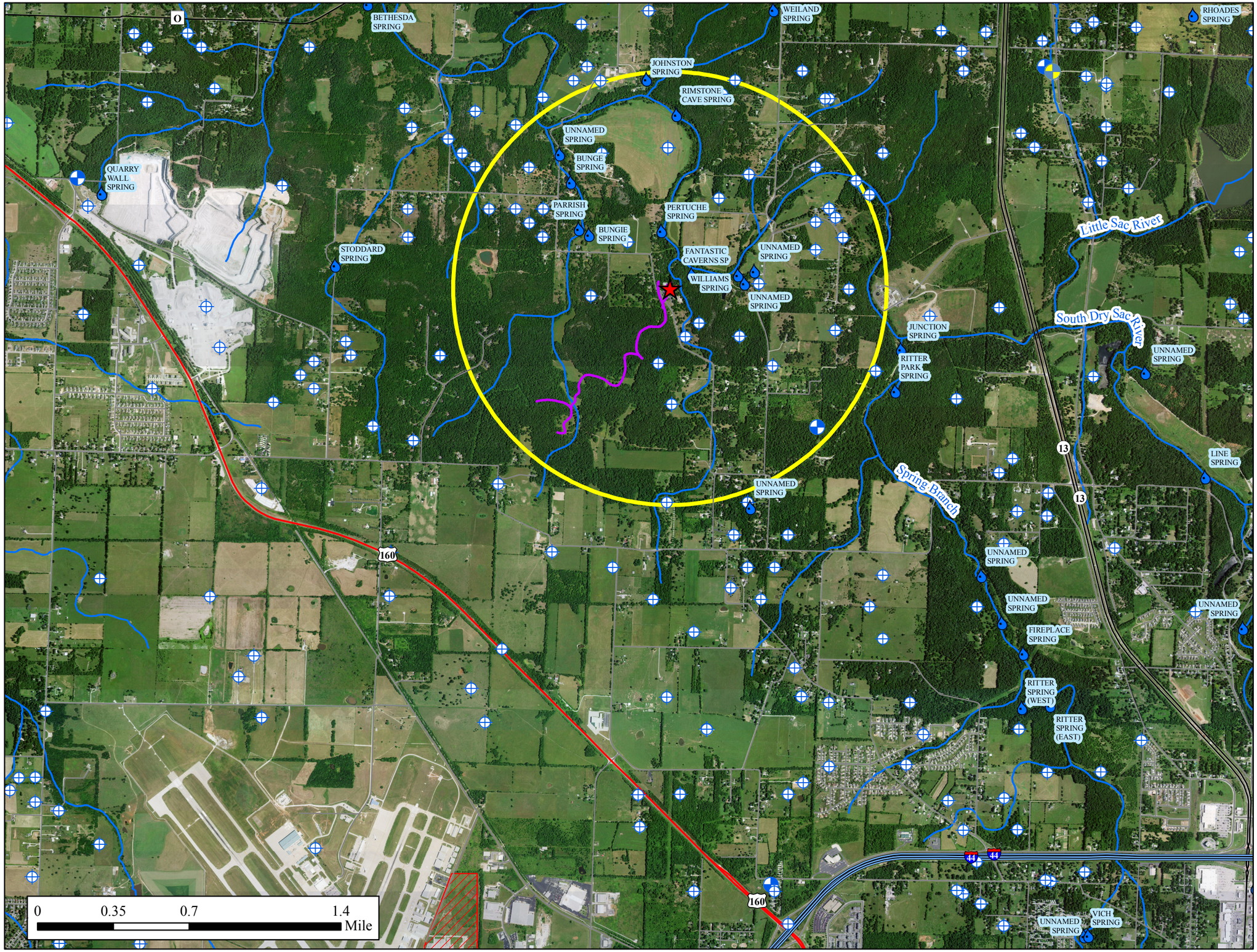
PCS Summary and Decision Rationale

(All text as entered on page A-4)

Due to the documented release of hazardous substances and the presence of a completed soil exposure/subsurface intrusion pathway, the site warrants placement on SEMS, further investigation and possibly remedial actions. The responsible party for the contamination at Fantastic Caverns,Northrup Grumman is working to address TCE contamination at the former Litton Systems manufacturing facility under an order through the Department's Superfund Cooperative Program. Northrup Grumman is also working with the owner of Fantastic Caverns to further investigate and address contamination in the cave. Therefore, the Department recommends deferring placement of the Fantastic Caverns site on SEMS and further investigation under CERCLA at this time.

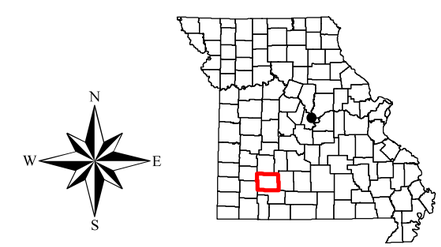
III. Figures

Figure 1: Site Location Map
Fantastic Caverns Site
Greene County, Missouri



Legend

- Fantastic Caverns Entrance
- Springs
- Private Drinking Water Wells
- Public Wells
- Glidewell Baptist Church Well
- Fantastic Caverns Mapped Cave
- Litton Facility Boundary
- 1 Mile Buffer of Cave Entrance
- Rivers and Streams



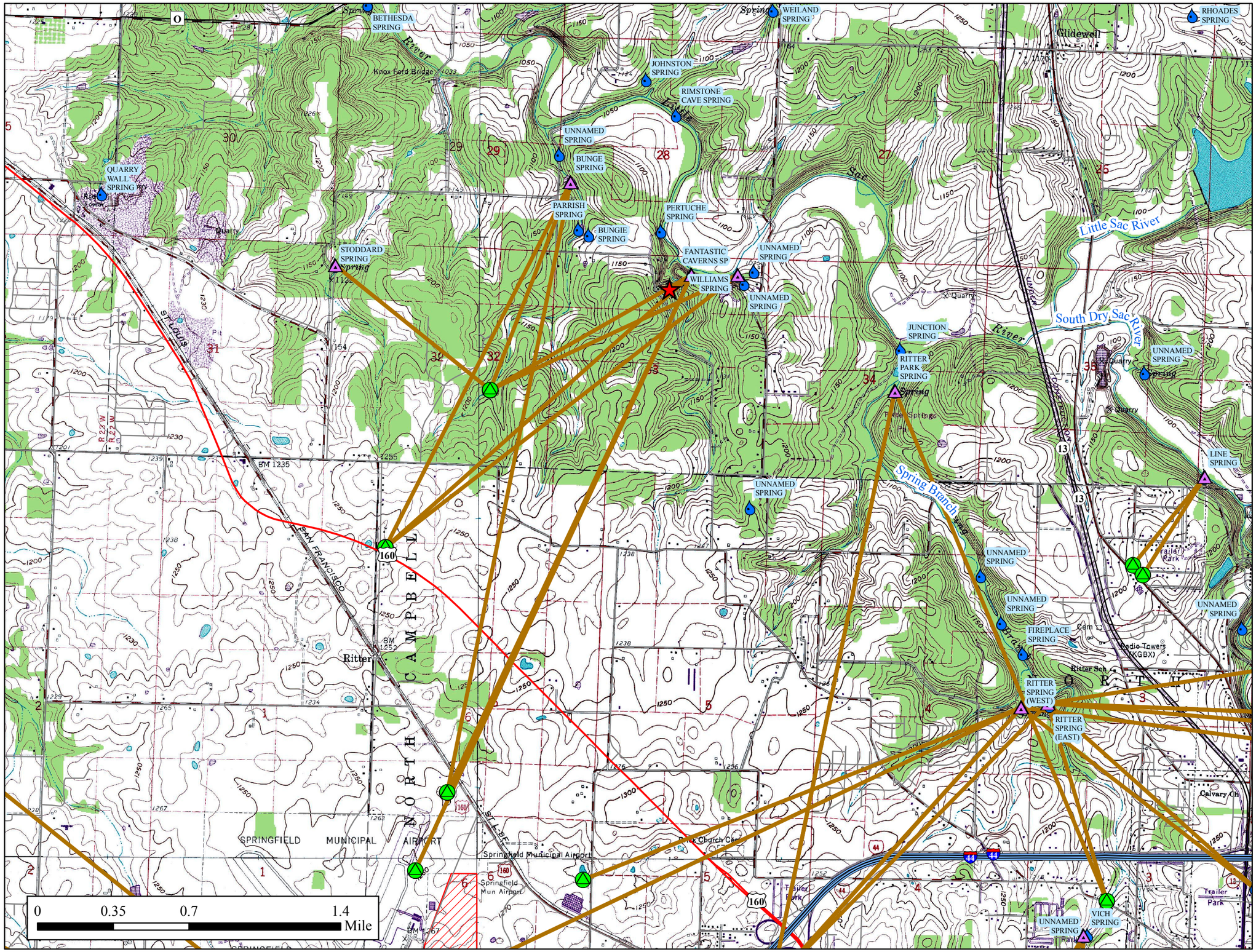
Created on: November 2, 2018 by Michael Stroh
This map is located at
M/Superfund/Fantastic Caverns

Base Map: National Agriculture Imagery Program (NAIP) ortho photography. Flight Date: 2014
Data Sources: US Census 2010;
Missouri Department of Transportation

Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

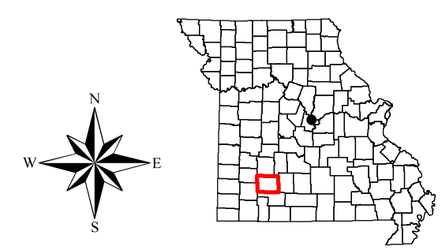
MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Figure 2:
Groundwater Dye Trace Map
Fantastic Caverns Site
Greene County, Missouri



Legend

- Fantastic Caverns Entrance
- Dye Reception Point
- Dye Injection Point
- Dye Trace Path
- Springs
- Local Roads
- Interstate
- Federal Highway
- State Lettered Highway
- State Numbered Highway
- Litton Facility Boundary



Created on: November 2, 2018 by Michael Stroh
This map is located at
M/Superfund/Fantastic Caverns

Base Map: National Agriculture Imagery Program (NAIP) ortho photography. Flight Date: 2014
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Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

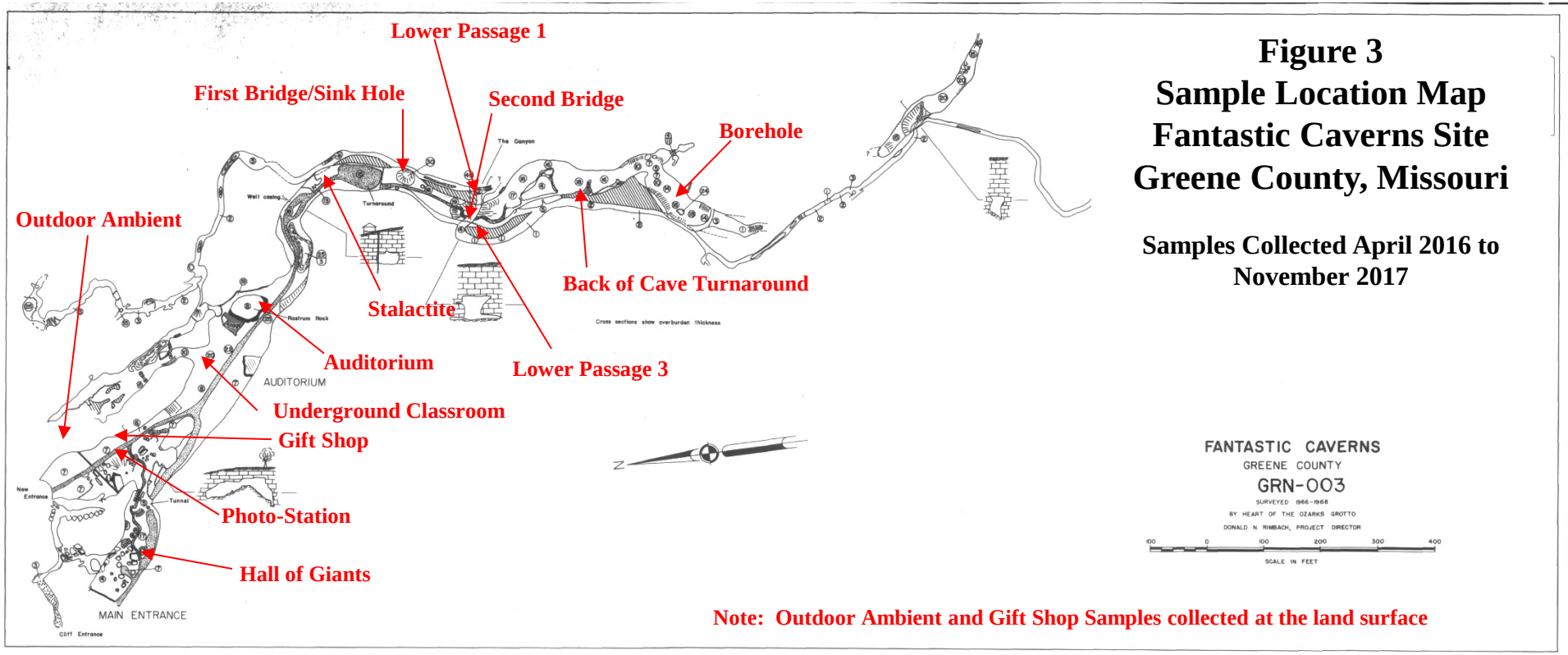


Figure 3
Sample Location Map
Fantastic Caverns Site
Greene County, Missouri

Samples Collected April 2016 to November 2017

Note: Outdoor Ambient and Gift Shop Samples collected at the land surface

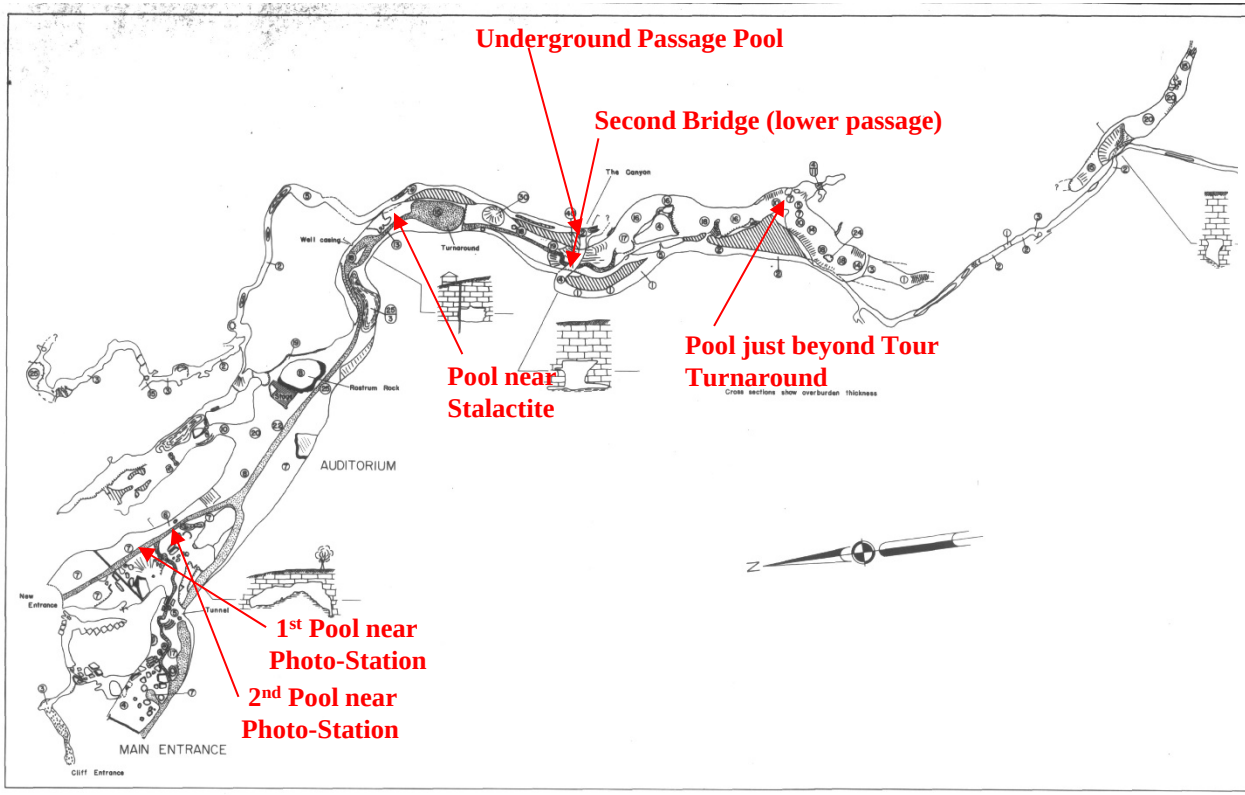


Figure 4
Water Sample Location Map
Fantastic Caverns Site
Greene County, Missouri

Samples Collected April 2016 to November 2017

IV. Photographic Log

IV.

Photographic Log

Pre-CERCLA Screening
Fantastic Caverns Site
Greene County, Missouri

Photographs taken by Kyle O'Rourke, Missouri Department of Natural Resources on May 11, 2017

Photograph 1

Commercial Entrance to Fantastic Caverns located approximately 130 feet southeast of the visitor center. Photo taken facing south.

Photograph 2

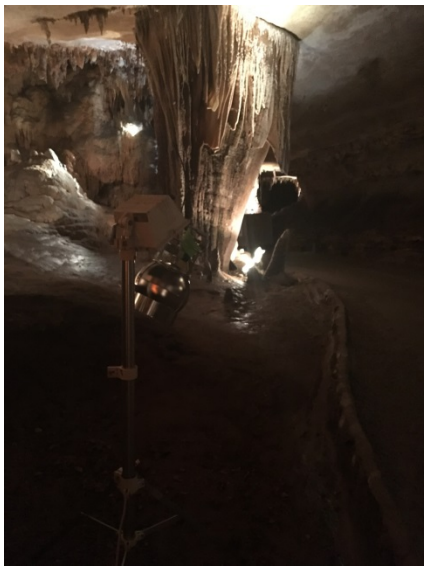
Canister placed at the first stop on the cave tour.

Photograph 3

Canister placed at the Underground Classroom.

Photograph 4

Canister placed in the Amphitheater.



Photograph 5

Canister placed near a column where the tour stops for approximately five minutes.

Photograph 6

Canister placed at the first sink hole.

Photograph 7

Canister located at the Second Bridge.

Photograph 8

Canisters placed at the back of the cave where the tour turns around.

Photograph 9

Canister placed in the Hall of Giants.

Photograph 10

Canister placed in the Gift Shop inside the visitor's center.

Photograph 11

Canister placed in the Gift Shop inside the visitor's center.

Photograph 12

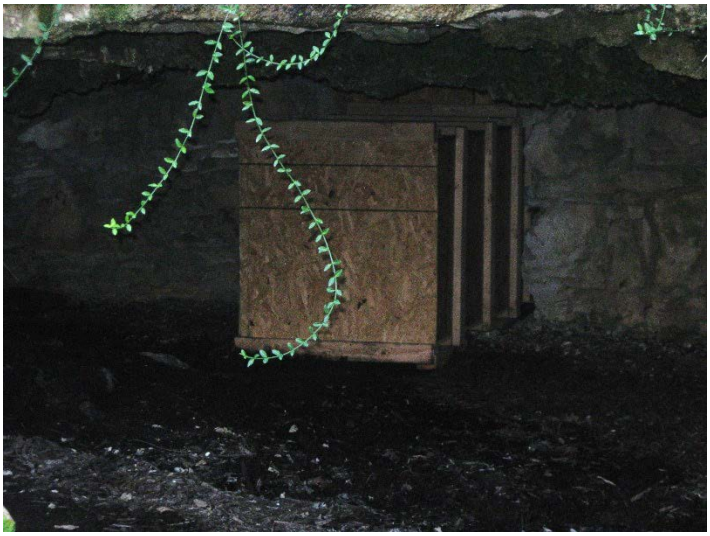
Photo of the 22” borehole drilled in the back of the cave to force air throughout the cave.

Photograph 13

Photo of lower water passage where water is present in the cave.

Photograph 14

Photo of box installed at the entrance of the cave where air movement can be controlled.



Photograph 15

Photo of box installed at the exit of the cave where air movement can be controlled.

Photograph 16

Photo of door at the entrance of the cave.

Photograph 17

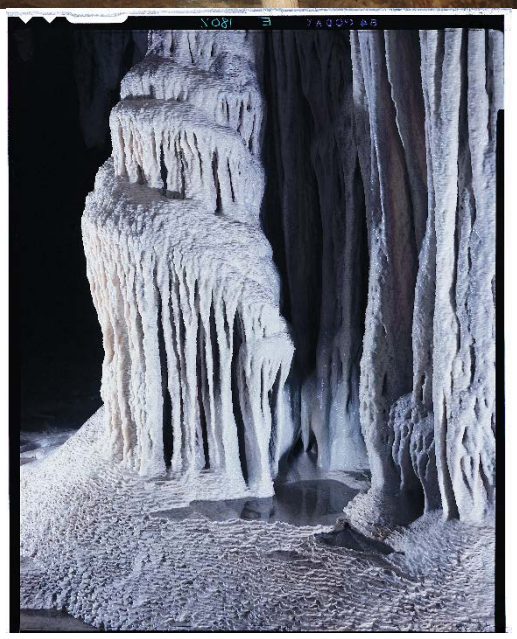
Photo of fan installed at the surface where the borehole was drilled.

Photograph 19

Photo of air mattresses wedged in the lower water passage.

Photograph 20

Photo of well casing along the toured portion of the cave.



Photograph 21

Photo of the Spiral Staircase, one of the most popular speleothems in the cave.

Photograph 22

Photo of the Hall of Giants

V. Analytical Data Tables

TABLE A-1: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES
COLLECTED APRIL 4, 2004, FEBRUARY 24, 2005 AND NOVEMBER 2, 2005
LITTON SYSTEMS INC SITE REASSESSMENT, GREENE COUNTY, MISSOURI

- All values listed in µg/m^3
- NL denotes screening benchmark not listed
- Sample results in shaded cells exceed the lowest of the VISL[1,2] values.
- All samples collected in 6L Summa cansiters & analyzed by Method TO-15

Sample ID	**Williams Spring**	**Fantastic Caverns** (Second Bridge)	**Fantastic Caverns** (Second Bridge)	**Fantastic Caverns** (Turnaround Area)	**Fantastic Caverns** (Second Bridge)	**Fantastic Caverns** (Turnaround Area)	**Fantastic Caverns** (Turnaround Area)	**VISL[1,2]**	
Date Sample Collected	**4/4/2004**	**4/4/2004**	**2/24/2005**	**2/24/2005**	**11/2/2005**	**11/2/2005**	**11/2/2005**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**24 hrs**	**24 hrs**	**24 hrs**	**24 hrs**	**24 hrs**	**24 hrs**	**24 hrs**		
Laboratory Number	**417560**	**417573**	**502635**	**502636**	**504171**	**504172**	**0504172Dup**		
Freon 12 (dichlorodifluoromet	<4.4	15	5.8	7	<3.8	<4.8	<4.8	NL	438
Freon 11 (trichlorofluorometh	<5.0	6.4	<5.8	<5.8	<4.8	<5.5	<5.5	NL	NL
1,1-Dichloroethene	27	<3.1	<4.1	<4.1	<3.0	<3.9	<3.9	NL	876
2-Butanone	<10	<9.1	4.8	<3.0	<2.2	<2.9	<2.9	NL	21900
Carbon disulfide	<11	<9.6	<3.2	4	<2.4	<3.0	<3.0	NL	NL
cis-1,2-Dichloroethene	44	6.7	<4.1	<4.1	<3.0	<3.9	<3.9	NL	NL
1,1,1-Trichloroethane	70	53	<5.6	<5.6	12	<5.3	<5.3	NL	21900
Trichloroethene	300	150	<5.5	<5.5	53	<5.3	<5.3	30	6
Toluene	6.6	17	<3.9	<3.9	<2.9	<3.7	<3.7	NL	21900
Tetrachloroethene	14	<5.2	<7.0	<7.0	<5.9	<6.6	<6.6	472	175
Acetone	9.3	9.2	13	<9.8	<7.2	<9.3	<9.3	NL	135000
Ethanol	13	<5.8	<7.8	<7.8	<5.7	<7.4	<7.4	NL	NL

[1] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[2] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-2: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED APRIL 2016
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes screening benchmark not listed
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**161798**	**161799**	**VISL1,2**	
Date Collected	**4/12/2016**	**4/12/2016**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**24 Hours**	**24 Hours**		
Lab Number	**1604244-01A**	**1604244-02A**		
Sample Type	**6L Summa**	**6L Summa**		
Sample Location	**Back of Cave Turnaround Area**	**Under Second Bridge**		
Volatile Organic Compounds (VOCs)				
Benzene	0.64	0.60	15.7	131
Carbon tetrachloride	0.36	0.32	20.4	438
Chloroform	0.46	3.1	5.3	428
Chloromethane	<0.18	<0.17	NL	394
Dichlorodifluoromethane	2.3	2.3	NL	438
1,4-Dichlorobenzene	<0.21	<0.20	11.1	3500
1,1-Dichloroethane	<0.14	<0.14	76.7	NL
1,1-Dichloroethene	<0.070	<0.067	NL	876
1,2-Dichloroethane	0.29	<0.14	4.72	31
cis-1,2-Dichloroethene	<0.14	<0.13	NL	NL
trans-1,2-Dichloroethene	<0.70	<0.67	NL	NL
Ethylbenzene	<0.15	<0.15	49.1	4380
Naphthalene	<0.47	<0.44	3.61	13.1
Tetrachloroethene (PCE)	1.3	1.1	472	175
Trichloroethene (TCE)	0.94	1.6	30	6**
1,1,1-Trichloroethane	0.28	0.46	NL	21900
Toluene	0.40	0.87	NL	21900
Vinyl Chloride	<0.046	<0.043	27.9	438
o-Xylene	<0.15	0.16	NL	438
m,p-Xylenes	<0.31	0.34	NL	438

[1] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[2] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-3: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED JULY 2016
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes screening benchmark not listed
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed lowest VISL benchmark [2,3]
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**163233**	**163234**	**163235**	**VISL[2,3]**	
Date Collected	**7/13/2016**	**7/13/2016**	**7/13/2016**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1607349-01A**	**1607349-02A**	**1067345-03A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**		
Sample Location	**Back of Cave Turnaround Area**	**Sink Hole Area**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)					
Benzene	**2.5**	1.0	0.52	15.7	131
Carbon tetrachloride	0.43	0.42	0.46	20.4	438
Chloroform	**3.1**	**4.0**	<0.19	5.3	428
Chloromethane	0.48	<0.18	1.5	NL	394
Dichlorodifluoromethane	2.8	2.7	3.2	NL	438
1,4-Dichlorobenzene	**0.46**	<0.22	<0.23	11.1	3500
1,1-Dichloroethane	**0.18**	<0.14	<0.15	76.7	NL
1,1-Dichloroethene	**1.7**	**2.6**	<0.076	NL	876
1,2-Dichloroethane	**1.8**	<0.14	<0.15	4.72	31
cis-1,2-Dichloroethene	**1.4**	**2.0**	<0.15	NL	NL
trans-1,2-Dichloroethene	**1.7**	<0.71	<0.76	NL	NL
Ethylbenzene	**9.4**	<0.16	0.30	49.1	4380
Naphthalene	**0.62**	<0.47	<0.5	3.61	13.1
Tetrachloroethene (PCE)	**2.2**	**1.3**	<0.26	472	175
Trichloroethene (TCE)	**61**	**88**	<0.20	30	6**
1,1,1-Trichloroethane	**11**	**15**	<0.21	NL	21900
Toluene	**75**	0.70	2.9	NL	21900
Vinyl Chloride	<0.035	<0.046	<0.049	27.9	438
o-Xylene	**7.9**	<0.16	0.31	NL	438
m,p-Xylenes	**23**	<0.31	0.95	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-4: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED DECEMBER 2016
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NA denotes Not Analyzed
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**164131**	**164132**	**164130**	**164129**	**164133**	**164128**	**164127**	**164126**	**164125**	**164134**	**162648**	**162649**	**VISL[2,3]**	
Date Collected	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**12/2/2016**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**5 Hours**	**5 Hours**		
Lab Number	**Q373007**	**Q373008**	**Q373006**	**Q373005**	**Q373009**	**Q373004**	**Q373003**	**Q373002**	**Q373001**	**Q373010**	**Q372901**	**Q372902**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**		
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Second Bridge**	**Sink Hole Area**	**Hall of Giants**	**Stalactite**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Background Outside Cave on Hill Near Bldg.**	**Personal Air Monitoring**	**Personal Air Monitoring (Duplicate)**		
Volatile Organic Compounds (VOCs)														
Benzene	0.27	0.27	0.39	0.29	0.30	0.39	0.49	0.42	0.30	0.54	0.64	0.5	15.7	131
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.4	438
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	Na	NA	NA	NA	NA	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.72	31
cis-1,2-Dichloroethene	<0.033	<0.031	<0.042	<0.032	<0.030	<0.026	<0.032	0.18	<0.031	<0.033	<0.044	<0.034	NL	NL
trans-1,2-Dichloroethene	<0.017	<0.015	<0.021	<0.016	<0.015	<0.013	<0.016	0.076 (J)	<0.015	<0.016	<0.022	<0.017	NL	NL
Ethylbenzene	0.16	0.17	0.52	0.17	0.14	0.18	0.41	0.20	0.18	0.21	0.20	0.13	49.1	4380
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.61	13.1
Tetrachloroethene (PCE)	0.090 (J)	0.090 (J)	0.092 (J)	0.099 (J)	0.068 (J)	0.10 (J)	0.086 (J)	0.10 (J)	0.077 (J)	0.041 (J)	0.12 (J)	0.095 (J)	472	175
Trichloroethene (TCE)	0.12	0.13	**0.43**	**0.28**	0.11	0.099	0.086 (J)	0.12	0.097 (J)	0.081 (J)	0.16	0.12	30	6**
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	21900
Toluene	0.89	0.97	1.87	0.97	0.83	0.97	2.72	1.04	1.03	1.12	1.04	0.82	NL	21900
Vinyl Chloride	0.037 (J)	0.033 (J)	0.046 (J)	0.039 (J)	0.024 (J)	0.027 (J)	0.026 (J)	0.029 (J)	0.025 (J)	0.032 (J)	0.033 (J)	0.027 (J)	27.9	438
o-Xylene	0.25	0.24	0.90	0.25	0.22	0.26	0.60	0.31	0.28	0.31	0.29	0.21	NL	438
m,p-Xylenes	0.74	0.76	2.37	0.77	0.61	0.79	1.75	0.85	0.81	0.83	0.77	0.55	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

J=Estimated value below reporting limit.

TABLE A-5: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED JANUARY 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**164295**	**164296**	**164297**	**164294**	**164293**	**164289**	**164292**	**164291**	**164290**	**164288**	**164299**	**164300**	**164298**	**VISL[2,3]**	
Date Collected	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**1/5/2017**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1701114-08A**	**1701114-09A**	**1701114-10A**	**1701114-07A**	**1701114-06A**	**1701114-02A**	**1701114-05A**	**1701114-04A**	**1701114-03A**	**1701114-01A**	**1701114-12A**	**1701114-13A**	**1701114-11A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**		
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)															
Benzene	0.70	0.44	<0.27	0.44	0.43	0.51	0.29	0.37	0.86	0.34	0.51	0.57	0.42	15.7	131
Carbon tetrachloride	0.63	0.59	0.55	0.56	0.52	0.52	0.55	0.56	0.53	0.52	0.52	0.55	0.57	20.4	438
Chloroform	0.19	<0.17	<0.17	<0.17	<0.16	<0.15	<0.17	<0.17	<0.16	<0.17	<0.17	<0.17	<0.15	5.3	428
Chloromethane	1.1	<0.18	<0.18	<0.18	<0.17	0.29	<0.18	<0.18	0.28	0.20	0.77	0.77	0.88	NL	394
Dichlorodifluoromethane	2.6	2.4	2.2	2.3	2.2	2.2	2.3	2.2	2.2	2.2	3.6	3.7	2.5	NL	438
1,4-Dichlorobenzene	<0.20	<0.22	<0.20	<0.22	<0.20	<0.19	<0.22	<0.20	<0.19	<0.21	<0.322	<0.21	<0.19	11.1	3500
1,1-Dichloroethane	<0.14	<0.14	<0.14	<0.14	<0.13	<0.13	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	76.7	NL
1,1-Dichloroethene	<0.067	<0.071	<0.068	<0.071	<0.065	<0.063	<0.071	<0.068	<0.064	<0.069	<0.071	<0.069	<0.062	NL	876
1,2-Dichloroethane	<0.14	<0.14	<0.14	<0.14	<0.13	0.15	<0.14	<0.14	<0.13	<0.14	0.17	0.18	<0.13	4.72	31
cis-1,2-Dichloroethene	<0.13	<0.14	<0.14	<0.14	<0.13	<0.12	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	<0.12	NL	NL
trans-1,2-Dichloroethene	<0.67	<0.71	<0.68	<0.71	<0.65	<0.63	<0.71	<0.68	<0.64	<0.69	<0.71	<0.69	<0.62	NL	NL
Ethylbenzene	<0.14	<0.16	<0.15	<0.16	<0.14	**0.75**	<0.16	<0.15	**0.86**	<0.15	0.22	0.19	<0.14	49.1	4380
Naphthalene	<0.44	<0.47	<0.45	<0.47	<0.43	<0.41	<0.47	<0.45	0.42	<0.46	<0.47	<0.46	<0.41	3.61	13.1
Tetrachloroethene (PCE)	<0.23	<0.24	<0.23	<0.24	<0.22	<0.21	<0.24	<0.23	<0.22	<0.24	<0.24	<0.24	<0.21	472	175
Trichloroethene (TCE)	<0.18	<0.19	<0.18	<0.19	<0.18	0.42	<0.19	<0.18	<0.17	<0.19	<0.19	<0.19	<0.17	30	6**
1,1,1-Trichloroethane	<0.18	<0.20	<0.19	<0.20	<0.18	<0.17	<0.20	<0.19	<0.18	<0.19	<0.20	<0.19	<0.17	NL	21900
Toluene	0.53	0.65	<0.13	0.33	0.46	**5.7**	0.30	0.27	**5.7**	0.49	**7.2**	**6.8**	0.54	NL	21900
Vinyl Chloride	<0.043	<0.046	<0.044	<0.046	<0.042	<0.040	<0.046	<0.044	<0.041	<0.045	<0.046	<0.045	<0.040	27.9	438
o-Xylene	<0.14	<0.16	<0.15	<0.16	<0.14	**0.91**	<0.16	<0.15	**1.2**	<0.15	0.27	0.26	<0.14	NL	438
m,p-Xylenes	0.34	0.32	<0.30	<0.31	0.29	**2.4**	<0.31	<0.30	**3.5**	0.35	0.74	0.66	<0.27	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-6: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED FEBRUARY 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**171227**	**171228**	**171229**	**171226**	**171225**	**171230**	**171224**	**171223**	**171222**	**171221**	**171233**	**171232**	**171231**	**VISL[2,3]**	
Date Collected	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**	**2/2/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1702108-07A**	**1702108-08A**	**1702108-09A**	**1702108-06A**	**1702108-05A**	**170218-10A**	**1702108-04A**	**1702108-03A**	**1702108-02A**	**1702108-01A**	**1702108-13A**	**1702108-12A**	**1702108-11A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)															
Benzene	0.91	0.83	0.52	**1.8**	**1.4**	0.89	**1.2**	0.89	0.76	0.77	0.35	0.36	0.31	15.7	131
Carbon tetrachloride	0.58	0.60	0.57	0.57	0.58	0.60	0.59	0.59	0.56	0.56	0.53	0.56	0.56	20.4	438
Chloroform	<0.17	<0.16	<0.16	<0.20	<0.17	<0.15	<0.16	<0.16	<0.17	<0.17	**0.23**	**0.20**	<0.15	5.3	428
Chloromethane	<0.18	<0.17	<0.17	<0.22	<0.18	0.20	<0.17	0.22	<0.18	<0.18	0.75	0.77	0.75	NL	394
Dichlorodifluoromethane	2.3	2.3	2.3	2.4	2.3	2.3	2.4	2.4	2.3	2.3	4.3	4.5	2.3	NL	438
1,4-Dichlorobenzene	<0.21	<0.20	<0.20	<0.25	<0.21	<0.19	<0.20	<0.19	<0.21	<0.21	<0.20	<0.19	<0.19	11.1	3500
1,1-Dichloroethane	<0.14	<0.13	<0.14	<0.17	<0.14	<0.13	<0.14	<0.13	<0.14	<0.14	<0.13	<0.13	<0.12	76.7	NL
1,1-Dichloroethene	<0.069	<0.065	<0.067	<0.083	<0.070	<0.063	<0.066	<0.064	<0.070	<0.070	<0.065	<0.064	<0.061	NL	876
1,2-Dichloroethane	<0.14	<0.13	<0.14	<0.17	<0.14	<0.13	<0.14	<0.13	<0.14	<0.14	<0.13	<0.13	<0.12	4.72	31
cis-1,2-Dichloroethene	<0.14	<0.13	<0.13	<0.17	<0.14	<0.12	<0.13	<0.13	<0.14	<0.14	<0.13	<0.13	<0.12	NL	NL
trans-1,2-Dichloroethene	<0.69	<0.65	<0.67	<0.83	<0.70	<0.63	<0.66	<0.64	<0.70	<0.70	<0.65	<0.64	<0.61	NL	NL
Ethylbenzene	<0.15	<0.14	<0.14	<0.18	<0.15	<0.14	<0.14	**0.17**	<0.15	<0.15	**0.22**	**0.24**	<0.13	49.1	4380
Naphthalene	<0.46	<0.43	<0.44	<0.55	<0.46	<0.41	<0.44	<0.42	<0.46	<0.46	<0.43	<0.42	<0.41	3.61	13.1
Tetrachloroethene (PCE)	**0.55**	**0.52**	**0.52**	**0.45**	**0.34**	<0.21	**0.27**	**0.25**	<0.24	**0.27**	**0.50**	**0.45**	<0.21	472	175
Trichloroethene (TCE)	<0.19	<0.18	<0.18	<0.22	<0.19	<0.17	<0.18	<0.17	<0.19	<0.19	<0.18	<0.17	<0.17	30	6**
1,1,1-Trichloroethane	<0.19	<0.18	<0.18	<0.23	<0.19	<0.17	<0.18	<0.18	<0.19	<0.19	<0.18	<0.18	<0.17	NL	21900
Toluene	0.42	0.38	0.21	**0.76**	**0.62**	0.40	**0.58**	**1.9**	0.35	0.35	**8.4**	**8.4**	0.18	NL	21900
Vinyl Chloride	<0.044	<0.042	<0.043	<0.054	<0.045	<0.040	<0.043	<0.041	<0.045	<0.045	<0.042	<0.041	<0.040	27.9	438
o-Xylene	<0.15	<0.14	<0.14	<0.18	<0.15	<0.14	<0.14	**0.18**	<0.15	<0.15	**0.29**	**0.28**	<0.13	NL	438
m,p-Xylenes	<0.30	**0.28**	<0.29	<0.36	<0.31	<0.27	<0.29	**0.47**	<0.30	<0.31	**0.76**	**0.76**	<0.27	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-7: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED MARCH 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**171251**	**171252**	**171253**	**171250**	**171249**	**171254**	**171248**	**171247**	**171246**	**171245**	**171257**	**171256**	**171255**	**VISL[2,3]**	
Date Collected	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/2017**	**3/2/207**	**3/2/2017**	**3/2/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1703110-07A**	**1703110-08A**	**1703110-09A**	**1703110-06A**	**1703110-05A**	**1703110-10A**	**1703110-04A**	**1703110-03A**	**1703110-02A**	**1703110-01A**	**1703110-13A**	**1703110-12A**	**1703110-11A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)															
Benzene	<0.27	<0.26	<0.26	<0.27	<0.27	<0.28	<0.26	<0.28	<0.28	0.29	0.73	0.74	0.43	15.7	131
Carbon tetrachloride	0.50	0.48	0.46	0.50	0.51	0.50	0.51	0.52	0.52	0.52	0.55	0.54	0.57	20.4	438
Chloroform	<0.17	<0.16	<0.16	<0.17	<0.17	<0.17	<0.16	<0.17	<0.17	<0.16	**0.18**	**0.18**	<0.16	5.3	428
Chloromethane	<0.18	<0.17	<0.17	<0.18	<0.18	<0.18	<0.17	0.18	<0.18	<0.17	0.94	0.96	0.98	NL	394
Dichlorodifluoromethane	2.6	2.6	2.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6	5.3	5.6	2.6	NL	438
1,4-Dichlorobenzene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	<0.19	<0.21	<0.22	<0.20	<0.20	<0.20	<0.20	11.1	3500
1,1-Dichloroethane	<0.14	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	76.7	NL
1,1-Dichloroethene	<0.068	<0.065	<0.065	<0.068	<0.068	<0.069	<0.064	<0.069	<0.071	<0.067	<0.068	<0.067	<0.067	NL	876
1,2-Dichloroethane	<0.14	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	**0.16**	**0.16**	<0.14	4.72	31
cis-1,2-Dichloroethene	<0.14	<0.13	<0.13	<0.14	<0.14	<0.14	<0.13	<0.14	<0.14	<0.13	<0.14	<0.13	<0.13	NL	NL
trans-1,2-Dichloroethene	<0.68	<0.65	<0.65	<0.68	<0.68	<0.69	<0.64	<0.69	<0.71	<0.67	<0.68	<0.67	<0.67	NL	NL
Ethylbenzene	<0.15	<0.14	<0.14	<0.15	<0.15	<0.15	<0.14	<0.15	<0.16	<0.14	**0.37**	**0.32**	<0.14	49.1	4380
Naphthalene	<0.45	<0.43	<0.43	<0.45	<0.45	<0.46	<0.42	<0.46	<0.47	<0.44	<0.45	<0.44	<0.44	3.61	13.1
Tetrachloroethene (PCE)	**0.36**	**0.36**	**0.33**	**0.38**	**0.34**	**0.27**	**0.32**	**0.32**	**0.31**	**0.35**	**1**	**0.70**	<0.23	472	175
Trichloroethene (TCE)	<0.18	<0.18	<0.18	<0.18	<0.18	<0.19	<0.17	<0.19	<0.19	<0.18	**0.25**	**0.25**	<0.18	30	6**
1,1,1-Trichloroethane	<0.19	<0.18	<0.18	<0.19	<0.19	<0.19	<0.18	<0.19	<0.20	<0.18	<0.19	<0.18	<0.18	NL	21900
Toluene	0.17	0.21	0.34	0.23	0.26	0.28	0.22	0.22	0.26	0.29	**76**	**42**	0.68	NL	21900
Vinyl Chloride	<0.044	<0.042	<0.042	<0.044	<0.044	<0.045	<0.041	<0.045	<0.046	<0.043	<0.044	<0.043	<0.043	27.9	438
o-Xylene	<0.15	<0.14	<0.14	<0.15	<0.15	<0.15	<0.14	**0.15**	<0.16	<0.14	**0.61**	**0.54**	<0.14	NL	438
m,p-Xylenes	<0.30	<0.28	<0.28	<0.30	<0.30	<0.30	<0.28	<0.30	<0.31	<0.29	**1.3**	**1.2**	<0.29	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-8: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED APRIL 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- NA denotes not analyzed
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**172274**	**172275**	**172276**	**172273**	**172272**	**172277**	**172271**	**171247**	**172269**	**172268**	**172280**	**172279**	**172278**	**VISL[2,3]**	
Date Collected	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/2017**	**4/6/207**	**4/6/2017**	**4/6/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1704190-07A**	**1704190-08A**	**1704190-09A**	**1704190-06A**	**1704190-05A**	**1704190-10A**	**1704190-04A**	**1703110-03A**	**1704190-02A**	**1704190-01A**	**1704190-13A**	**1704190-12A**	**1704190-11A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)															
Benzene	0.64	0.65	0.46	1.3	2	0.54	1	NA	0.61	0.69	0.57	0.57	0.47	15.7	131
Carbon tetrachloride	0.38	0.38	0.36	0.37	0.38	0.39	0.36	NA	0.36	0.36	0.36	0.36	0.29	20.4	438
Chloroform	<0.16	<0.17	<0.17	<0.17	<0.16	<0.16	**0.16**	NA	<0.16	<0.15	**0.72**	**0.71**	<0.15	5.3	428
Chloromethane	<0.17	<0.18	<0.18	<0.18	0.22	0.32	0.32	NA	0.23	0.26	0.79	0.85	0.76	NL	394
Dichlorodifluoromethane	1.9	1.9	1.9	2	1.9	1.9	1.9	NA	1.8	1.8	5.4	5.2	1.9	NL	438
1,4-Dichlorobenzene	<0.20	<0.20	<0.21	<0.21	<0.20	<0.20	<0.20	NA	<0.19	<0.18	<0.20	<0.19	<0.18	11.1	3500
1,1-Dichloroethane	<0.14	<0.14	<0.14	<0.14	<0.14	<0.13	<0.13	NA	<0.13	<0.12	<0.14	<0.13	<0.12	76.7	NL
1,1-Dichloroethene	<0.067	<0.068	<0.070	<0.069	<0.066	<0.065	<0.066	NA	<0.064	<0.060	<0.068	<0.064	<0.061	NL	876
1,2-Dichloroethane	<0.14	<0.14	<0.14	<0.14	<0.14	<0.13	**0.19**	NA	<0.13	<0.12	**0.16**	**0.16**	<0.12	4.72	31
cis-1,2-Dichloroethene	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	<0.13	NA	<0.13	<0.12	<0.14	<0.13	<0.12	NL	NL
trans-1,2-Dichloroethene	<0.67	<0.68	<0.70	<0.69	<0.66	<0.65	<0.66	NA	<0.64	<0.60	<0.68	<0.64	<0.61	NL	NL
Ethylbenzene	<0.14	<0.15	<0.15	<0.15	**1.5**	**0.16**	**1.3**	NA	<0.14	<0.13	**0.63**	**0.73**	<0.13	49.1	4380
Naphthalene	<0.44	<0.45	<0.47	**1**	**2**	<0.43	<0.44	NA	<0.42	<0.40	<0.45	<0.42	<0.40	3.61	13.1
Tetrachloroethene (PCE)	<0.23	<0.23	<0.24	<0.24	<0.23	<0.22	**0.33**	NA	<0.22	<0.20	<0.23	<0.22	<0.21	472	175
Trichloroethene (TCE)	**0.96**	**0.95**	**0.92**	**0.59**	**0.22**	<0.18	**0.30**	NA	<0.17	<0.16	<0.18	<0.17	<0.16	30	6**
1,1,1-Trichloroethane	<0.18	<0.19	<0.19	<0.19	<0.18	<0.18	<0.18	NA	<0.18	<0.16	<0.19	<0.18	<0.17	NL	21900
Toluene	0.29	0.33	0.23	0.54	**6.7**	0.85	**19**	NA	0.51	1.2	**13**	**16**	0.41	NL	21900
Vinyl Chloride	<0.043	<0.044	<0.046	<0.045	<0.043	<0.042	<0.042	NA	<0.041	<0.038	<0.044	<0.041	<0.039	27.9	438
o-Xylene	<0.14	**0.15**	<0.15	**0.15**	**2**	**0.25**	**1.5**	NA	<0.14	**0.18**	**0.82**	**0.92**	<0.13	NL	438
m,p-Xylenes	<0.29	**0.32**	<0.31	**0.36**	**5**	**0.65**	**3.8**	NA	**0.28**	**0.27**	**2.2**	**2.3**	<0.27	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-9: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED MAY 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**172620**	**172621**	**172622**	**172619**	**172618**	**172623**	**172617**	**172616**	**172615**	**172614**	**172612**	**172611**	**172613**	**172610**	**VISL[2,3]**	
Date Collected	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**	**5/11/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1705343-10A**	**1705343-11A**	**1705343-12A**	**1705343-09A**	**1705343-08A**	**1705343-13A**	**1705343-07A**	**1705343-06A**	**1705343-05A**	**1705343-04A**	**1705343-02A**	**1705343-01A**	**1705343-03A**	**1705343-14A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**	**Personal Air Monitoring**		
Volatile Organic Compounds (VOCs)																
Benzene	0.36	0.75	<0.27	0.60	0.57	<0.29	0.71	0.84	0.81	0.35	0.45	**1.5**	0.37	0.48	15.7	131
Carbon tetrachloride	0.52	0.62	0.54	0.50	0.51	0.58	0.59	0.57	0.54	0.55	0.56	0.62	0.54	0.59	20.4	438
Chloroform	<0.17	**0.18**	<0.16	**0.26**	**0.32**	<0.18	**0.42**	**0.41**	**0.38**	**0.27**	**0.59**	**0.62**	<0.17	0.34	5.3	428
Chloromethane	<0.18	0.31	<0.17	0.18	0.20	<0.19	0.17	0.22	0.23	<0.19	1.3	1.3	1.2	0.62	NL	394
Dichlorodifluoromethane	2.3	2.3	2.4	2.3	2.3	2.4	2.4	2.3	2.3	2.3	6.3	5.8	2.4	3.3	NL	438
1,4-Dichlorobenzene	<0.21	<0.21	<0.20	<0.20	<0.20	<0.22	<0.20	<0.21	<0.21	<0.22	<0.21	<0.19	<0.21	<0.22	11.1	3500
1,1-Dichloroethane	<0.14	<0.14	<0.14	<0.14	<0.14	<0.15	<0.14	<0.14	<0.14	<0.15	<0.14	<0.13	<0.14	<0.15	76.7	NL
1,1-Dichloroethene	<0.070	<0.068	<0.067	**0.12**	<0.068	<0.072	<0.067	<0.070	<0.068	<0.072	<0.070	<0.063	<0.070	<0.072	NL	876
1,2-Dichloroethane	<0.14	**0.16**	<0.14	<0.14	<0.14	<0.15	<0.14	**0.15**	<0.14	<0.15	**0.42**	**0.56**	<0.14	<0.15	4.72	31
cis-1,2-Dichloroethene	<0.14	<0.14	<0.13	**0.17**	0.16	<0.14	<0.13	<0.14	<0.14	<0.14	<0.14	<0.13	<0.14	<0.14	NL	NL
trans-1,2-Dichloroethene	<0.70	**1**	<0.67	<0.67	<0.68	<0.72	<0.67	**0.83**	<0.68	<0.72	<0.70	**0.84**	<0.70	<0.72	NL	NL
Ethylbenzene	<0.15	**1.1**	0.17	<0.15	<0.15	<0.16	<0.14	**1**	**1**	<0.16	**1.8**	**4.1**	<0.15	0.45	49.1	4380
Naphthalene	<0.46	<0.45	<0.44	<0.44	<0.45	<0.47	<0.44	<0.46	<0.45	<0.48	<0.46	0.47	<0.46	<0.47	3.61	13.1
Tetrachloroethene (PCE)	<0.24	0.34	<0.23	0.52	0.35	<0.24	0.37	0.46	0.42	0.27	0.25	**5.1**	<0.24	0.27	472	175
Trichloroethene (TCE)	**2.2**	**2.1**	**1**	**4**	**4.3**	**0.71**	**4.4**	**4.1**	**4.1**	**2.7**	**0.22**	**0.22**	<0.19	**1.8**	30	6**
1,1,1-Trichloroethane	0.29	0.26	0.19	0.53	0.55	<0.20	**0.62**	0.59	0.6	0.44	<0.19	<0.17	<0.19	0.28	NL	21900
Toluene	0.27	**28**	0.34	0.59	**0.77**	0.43	0.63	**22**	**21**	0.29	**30**	**72**	0.72	**7.1**	NL	21900
Vinyl Chloride	<0.045	<0.044	<0.043	<0.043	<0.044	<0.046	<0.043	<0.045	<0.044	<0.047	<0.045	<0.041	<0.045	<0.046	27.9	438
o-Xylene	<0.15	**1.3**	0.15	<0.15	0.16	<0.16	<0.14	**1.2**	**1.2**	<0.16	**2.3**	**4.9**	0.18	**0.52**	NL	438
m,p-Xylenes	<0.31	**3.8**	0.32	<0.30	0.47	<0.31	<0.29	**3.5**	**3.4**	<0.32	**7.1**	**15**	0.39	**1.6**	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-10: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED JUNE 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	172300	172301	172302	172299	172298	172303	172297	172296	172295	172294	172306	172305	172613	172307	VISL[2,3]	
Date Collected	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	5/11/2017	6/7/2017		
Sample Duration	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours		
Lab Number	1706264-07A	1706264-08A	1706264-09A	1706264-06A	1706264-05A	1706264-10A	1706264-04A	1706264-03A	1706264-02A	1706264-01A	1706264-12A	1706264-11A	1705343-03A	1706264-13A		
Sample Type	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	Cancer Screening Level (Risk 1E-05)	Non Cancer Screening Level (HQ=1)
Sample Location	Back of Cave Turnaround Area	Back of Cave Turnaround Area (Duplicate)	Borehole	Second Bridge	First Bridge (Sink Hole Area)	Hall of Giants	Stalactite (near column)	Auditorium	Underground Classroom	Photo Station	Gift Shop inside Visitors Center	Behind Desk inside Visitors Center	Background Outside Cave on Hill Near Bldg.	Personal Air Monitoring		
Volatile Organic Compounds (VOCs)																
Benzene	0.46	0.36	<0.24	1.00	0.66	0.33	0.73	0.73	0.58	0.45	0.92	**1.1**	0.37	0.81	15.7	131
Carbon tetrachloride	0.65	0.50	0.56	0.65	0.66	0.58	0.63	0.69	0.67	0.73	0.58	0.63	0.54	0.63	20.4	438
Chloroform	**0.20**	**0.17**	**0.16**	**0.26**	**0.27**	**0.16**	**0.31**	**0.26**	**0.24**	**0.22**	**0.31**	**0.32**	<0.17	**0.23**	5.3	428
Chloromethane	<1.6	<1.5	<1.5	<1.5	<1.6	<1.6	<1.7	<1.7	<1.6	<1.5	<1.7	<1.7	1.2	<1.7	NL	394
Dichlorodifluoromethane	3	2.5	2.5	2.9	2.9	2.5	2.9	3.6	3	3	**8.4**	**8.8**	2.4	4.4	NL	438
1,4-Dichlorobenzene	<0.19	<0.18	<0.18	<0.18	<0.19	<0.18	<0.20	<0.20	<0.19	<0.18	<0.20	<0.20	<0.21	<0.20	11.1	3500
1,1-Dichloroethane	<0.13	<0.12	<0.12	<0.12	<0.13	<0.12	<0.13	<0.14	<0.13	<0.12	<0.13	<0.13	<0.14	<0.13	76.7	NL
1,1-Dichloroethene	<0.063	<0.058	<0.059	<0.059	<0.062	<0.061	**0.074**	<0.067	<0.063	<0.059	<0.065	<0.066	<0.070	<0.065	NL	876
1,2-Dichloroethane	<0.13	<0.12	**0.16**	<0.12	<0.13	**0.66**	**0.74**	<0.14	<0.13	<0.12	**0.31**	**0.37**	<0.14	**0.13**	4.72	31
cis-1,2-Dichloroethene	<0.13	<0.12	<0.12	<0.12	<0.12	<0.12	<0.13	<0.13	<0.13	<0.12	<0.13	<0.13	<0.14	<0.13	NL	NL
trans-1,2-Dichloroethene	<0.63	<0.58	<0.59	<0.59	<0.62	<0.61	<0.65	<0.67	<0.63	<0.59	<0.65	<0.66	<0.70	<0.65	NL	NL
Ethylbenzene	<0.14	<0.13	<0.13	<0.13	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	**1.1**	**1.1**	<0.15	**0.37**	49.1	4380
Naphthalene	<0.42	<0.38	<0.39	<0.39	<0.41	<0.40	<0.43	<0.44	<0.42	<0.39	<0.43	<0.44	<0.46	<0.43	3.61	13.1
Tetrachloroethene (PCE)	**0.26**	<0.20	<0.20	**0.56**	**0.26**	<0.21	**0.56**	**0.31**	**0.32**	**0.30**	<0.22	**0.38**	<0.24	<0.22	472	175
Trichloroethene (TCE)	**4.1**	**3.3**	**1.7**	**4.7**	**4.3**	**0.73**	**3.3**	**2.3**	**2**	**1**	<0.18	<0.18	<0.19	**1.5**	30	6[**]
1,1,1-Trichloroethane	**0.38**	<0.30	**0.44**	**0.46**	**0.39**	**0.53**	**1.8**	**0.24**	**0.24**	<0.16	<0.18	<0.18	<0.19	<0.18	NL	21900
Toluene	0.18	0.18	0.15	0.61	0.38	0.2	0.37	0.33	0.29	0.30	**21**	**24**	0.72	**6.4**	NL	21900
Vinyl Chloride	<0.041	<0.038	<0.038	<0.038	<0.040	<0.039	<0.042	<0.043	<0.041	<0.038	<0.042	<0.042	<0.045	<0.042	27.9	438
o-Xylene	<0.14	<0.13	<0.13	<0.13	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	**1.7**	**1.8**	0.18	**0.59**	NL	438
m,p-Xylenes	<0.28	<0.26	<0.26	<0.26	<0.27	<0.27	<0.28	<0.29	<0.28	<0.26	**4.6**	**4.9**	0.39	**1.4**	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-11: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED JULY 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**173335**	**173336**	**173337**	**173334**	**173333**	**173338**	**173332**	**173331**	**173330**	**173329**	**173341**	**173340**	**173339**	**173342**	**VISL[2,3]**	
Date Collected	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**	**7/18/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1707337-07A**	**1707337-08A**	**1707337-09A**	**1707337-06A**	**1707337-05A**	**1707337-10A**	**1707337-04A**	**1707337-03A**	**1707337-02A**	**1707337-01A**	**1707337-13A**	**1707337-12A**	**1707337-11A**	**1707337-14A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**	**Personal Air Monitoring**		
Volatile Organic Compounds (VOCs)																
Benzene	0.33	0.33	<0.24	0.43	0.42	0.28	0.4	0.38	0.38	0.35	0.53	0.5	0.47	**0.44**	15.7	131
Carbon tetrachloride	<0.19	<0.19	**0.2**	**0.20**	**0.21**	**0.23**	**0.27**	**0.2**	**0.19**	<0.20	**0.45**	**0.39**	<0.23	**0.28**	20.4	438
Chloroform	**0.27**	**0.26**	**0.17**	**0.24**	**0.28**	**0.19**	**0.28**	**0.28**	**0.26**	**0.17**	**0.30**	**0.30**	<0.18	**0.31**	5.3	428
Chloromethane	<1.6	<1.6	<1.5	<1.5	<1.7	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.9	<2	NL	394
Dichlorodifluoromethane	2.4	2.4	2.3	2.5	2.3	2.3	2.2	2.3	2.3	2.3	6.5	6.4	2.2	3.1	NL	438
1,4-Dichlorobenzene	<0.18	<0.18	<0.18	<0.18	<0.20	<0.19	<0.18	<0.19	<0.18	<0.19	<0.18	<0.19	<0.22	<0.23	11.1	3500
1,1-Dichloroethane	<0.12	<0.12	<0.12	<0.12	<0.13	<0.12	<0.12	<0.12	<0.12	<0.13	**0.52**	<0.13	<0.15	<0.16	76.7	NL
1,1-Dichloroethene	<0.061	<0.061	<0.059	<0.059	<0.065	<0.061	<0.061	<0.061	<0.060	<0.062	<0.061	<0.062	<0.072	<0.049	NL	876
1,2-Dichloroethane	<0.12	<0.12	<0.12	<0.12	<0.13	<0.12	<0.12	<0.12	<0.12	<0.13	**0.52**	**0.5**	<0.15	<0.16	4.72	31
cis-1,2-Dichloroethene	<0.12	<0.12	<0.12	<0.12	<0.13	<0.12	<0.12	**1.2**	<0.12	<0.12	<0.12	<0.12	<0.14	**0.17**	NL	NL
trans-1,2-Dichloroethene	<0.61	<0.61	<0.59	<0.59	<0.65	<0.61	<0.61	<0.61	<0.60	<0.62	<0.61	<0.62	<0.72	<0.76	NL	NL
Ethylbenzene	<0.13	<0.13	<0.13	<0.13	<0.14	<0.13	<0.13	**1.2**	<0.13	<0.14	**1.4**	**1.3**	0.16(J)	0.37	49.1	4380
Naphthalene	<0.40	<0.40	<0.39	<0.39	<0.43	<0.41	<0.40	<0.41	<0.40	<0.41	<0.40	<0.41	<0.48	<0.50	3.61	13.1
Tetrachloroethene (PCE)	0.29	0.29	0.31	0.28	0.31	0.38	0.37	0.54	0.42	0.26	0.27	0.27	0.30	0.40	472	175
Trichloroethene (TCE)	**3.4**	**3.2**	**1.2**	**1.7**	**2.4**	**0.42**	**1**	**1.2**	**0.64**	**0.27**	<0.16	<0.17	<0.20	**1.2**	30	6**
1,1,1-Trichloroethane	**0.59**	**0.55**	**1.222**	**0.32**	**0.41**	<0.17	**0.21**	**0.18**	<0.16	<0.17	<0.17	<0.17	<0.20	<0.21	NL	21900
Toluene	0.61	0.62	1.3	0.66	0.61	0.4	0.56	6.5	0.68	0.93	30	28	2	**6.9**	NL	21900
Vinyl Chloride	<0.039	<0.039	<0.038	<0.038	<0.042	<0.040	<0.039	<0.040	<0.039	<0.040	<0.039	<0.040	<0.047	<0.049	27.9	438
o-Xylene	<0.13	<0.13	<0.13	0.13	<0.14	<0.13	<0.13	1.7	<0.13	<0.14	2.3	2.1	0.22	0.54	NL	438
m,p-Xylenes	0.32	0.37	0.26	<0.26	<0.29	<0.27	<0.26	5.1	<0.26	0.29	6	5.4	0.56	1.4	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

J=Estimated value below reporting limit.

TABLE A-12: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED AUGUST 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed lowest VISL benchmark [2,3]
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**173349**	**173350**	**173351**	**173348**	**173347**	**173352**	**173346**	**173345**	**173344**	**173343**	**173355**	**173354**	**173353**	**VISL[2,3]**	
Date Collected	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1708405-07A**	**1708405-08A**	**1708405-09A**	**1708405-06A**	**1708405-05A**	**1708405-10A**	**1708405-04A**	**1708405-03A**	**1708405-02A**	**1708405-01A**	**1708405-13A**	**1708405-12A**	**1708405-11A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Second Bridge**	**First Bridge (Sink Hole Area)**	**Hall of Giants**	**Stalactite (near column)**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)															
Benzene	0.84	0.50	<0.27	0.69	0.92	0.38	0.85	0.71	0.63	0.46	0.51	0.54	0.32	15.7	131
Carbon tetrachloride	0.54	0.57	0.62	0.56	0.51	0.58	0.56	0.6	0.6	0.6	0.55	0.55	0.63	20.4	438
Chloroform	**0.33**	**0.35**	<0.16	**0.25**	**0.36**	**0.23**	**0.36**	**0.31**	**0.31**	**0.25**	**0.40**	**0.38**	<0.17	5.3	428
Chloromethane	<1.7	<1.5	<1.7	<1.6	<2.2	<1.7	<1.7	<1.6	<1.6	<1.8	<1.8	<1.7	<1.8	NL	394
Dichlorodifluoromethane	2.4	2.5	2.5	2.4	2.4	2.5	2.4	2.4	2.4	2.4	4.6	4.8	2.6	NL	438
1,4-Dichlorobenzene	<0.19	<0.18	<0.20	<0.19	<0.25	<0.20	<0.19	<0.41	<0.19	<0.21	<0.21	<0.20	<0.20	11.1	3500
1,1-Dichloroethane	<0.13	<0.12	<0.14	<0.13	<0.17	<0.13	<0.13	<0.13	<0.13	<0.14	<0.14	<0.14	<0.14	76.7	NL
1,1-Dichloroethene	**7.5**	**8.4**	**0.53**	**3.5**	**5.6**	<0.58	**1.9**	**1.5**	**1.4**	**0.32**	<0.069	<0.067	<0.067	NL	876
1,2-Dichloroethane	<0.13	<0.12	<0.14	<0.13	<0.17	<0.13	<0.13	<0.13	<0.13	<0.14	**0.54**	**0.55**	<0.14	4.72	31
cis-1,2-Dichloroethene	**5.4**	**4.8**	**0.59**	**2.3**	**3.5**	**0.53**	**1.4**	**1.1**	**0.87**	**0.30**	<0.14	<0.13	<0.13	NL	NL
trans-1,2-Dichloroethene	<0.64	<0.59	<0.67	<0.63	<0.83	<0.65	<0.64	<0.62	<0.63	<0.68	<0.69	<0.67	<0.67	NL	NL
Ethylbenzene	<0.14	<0.13	<0.15	<0.14	<0.18	<0.14	<0.14	<0.14	<0.14	<0.15	**1.4**	**1.4**	0.16	49.1	4380
Naphthalene	<0.42	<0.39	<0.44	<0.42	<0.55	<0.43	<0.42	<0.41	<0.42	<0.45	<0.46	0.47	0.73	3.61	13.1
Tetrachloroethene (PCE)	**0.33**	**0.34**	<0.23	**0.25**	**0.40**	**0.45**	**0.34**	**0.39**	**0.44**	**0.26**	**0.90**	**0.87**	<0.23	472	175
Trichloroethene (TCE)	**81**	**84**	**15**	**45**	**70**	**14**	**31**	**25**	**20**	**7.9**	**0.19**	**0.19**	<0.18	30	6**
1,1,1-Trichloroethane	**8.7**	**9.4**	**1.7**	**5**	**7.4**	**1.8**	**3.4**	**2.8**	**2.4**	**1**	<0.19	<0.18	<0.18	NL	21900
Toluene	0.44	0.46	0.82	0.44	1.4	0.32	0.49	0.47	0.96	0.53	**37**	**39**	1.6	NL	21900
Vinyl Chloride	**0.074**	<0.038	<0.043	<0.041	<0.054	<0.042	<0.041	<0.040	<0.041	<0.044	<0.045	<0.043	<0.043	27.9	438
o-Xylene	<0.14	<0.13	<0.15	<0.14	<0.18	<0.14	<0.14	<0.14	<0.14	<0.15	**2.2**	**2.3**	0.20	NL	438
m,p-Xylenes	<0.28	<0.26	<0.29	<0.28	<0.36	<0.28	<0.28	<0.27	<0.28	<0.30	**5.7**	**5.9**	0.52	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-13: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED SEPTEMBER 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed lowest VISL benchmark [2,3]
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	**173363**	**173364**	**173365**	**173362**	**173361**	**173360**	**173366**	**173359**	**173358**	**173357**	**173356**	**173369**	**173368**	**173367**	**173371**	**173370**	**VISL[2,3]**	
Date Collected	**9/13/2016**	**9/13/2016**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**	**9/13/2017**		
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1709331-08A**	**1709331-09A**	**1709331-10A**	**1709331-07A**	**1709331-06A**	**1709331-05A**	**1709331-11A**	**1709331-04A**	**1709331-03A**	**1709331-02A**	**1709331-01A**	**1709331-14A**	**1709331-13A**	**1709331-12A**	**1709331-16A**	**1709331-15A**		
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Location	**Back of Cave Turnaround Area**	**Back of Cave Turnaround Area (Duplicate)**	**Borehole**	**Lower Passage**	**Second Bridge**	**First Bridge / Sink Hole Area**	**Hall of Giants**	**Stalactite**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Gift Shop inside Visitors Center**	**Behind Desk inside Visitors Center**	**Background Outside Cave on Hill Near Bldg.**	**Personal Air Monitoring**	**Personal Air Monitoring (Duplicate)**		
Volatile Organic Compounds (VOCs)																		
Benzene	0.36	0.34	0.29	**<1.2**	0.39	0.29	0.27	0.35	0.31	0.53	0.34	0.56	0.60	0.39	0.49	0.41	15.7	131
Carbon tetrachloride	0.58	0.59	0.58	<0.98	0.56	0.57	0.60	0.55	0.51	0.54	0.54	0.54	0.53	0.59	0.52	0.54	20.4	438
Chloroform	**0.17**	**0.17**	**0.16**	**1.2**	<.016	**0.17**	<0.16	<0.16	<0.17	<0.16	<0.16	**0.45**	**0.44**	<0.14	**0.27**	**0.28**	5.3	428
Chloromethane	<1.6	<1.6	<1.6	<8.0	<1.7	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7	<1.7	<1.8	<1.5	<1.8	<1.8	NL	394
Dichlorodifluoromethane	2.4	2.3	2.4	2.5	2.4	2.4	2.4	2.3	2.4	2.4	2.4	**10**	**10**	2.4	5.5	5.6	NL	438
1,4-Dichlorobenzene	<0.19	<0.19	<0.18	<0.93	<0.20	<0.19	<0.20	<0.20	<0.20	<0.19	<0.20	<0.19	<0.20	<0.18	<0.20	<0.21	11.1	3500
1,1-Dichloroethane	<0.13	<0.12	<0.12	**0.92**	<0.13	<0.13	<0.13	<0.13	<0.14	**0.29**	<0.14	<0.13	<0.14	<0.12	<0.14	<0.14	76.7	NL
1,1-Dichloroethene	<0.063	<0.061	**0.86**	**120**	**0.14**	<0.063	<0.065	<0.065	<0.068	<0.064	<0.067	<0.064	<0.068	<0.058	**0.39**	**0.30**	NL	876
1,2-Dichloroethane	<0.13	<0.12	<0.12	<0.63	<0.13	<0.13	<0.13	<0.13	<0.14	<0.13	<0.14	**0.22**	**0.21**	<0.12	**0.23**	<0.14	4.72	31
cis-1,2-Dichloroethene	**0.53**	**0.52**	**0.84**	**70**	**0.16**	**0.14**	<0.13	<0.13	<0.14	<0.13	<0.13	<0.13	<0.14	<0.12	**0.61**	0.27	NL	NL
trans-1,2-Dichloroethene	<0.63	<0.61	<0.60	<3.1	<0.65	<0.63	<0.65	<0.65	<0.68	<0.64	<0.67	<0.64	<0.68	<0.58	<0.68	<0.69	NL	NL
Ethylbenzene	<0.14	<0.13	<0.13	<0.67	<0.14	<0.14	<0.14	<0.14	<0.15	**0.35**	<0.14	**0.97**	**0.92**	<0.13	**0.63**	**0.40**	49.1	4380
Naphthalene	<0.41	<0.41	<0.40	<2.0	<0.43	<0.41	<0.43	<0.43	<0.45	**1.4**	<0.44	**1.9**	<0.45	<0.38	<0.45	**1.3**	3.61	13.1
Tetrachloroethene (PCE)	<0.21	<0.21	<0.21	**1.2**	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.23	<0.22	<0.23	<0.20	**0.69**	<0.24	472	175
Trichloroethene (TCE)	**5.2**	**5.0**	**8.9**	**530**	**1.7**	**1.3**	<0.18	0.74	0.64	0.62	<0.18	0.26	0.26	0.39	**3.4**	**2.4**	30	6**
1,1,1-Trichloroethane	**0.49**	**0.50**	**0.83**	**45**	**0.19**	<0.17	<0.18	0.19	<0.19	<0.18	<0.18	<0.18	<0.19	<0.16	**0.28**	**0.23**	NL	21900
Toluene	0.33	0.18	0.32	0.97	0.60	0.26	0.33	0.51	0.35	0.55	0.38	**24**	**25**	0.49	**12**	**10**	NL	21900
Vinyl Chloride	<0.040	<0.040	<0.039	<0.20	<0.042	<0.040	<0.042	<0.042	<0.044	<0.041	<0.043	<0.041	<0.044	<0.037	<0.044	<0.045	27.9	438
o-Xylene	<0.14	<0.13	<0.13	<0.67	<0.14	<0.14	<0.14	<0.14	<0.15	**0.26**	<0.14	**1.4**	**1.4**	<0.13	**0.87**	**0.58**	NL	438
m,p-Xylenes	<0.27	<0.27	<0.26	<1.3	**0.32**	<0.27	<0.28	**0.30**	<0.30	**0.89**	<0.29	**3.6**	**3.5**	<0.25	**2.2**	**1.4**	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-14: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED OCTOBER 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed lowest VISL benchmark [2,3]
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	173873	173874	173872	173871	173870	173868	173866	173866	173865	173864	173875	173876	173877	28989	173889	173887	173888	VISL[2,3]	
Date Collected	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017	10/11/2017		
Sample Duration	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours		
Lab Number	1710291-08A	1710291-09A	1710291-06A	1710291-07A	1710291-05A	1710291-10A	1710291-04A	1710291-03A	1710291-02A	1710291-01A	1710291-14B	1710291-15B	1710291-16B	1710291-17B	1710291-13A	1710291-11A	1710291-12A	Cancer Screening Level (Risk 1E-05)	Non Cancer Screening Level (HQ=1)
Sample Type	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa		
Sample Location	Back of Cave Turnaround Area	Borehole	Second Bridge	Second Bridge Duplicate	First Bridge / Sink Hole Area	Hall of Giants	Stalactite	Auditorium	Underground Classroom	Photo Station	Lower Passage #1	Lower Passage #2	Lower Passage #3	Lower Passage Floor	Background Outside Cave on Hill Near Bldg.	Personal Air Monitoring	Personal Air Monitoring (Duplicate)		
Volatile Organic Compounds (VOCs)																			
Benzene	**0.88**	**0.39**	**0.57**	**0.51**	**0.47**	**0.71**	**0.69**	**1.9**	**0.45**	<0.27	<2.8	<2.7	<2.7	<2.7	<0.29	**0.61**	**0.6**	15.7	131
Carbon tetrachloride	<1.1	<1.1	<1.0	<1.0	<1.0	<1.1	<1.0	<1.0	<1.0	<1.1	<11	<10	<11	<11	<1.2	<1.1	<1.2	20.4	438
Chloroform	<0.17	<0.17	0.16	<0.16	<0.16	<0.17	<0.16	<0.16	<0.16	<0.17	**3.1**	**3.2**	**3.2**	**3.2**	<0.18	**0.19**	**0.19**	5.3	428
Chloromethane	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7	<1.7	<1.7	<1.8	<18	<17	<18	<18	<1.9	<1.8	<1.9	NL	394
Dichlorodifluoromethane	2.7	2.8	2.7	2.7	2.6	2.7	2.7	2.7	2.7	2.7	2.9	2.9	2.8	3	2.6	3.9	3.9	NL	438
1,4-Dichlorobenzene	<0.21	<0.22	<0.20	<0.20	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.1	<2.0	<2.0	<2.0	<0.22	<0.22	<0.22	11.1	3500
1,1-Dichloroethane	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	<0.14	<0.14	**4.5**	**4.6**	**4.6**	**4.9**	<0.15	<0.14	<0.15	76.7	NL
1,1-Dichloroethene	**2.2**	**1.9**	**1.6**	**1.6**	**2.0**	<0.068	**0.59**	**1.0**	**0.38**	<0.068	**470**	**480**	**480**	**510**	<0.072	**0.71**	**0.71**	NL	876
1,2-Dichloroethane	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	<0.14	<0.14	<1.4	<1.4	<1.4	<1.4	<0.15	<0.14	<0.15	4.72	31
cis-1,2-Dichloroethene	**1.8**	**1.8**	**1.4**	**1.4**	**1.8**	<0.14	**0.55**	**0.94**	**0.39**	<0.14	**340**	**350**	**350**	**370**	<0.14	**0.60**	**0.60**	NL	NL
trans-1,2-Dichloroethene	<0.69	<0.71	<0.65	<0.67	<0.67	<0.68	<0.65	<0.65	<0.67	<0.68	<6.9	<6.7	<6.8	<6.8	<0.72	<0.71	<0.72	NL	NL
Ethylbenzene	<0.15	<0.16	0.26	<0.14	<0.14	**0.42**	**0.21**	**0.48**	**0.17**	<0.15	<1.5	<1.4	<1.5	<1.5	<0.16	**0.24**	**0.23**	49.1	4380
Naphthalene	<0.46	<0.47	<0.43	<0.44	<0.44	**0.53**	<0.43	<0.43	**0.58**	<0.45	<4.6	<4.4	<4.5	<4.5	<0.48	<0.47	<0.48	3.61	13.1
Tetrachloroethene (PCE)	<0.24	0.28	<0.22	<0.23	<0.23	<0.23	<0.22	<0.22	<0.23	<0.23	**3.4**	**3.6**	**3.6**	**3.8**	<0.25	<0.24	<0.25	472	175
Trichloroethene (TCE)	**13**	**15**	**9.9**	**9.8**	**12**	<0.18	**4.2**	**7**	**2.7**	<0.18	**2200**	**2200**	**2300**	**2400**	<0.20	**4.3**	**4.3**	30	6**
1,1,1-Trichloroethane	**1.2**	**1.3**	**0.88**	**0.87**	**1.1**	<0.19	**0.40**	**0.64**	**0.26**	<0.19	**160**	**160**	**160**	**180**	<0.20	**0.40**	**0.39**	NL	21900
Toluene	**0.69**	0.38	**1.5**	**0.66**	**0.72**	**2.2**	**1.4**	**1.2**	**1.1**	**0.70**	<1.3	<1.3	<1.3	<1.3	0.21	**3.6**	**3.4**	NL	21900
Vinyl Chloride	<0.045	<0.046	<0.042	<0.043	<0.043	<0.044	<0.042	<0.042	<0.043	<0.044	<0.45	<0.43	<0.44	<0.44	<0.047	<0.046	<0.047	27.9	438
o-Xylene	**0.20**	**0.21**	**0.41**	**0.21**	**0.18**	**0.60**	**0.36**	**0.32**	**0.27**	<0.15	<1.5	<1.4	<1.5	<1.5	<0.16	**0.41**	**0.41**	NL	438
m,p-Xylenes	**0.32**	<0.31	**0.94**	**0.35**	**0.39**	**1.5**	**0.76**	**1.1**	**0.62**	**0.30**	<3.0	<2.9	<3.0	<3.0	<0.32	**0.86**	**0.85**	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A-15: SELECTED ANALYTICAL RESULTS FOR AIR SAMPLES COLLECTED NOVEMBER 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed lowest VISL benchmark [2,3]
- All samples collected in 6L Summa canisters and analyzed by EPA Method TO-15

Sample Tag Number	174118	174119	174120	174119	174116	174121	174115	174114	174113	174112	174122	174123	174124	174127	174126	174125	174128	174129	VISL[2,3]	
Date Collected	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017	11/08/2017		
Sample Duration	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours	8 Hours		
Lab Number	1711216-07A	1711216-08A	1711216-09A	1711216-06A	1711216-05A	1711216-10A	1711216-04A	1711216-03A	1711216-02A	1711216-01A	1711216-11A	1711216-12A	1711216-13A	1711216-16A	1711216-15A	1711216-14A	1711216-17A	1711216-18A		
Sample Type	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	6L Summa	Cancer Screening Level (Risk 1E-05)	Non Cancer Screening Level (HQ=1)
Sample Location	Back of Cave Turnaround Area	Back of Cave Turnaround (Duplicate)	Borehole	Second Bridge	First Bridge / Sink Hole Area	Hall of Giants	Stalactite	Auditorium	Underground Classroom	Photo Station	Lower Passage #1	Lower Passage #2	Lower Passage #3	Gift Shop	Front Desk	Background Outside Cave on Hill Near Bldg.	Personal Air Monitoring	Personal Air Monitoring (Duplicate)		
Volatile Organic Compounds (VOCs)																				
Benzene	0.33	0.52	<0.43	0.63	0.45	0.34	0.45	0.86	0.48	0.49	<0.27	<0.27	<0.26	0.43	0.45	0.31	0.49	0.53	15.7	131
Carbon tetrachloride	0.42	0.42	0.42	0.39	0.40	0.39	0.40	0.40	0.39	0.38	0.37	0.38	0.41	0.38	0.38	0.35	0.41	0.42	20.4	438
Chloroform	<0.16	<0.16	<0.26	<0.16	<0.17	<0.15	<0.16	<0.17	<0.16	<0.17	**0.40**	**0.37**	**0.34**	**0.21**	**0.23**	<0.15	<0.16	<0.15	5.3	428
Chloromethane	<1.7	<1.7	<2.8	<1.7	<1.8	<1.6	<1.7	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.6	<1.6	<1.6	NL	394
Dichlorodifluoromethane	1.9	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2	2	2	**5.8**	4.9	1.9	2.7	2.8	NL	438
1,4-Dichlorobenzene	<0.20	<0.20	<0.32	<0.20	<0.21	<0.19	<0.20	<0.21	<0.19	<0.21	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.19	11.1	3500
1,1-Dichloroethane	<0.13	<0.14	<0.22	<0.14	<0.14	<0.12	<0.13	<0.14	<0.13	<0.14	<0.14	<0.14	0.38	<0.13	<0.13	<0.13	<0.13	<0.12	76.7	NL
1,1-Dichloroethene	<0.065	<0.067	<0.11	<0.067	<0.068	<0.061	<0.065	<0.068	<0.064	<0.068	**0.54**	**0.47**	**0.38**	<0.064	<0.064	<0.063	<0.063	<0.061	NL	876
1,2-Dichloroethane	<0.13	<0.14	<0.22	<0.14	<0.14	<0.12	<0.13	<0.14	<0.13	<0.14	<0.14	<0.14	<0.13	<0.13	<0.13	<0.13	<0.13	<0.12	4.72	31
cis-1,2-Dichloroethene	<0.13	<0.13	<0.21	<0.13	<0.14	<0.12	<0.13	<0.14	<0.13	<0.14	**0.80**	**0.73**	**0.59**	<0.13	<0.13	<0.12	<0.13	<0.12	NL	NL
trans-1,2-Dichloroethene	<0.65	<0.67	<1.1	<0.67	<0.68	<0.61	<0.65	<0.68	<0.64	<0.68	<0.67	<0.67	<0.66	<0.64	<0.64	<0.63	<0.63	<0.61	NL	NL
Ethylbenzene	<0.14	<0.15	**0.41**	**0.25**	<0.15	<0.13	<0.14	<0.15	<0.14	<0.15	<0.15	<0.14	<0.14	**0.46**	**0.49**	<0.14	**0.25**	**0.15**	49.1	4380
Naphthalene	<0.43	<0.44	**17**	**2.7**	<0.45	<0.41	<0.43	<0.45	<0.42	<0.45	<0.44	<0.44	<0.44	<0.42	<0.42	<0.41	<0.42	<0.41	3.61	13.1
Tetrachloroethene (PCE)	<0.22	<0.23	<0.37	<0.23	<0.23	<0.21	<0.22	<0.23	<0.22	<0.23	**0.79**	<0.23	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	472	175
Trichloroethene (TCE)	0.19	<0.18	<0.29	1.1	0.31	0.37	<0.18	<0.18	0.29	<0.18	**18**	**16**	**13**	<0.17	<0.17	0.51	<0.17	<0.17	30	6**
1,1,1-Trichloroethane	<0.18	<0.18	<0.29	<0.18	0.32	<0.17	<0.18	<0.19	<0.18	<0.19	**1**	**0.92**	**0.72**	<0.18	<0.18	<0.17	<0.17	<0.17	NL	21900
Toluene	0.19	0.28	0.90	0.64	0.26	0.30	0.24	0.31	0.30	0.37	0.37	0.43	**2.9**	**12**	**11**	0.35	**3.9**	**3.3**	NL	21900
Vinyl Chloride	<0.042	<0.043	<0.069	<0.043	<0.044	<0.040	<0.042	<0.044	<0.041	<0.044	<0.043	<0.043	<0.042	<0.041	<0.041	<0.040	<0.041	<0.040	27.9	438
o-Xylene	<0.14	<0.15	**0.88**	**0.63**	<0.15	<0.13	<0.14	<0.15	<0.14	<0.15	<0.15	<0.14	0.14	**0.67**	**0.74**	<0.14	**0.29**	**0.21**	NL	438
m,p-Xylenes	<0.28	<0.29	**2.8**	**1.1**	<0.30	<0.27	<0.29	<0.30	<0.28	<0.30	<0.30	<0.29	**0.35**	**1.7**	**1.9**	<0.27	**0.78**	**0.54**	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE A16: CALCULATION OF SAMPLE/ COLLOCATED SAMPLE
RELATIVE PERCENT DIFFERENCE (RPD)
CAVE AIR SAMPLES
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

All results are in ug/m^3

Sample Tag Number	164131	164132	RPD	172274	172275	RPD	172610	172620	RPD	172300	172301	RPD	173335	173336	RPD	173349	173350	RPD	173363	173364	RPD	173871	173872	RPD
Date Collected	12/2/2016	12/2/2016		4/6/2017	4/6/2017		5/11/2017	5/11/2017		6/7/2017	6/7/2017		7/18/2017	7/18/2017		8/16/2017	8/16/2017		9/13/2016	9/13/2016		10/11/2017	10/11/2017	
Lab Number	Q373007	Q373008		1704190-07A	1704190-08A		1705343-14A	1705343-10A		1706264-07A	1706264-08A		1707337-07A	1707337-08A		1708405-07A	1708405-08A		1709331-08A	1709331-09A		1710291-07A	1710291-06A	
Trichloroethene	0.12	0.13	8.0	0.96	0.95	1.0	1.8	2.2	20.0	4.1	3.3	24.7	3.4	3.2	6.1	81	84	3.6	5.2	5.0	3.9	9.8	9.9	1.0

TABLE A-17: TCE RESULTS FOR AIR SAMPLES COLLECTED IN 2018
FANTASTIC CAVERNS

- All results in µg/m^3
- Results in bold exceed the lowest of the cancer and non-cancer screening level
- NS - Not Sampled
- All samples collected by Ozark Underground Laboratories over 8 hours into 6L Summa canisters and analyzed by EPA Method TO-15/SIM

Date Sampled	Employee Jeep Tour Sample TCE, µg/m^3	Employee Jeep Tour Sample Duplicate TCE, µg/m^3	Lower Passage Upstream Canyon	Lower Passage Downstream Canyon	Ventillation Shaft	Smalley Cave	Calcite Well	Well-FC West (big)	Well- FC East (small)	Well -4843 N FR 125	Line 2 Borehole	Line 3 Borehole (Paradise Room)	Line 6 Borehole (White's Room)	Line 7 Borehole	Cancer Screening Level[1] (Risk 1x10^{-5})	Non-Cancer Screening[1] Level (HQ=1)
February 27	3.2	3.4	**8.4**	**14**	**13**	**88**	NS	NS	NS	NS	NS	NS	NS	NS	30	**6**
March 21	0.24	0.25	**12**	**16**	<0.18	0.19	<0.19	3.5	1.6	1.8	NS	NS	NS	NS		
April 24	0.28	0.30	**18**	**19**	0.35	0.34	NS	NS	NS	NS	NS	NS	NS	NS		
May 29	0.48	0.49	4.6	4.5	0.40	2.2	NS	NS	NS	NS	NS	NS	NS	NS		
June 28	**20**	**20**	**550**	**450**	**26**	**210**	**6.6**	**6.3**	5.4	**110**	NS	NS	NS	NS		
July 25	**19**	**19**	**560**	**230**	**23**	**1,900**	NS	NS	NS	NS	NS	NS	NS	NS		
August 8	**29**	**26**	**1,400**	**420**	**67**	**4,200**	NS	NS	NS	NS	NS	NS	NS	NS		
August 23	**18**	**19**	**1,100**	**890**	**49**	**3,200**	NS	NS	NS	NS	NS	NS	NS	NS		
September 12	5.3	5.2	**350**	**360**	**14**	**100**	2.8	**15**	1.8	**73**	NS	NS	NS	NS		
October 10	**22**	**22**	**880**	**830**	**41**	**1,200**	NS	NS	NS	NS	NS	NS	NS	NS		
November 13	<0.15	<0.16	1.9	2.4	<0.20	0.84	NS	NS	NS	NS	NS	NS	NS	NS		
December 21	0.22	<0.17	5.9	**7.0**	<0.18	<0.18	NS	NS	NS	NS	<0.56	2.3	1.8	0.48		

[1] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE B1: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED DECEMBER 2, 2016
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

● All values listed in parts per billion (ug/l) unless otherwise noted.

Sample Tag Number	**164135**	**164136**	**164138**	**SCDM[2]**				
Date Collected	**12/2/2016**	**12/2/2016**	**12/2/2016**					
Laboratory Number	**AC88748**	**AC88749**	**AC88751**	**MCL**	**MRBCA[3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Sample Location	**Pool near Photo Station**	**Pool just beyond Tour Turnaround**	**Pool near Stalactite**					
Volatile Organic Compounds (VOCs)								
Trichloroethene (TCE)	<0.5	<0.5	<0.5	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B2: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED FEBRUARY 1, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

- All values listed in parts per billion (ug/l) unless otherwise noted.
- NL denotes benchmark value not listed in reference source.

Sample Tag Number	**171234**	**171236**	**171238**	**SCDM[2]**	**MRBCA[3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Date Collected	**2/1/2017**	**2/1/2017**	**2/1/2017**	**MCL**				
Laboratory Number	**AC91889**	**AC91891**	**AC91892**					
Sample Location	**1st Drip Pool near Photo Station**	**2nd Drip Pool near Photo Station**	**Pool at back of Cave**					
Volatile Organic Compounds (VOCs)								
Trichloroethene (TCE)	<0.5	<0.5	<0.5	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B3: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED APRIL 5, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

- All values listed in parts per billion (ug/l) unless otherwise noted.
- NL denotes benchmark value not listed in reference source.

Sample Tag Number	**172282**	**172283**	**172285**	**172285**	**SCDM[2]**				
Date Collected	**4/5/2017**	**4/5/2017**	**4/5/2017**	**4/5/2017**					
Laboratory Number	**AC95349**	**AC95350**	**AC95351**	**AC95352**	**MCL**	**MRBCA [3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Sample Location	**Lower Passage Stream**	**Lower Passage Stream (Duplicate)**	**Indian Spring**	**Pool at back of Cave**					
Volatile Organic Compounds (VOCs)									
Trichloroethene (TCE)	0.96	0.99	0.58	<0.5	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B4: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED MAY 11, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

- All values listed in parts per billion (ug/l) unless otherwise noted.
- NL denotes benchmark value not listed in reference source.

Sample Tag Number	**172626**	**172627**	**172625**	**SCDM[2]**	**MRBCA [3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Date Collected	**5/11/2017**	**5/11/2017**	**5/11/2017**	**MCL**				
Laboratory Number	**AC97976**	**AC97977**	**AC97975**					
Sample Location	**Lower Passage Stream**	**Lower Passage Stream (Duplicate)**	**Indian Spring**					
Volatile Organic Compounds (VOCs)								
Trichloroethene (TCE)	1.55	1.45	1.40	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B5: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED JUNE 7, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

- All values listed in parts per billion (ug/l) unless otherwise noted.

Sample Tag Number	**172292**	**172308**	**172293**	**SCDM[2]**				
Date Collected	**6/7/2017**	**6/7/2017**	**6/7/2017**					
Laboratory Number	**AC99459**	**AC99460**	**AC99461**	**MCL**	**MRBCA [3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Sample Location	**Lower Passage Stream**	**Lower Passage Stream (Duplicate)**	**Indian Spring**					
Volatile Organic Compounds (VOCs)								
Trichloroethene (TCE)	<0.5	<0.5	<0.5	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B6: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED SEPTEMBER 12, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

● All values listed in parts per billion (ug/l) unless otherwise noted.

Sample Tag Number	**172312**	**172313**	**SCDM[2]**				
Date Collected	**9/12/2017**	**9/12/2017**					
Laboratory Number	**AD07520**	**AD07521**	**MCL**	**MRBCA[3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Sample Location	**Lower Passage Stream**	**Lower Passage Stream (Duplicate)**					
Volatile Organic Compounds (VOCs)							
Trichloroethene (TCE)	<0.5	<0.5	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B7: SELECTED ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED OCTOBER 11, 2017
FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

- All values listed in parts per billion (ug/l) unless otherwise noted.

Sample Tag Number	**173869**	**170880**	**SCDM[2]**				
Date Collected	**10/11/2017**	**10/11/2017**					
Laboratory Number	**AD09043**	**AD09044**	**MCL**	**MRBCA [3] RBTL**	**EPA SL[4]**	**MO WQS[5]**	**RML[6]**
Sample Location	**Lower Passage Pool**	**Lower Passage Pool (Duplicate)**					
Volatile Organic Compounds (VOCs)							
Trichloroethene (TCE)	1.58	2	5	5	5	5	0

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] SCDM - Superfund Chemical Data Matrix March 31, 2012, Maximum Contaminant Level (MCL) for drinking water screening levels (SL) for groundwater/surface water pathway drinking water.

[3] MRBCA RBTL - Missouri Risk-Based Corrective Action Risk-Based Target Level for domestic water use, June 2006.

[4] EPA SL - EPA Regional Screening Levels, November 2012, tap water

[5] MO WQS - Missouri Water Quality Standards, groundwater/drinking water use catagories, Missouri Code of State Regulations, 10 CSR 20-7.031, May 31, 2012.

[6] RML - US EPA Removal Management Level, cancer risk level 1x10-6, non cancer risk levels hazard quotient=1

TABLE B8: CALCULATION OF SAMPLE/ COLLOCATED SAMPLE RELATIVE PERCENT DIFFERENCE (RPD) SURFACE WATER SAMPLES FANTASTIC CAVERNS, GREENE COUNTY, MISSOURI

All results are in ug/L

Sample Tag Number	**172282**	**172283**	**RPD**	**172626**	**172627**	**RPD**	**173869**	**170880**	**RPD**
Date Collected	**4/5/2017**	**4/5/2017**		**5/11/2017**	**5/11/2017**		**10/11/2017**	**10/11/2017**	
Lab Number	**AC95349**	**AC95350**		**AC97976**	**AC97977**		**AD09043**	**AD09044**	
Trichloroethene	0.96	0.99	3.10	1.55	1.45	6.70	1.58	2.00	23.50

TABLE C1: SELECTED ANALYTICAL RESULTS FOR PASSIVE AIR SAMPLES COLLECTED DECEMBER 19, 2016
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- NA denotes not analyzed

Sample Tag Number	**164139**	**164140**	**164142**	**164141**	**164143**	**VISL[2,3]**	
Date Collected	**12/2 - 12/19**	**12/2 - 12/19**	**12/2 - 12/19**	**12/2 - 12/19**	**12/2 - 12/19**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**17 Days**	**17 Days**	**17 Days**	**17 Days**	**17 Days**		
Lab Number	**AC88904**	**AC88905**	**AC88907**	**AC88906**	**AC88908**		
Sample Type	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**		
Sample Location	**Back of Cave Turnaround Area**	**Second Bridge**	**Hall of Giants**	**Underground Classroom**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)							
Benzene	<0.21	<0.21	0.22	<0.21	0.47	15.7	131
Carbon tetrachloride	0.22	0.24	0.29	0.23	0.36	20.4	438
Chloroform	**0.062**	**0.077**	<0.057	<0.057	<0.057	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	<0.083	<0.083	<0.083	<0.083	<0.083	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	NA	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	<0.055	<0.055	<0.055	<0.055	<0.055	4.72	31
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
Ethylbenzene	<0.062	<0.062	<0.062	<0.062	<0.062	49.1	4380
Naphthalene	<0.17	<0.17	<0.17	<0.17	<0.17	3.61	13.1
Tetrachloroethene (PCE)	<0.072	<0.072	<0.072	<0.072	<0.072	472	175
Trichloroethene (TCE)	<0.062	<0.062	<0.062	<0.062	<0.062	30	6.0
1,1,1-Trichloroethane	<0.068	<0.068	<0.068	<0.069	<0.068	NL	21900
Toluene	<0.057	<0.057	0.094	0.086	0.38	NL	21900
Vinyl Chloride	NA	NA	NA	NA	NA	27.9	438
o-Xylene	<0.065	<0.065	<0.065	<0.065	<0.065	NL	438
m,p-Xylenes	<0.061	<0.061	<0.061	<0.061	0.12	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

Double-c

TABLE C2: SELECTED ANALYTICAL RESULTS FOR PASSIVE AIR SAMPLES COLLECTED FEBRUARY 16, 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- NA denotes not analyzed

Sample Tag Number	**171242**	**171241**	**171243**	**171240**	**171244**	**VISL[2,3]**	
Date Collected	**2/2 - 2/16**	**2/2 - 2/16**	**2/2 - 2/16**	**2/2 - 2/16**	**2/2 - 2/16**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**14 Days**	**14 Days**	**14 Days**	**14 Days**	**14 Days**		
Lab Number	**1702337-03A**	**1702337-02A**	**1702337-04A**	**1702337-01A**	**1702337-05A**		
Sample Type	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**		
Sample Location	**Back of Cave Turnaround Area**	**Second Bridge**	**Hall of Giants**	**Underground Classroom**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)							
Benzene	0.27	0.28	<0.26	0.30	0.43	15.7	131
Carbon tetrachloride	0.22	0.22	0.24	0.27	0.35	20.4	438
Chloroform	<0.068	<0.068	<0.068	<0.068	<0.068	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	<0.10	<0.10	<0.10	<0.10	<0.10	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	Na	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	<0.066	<0.066	<0.066	<0.066	<0.066	4.72	31
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
Ethylbenzene	<0.075	<0.075	<0.075	<0.075	<0.075	49.1	4380
Naphthalene	<0.20	<0.20	<0.20	<0.20	<0.20	3.61	13.1
Tetrachloroethene (PCE)	0.90	0.93	0.73	0.94	0.88	472	175
Trichloroethene (TCE)	**0.21**	**0.18**	<0.074	<0.074	<0.074	30	6.0
1,1,1-Trichloroethane	<0.082	<0.082	,0.083	<0.082	<0.082	NL	21900
Toluene	0.072	0.099	0.12	0.12	0.42	NL	21900
Vinyl Chloride	NA	NA	NA	NA	NA	27.9	438
o-Xylene	<0.079	<0.079	<0.079	<0.079	<0.078	NL	438
m,p-Xylenes	<0.073	<0.073	<0.073	<0.073	0.15	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE C3: SELECTED ANALYTICAL RESULTS FOR PASSIVE AIR SAMPLES COLLECTED MARCH 16, 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- NA denotes not analyzed

Sample Tag Number						**VISL[2,2]**	
Date Collected	**3/2 - 3/16**	**3/2 - 3/16**	**3/2 - 3/16**	**3/2 - 3/16**	**3/2 - 3/16**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**14 Days**	**14 Days**	**14 Days**	**14 Days**	**14 Days**		
Lab Number	**1703414-03A**	**1703414-02A**	**1703414-04A**	**1703414-01A**	**1703414-05A**		
Sample Type	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**		
Sample Location	**Back of Cave Turnaround Area**	**Second Bridge**	**Hall of Giants**	**Underground Classroom**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)							
Benzene	<0.25	0.36	<0.25	0.32	0.37	15.7	131
Carbon tetrachloride	0.21	0.22	0.25	0.22	0.44	20.4	438
Chloroform	**0.74**	**0.87**	**0.52**	**1.3**	<0.070	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	<0.099	<0.099	<0.099	<0.099	<0.10	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	NA	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	<0.066	<0.066	<0.066	<0.066	<0.068	4.72	31
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
Ethylbenzene	<0.074	<0.074	<0.074	<0.074	<0.077	49.1	4380
Naphthalene	<0.20	<0.20	<0.120	<0.20	<0.21	3.61	13.1
Tetrachloroethene (PCE)	**0.31**	**0.31**	**0.18**	**0.22**	<0.088	472	175
Trichloroethene (TCE)	**0.18**	**0.17**	<0.073	<0.073	<0.076	30	6.0
1,1,1-Trichloroethane	<0.082	<0.082	<0.082	<0.082	<0.084	NL	21900
Toluene	0.45	0.62	0.38	0.51	0.66	NL	21900
Vinyl Chloride	NA	NA	NA	NA	NA	27.9	438
o-Xylene	<0.078	<0.078	<0.078	<0.078	<0.080	NL	438
m,p-Xylenes	<0.072	<0.072	<0.072	<0.072	0.14	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE C4: SELECTED ANALYTICAL RESULTS FOR PASSIVE IR SAMPLES COLLECTED APRIL 20, 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Sample results in bold are significantly[1] above background
- NA denotes not analyzed

Sample Tag Number	**172288**	**172287**	**172289**	**172286**	**172290**	**VISL[2,3]**	
Date Collected	**4/6 - 4/20**	**4/6 - 4/20**	**4/6 - 4/20**	**4/6 - 4/20**	**4/6 - 4/20**	**Cancer Screening Level (Risk 1E-05)**	**Non Cancer Screening Level (HQ=1)**
Sample Duration	**14 Days**	**14 Days**	**14 Days**	**14 Days**	**14 Days**		
Lab Number	**1704420-03A**	**1704420-02A**	**1704420-04A**	**1704420-01A**	**1704420-05A**		
Sample Type	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**	**Radiello Passive**		
Sample Location	**Back of Cave Turnaround Area**	**Second Bridge**	**Hall of Giants**	**Underground Classroom**	**Background Outside Cave on Hill Near Bldg.**		
Volatile Organic Compounds (VOCs)							
Benzene	<0.26	0.31	<0.26	0.36	0.32	15.7	131
Carbon tetrachloride	0.18	0.19	0.20	0.23	0.38	20.4	438
Chloroform	**0.33**	**0.54**	**0.25**	**0.82**	<0.068	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	<0.10	<0.10	<0.10	<0.10	<0.10	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	NA	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	<0.067	<0.067	<0.067	<0.067	<0.067	4.72	31
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NL	NL
Ethylbenzene	<0.076	<0.076	<0.076	<0.076	0.11	49.1	4380
Naphthalene	<0.20	<0.20	<0.20	<0.20	<0.20	3.61	13.1
Tetrachloroethene (PCE)	**0.17**	**0.22**	**0.16**	**0.23**	<0.087	472	175
Trichloroethene (TCE)	**1.6**	**1.6**	**0.32**	**0.83**	<0.074	30	6.0
1,1,1-Trichloroethane	**0.15**	**0.16**	<0.083	**0.10**	<0.083	NL	21900
Toluene	0.11 B	0.14 B	0.18 B	0.18 B	1.1 B	NL	21900
Vinyl Chloride	NA	NA	NA	NA	NA	27.9	438
o-Xylene	<0.079	<0.079	<0.079	<0.079	0.15	NL	438
m,p-Xylenes	<0.074	0.088B	0.10 B	<0.073	0.37 B	NL	438

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

B=Analyte present in laboratory balnk greater than reporting limit

TABLE C5: SELECTED ANALYTICAL RESULTS FOR PASSIVE AIR SAMPLES COLLECTED NOVEMBER 8, 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- NL denotes not listed
- Shaded sample results exceed lowest VISL benchmark[1,2]
- NA denotes not analyzed

Sample Tag Number	173969	173970	173971	173972	173973	173974	VISL[1,2]	
Date Collected	10/11 - 11/8	10/11 - 11/8	10/11 - 11/8	10/11 - 11/8	10/11 - 11/8	10/11 - 11/8	Cancer Screening Level (Risk 1E-05)	Non Cancer Screening Level (HQ=1)
Sample Duration	28 Days	28 Days	28 Days	28 Days	28 Days	28 Days		
Lab Number	1711229-01A	1711229-02A	1711229-03A	1711229-04A	1711229-05A	1711229-06A		
Sample Type	Radiello Passive	Radiello Passive	Radiello Passive	Radiello Passive	Radiello Passive	Radiello Passive		
Sample Location	Lower Passage #1	Lower Passage #1 (duplicate)	Lower Passage #3	Lower Passage Floor	Second Bridge (Below)	Second Bridge (Above)		
Volatile Organic Compounds (VOCs)								
Benzene	<0.13	<0.13	<0.13	<0.13	0.16	0.26	15.7	131
Carbon tetrachloride	0.046	0.041	0.052	0.062	0.090	0.14	20.4	438
Chloroform	0.078	0.072	0.063	0.063	0.050	<0.034	5.3	428
Chloromethane	NA	NA	NA	NA	NA	NA	NL	394
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	NL	438
1,4-Dichlorobenzene	<0.050	<0.052	<0.050	<0.050	<0.050	<0.050	11.1	3500
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	76.7	NL
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NL	876
1,2-Dichloroethane	<0.033	<0.034	<0.033	<0.033	<0.033	<0.033	4.72	31
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NL	NL
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NL	NL
Ethylbenzene	<0.038	<0.039	<0.038	<0.038	<0.038	<0.038	49.1	4380
Naphthalene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.61	13.1
Tetrachloroethene (PCE)	0.43	0.47	0.90	0.82	0.46	0.073	472	175
Trichloroethene (TCE)	130	130	210	200	140	7	30	6.0
1,1,1-Trichloroethane	3.2	3.1	5.1	4.8	3.7	0.25	NL	21900
Toluene	<0.035	<0.036	0.068	0.041	0.041	0.14	NL	21900
Vinyl Chloride	NA	NA	NA	NA	NA	NA	27.9	438
o-Xylene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	NL	438
m,p-Xylenes	<0.037	<0.038	<0.037	<0.037	<0.037	<0.037	NL	438

[1] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[2] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

TABLE D: MAXIMUM TCE RESULTS FOR ALL AIR SAMPLES COLLECTED APRIL 2016 THROUGH NOVEMBER 2017
FANTASTIC CAVERNS

- All values listed in ug/m^3
- Sample results in bold are significantly[1] above background
- Shaded sample results exceed VISL[2]

Sample Tag Number	**173350**	**173351**	**173348**	**163234**	**173352**	**173346**	**173345**	**173344**	**173343**	**173875**	**173876**	**173877**	**173369**	**173368**	**174125**	**173887**	**173888**	**VISL[2]**	
Date Collected	**8/16/2017**	**8/16/2017**	**8/16/2017**	**7/13/2016**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**8/16/2017**	**10/11/2017**	**10/11/2017**	**10/11/2017**	**9/13/2017**	**9/13/2017**	**11/08/2017**	**10/11/2017**	**10/11/2017**	**Cancer**	**Non-**
Sample Duration	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**	**8 Hours**		
Lab Number	**1708405-08A**	**1708405-09A**	**1708405-06A**	**1607349-02A**	**1708405-10A**	**1708405-04A**	**1708405-03A**	**1708405-02A**	**1708405-01A**	**1710291-14B**	**1710291-15B**	**1710291-16B**	**1709331-14A**	**1709331-13A**	**1711216-14A**	**1710291-11A**	**1710291-12A**	**Screening**	**Cancer**
Sample Type	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**	**6L Summa**		
Sample Location	**Back of Cave Turnaround Area**	**Borehole**	**Second Bridge**	**First Bridge / Sink Hole Area**	**Hall of Giants**	**Stalactite**	**Auditorium**	**Underground Classroom**	**Photo Station**	**Lower Passage #1**	**Lower Passage #2**	**Lower Passage #3**	**Gift Shop**	**Front Desk**	**Background Outside Cave on Hill Near Bldg.**	**Personal Air Monitoring**	**Personal Air Monitoring (Duplicate)**	**Level 1E-05**	**Screening Level**
Volatile Organic Compounds (VOCs)																			
Trichloroethene (TCE)	**84**	**15**	**45**	**88**	**14**	**31**	**25**	**20**	**7.9**	**2200**	**2200**	**2300**	0.26	0.26	0.51	**4.3**	**4.3**	30	6[3]

[1] Three times the background concentration when contaminant is detected in background sample or above the PQL when the background concentration is < MDL.

[2] Non-residential health-based screening benchmarks from EPA Vapor Intrusion Screening Level (VISL) calculator, accessed June 2018.
https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator

[3] Screening levels for TCE are based on EPA Region 7 guidance (Beringer, 2016)

J=Estimated value below reporting limit.

TABLE E: TOUR GUIDE EXPOSURE DATA FANTASTIC CAVERNS, GREENE COUNTY MISSOURI													
	Minutes of Tour Time, 2016											Totals	
Tour Guide ID	January	February	March	April	May	June	July	August	October	November	December*	Minutes	Hours
1	2,780	3,070	3,665	4,005	4,270	4,485	4,555	8,430	4,675	5,125	645	45,705	762
17		1,688	6,175	4,245	5,770	6,905	6,850	6,800	3,275	920		42,628	710
19			585	4,915	5,795	5,995	6,180	8,575	4,345	4,005	695	41,090	685
21		1,075	5,175	3,275	4,530	5,325	6,105	7,730	3,860	495		37,570	626
8					2,205	6,590	6,065	8,630	3,765	5,350	560	33,165	553
20		840	4,675	3,130	4,200	5,705	5,725	6,441	905			31,621	527
2	1,910	987	3,380	1,970	3,235	3,585	2,660	4,285				22,012	367
9						1,550	4,490	7,495	3,580	2,090		19,205	320
7						1,660	4,870	5,205	3,100	195		15,030	251
12			585	2,480	2,885	2,550	830	4,315	1,260			14,905	248
3	1,900	1,600	220	400	1,350	4,545	4,215					14,230	237
5	2,730	2,645	4,560	2,480								12,415	207
15	1,090	1,395	905	985	2,145	1,455	2,260	1,740				11,975	200
4	2,365	2,215	3,525	2,105	1,065							11,275	188
11						1,040	5,360	4,037				10,437	174
10					1	22	4,140	3,305	2,325	635		10,428	174
6			3,760	3,250	3,255							10,265	171
14				2,800	3,300	940		540	285	1,675	350	9,890	165
18	355	450	2,335	2,300	1,760	1,910						9,110	152
23		930	5,450	2,165								8,545	142
24	235	630				1			60	1,290	520	2,736	46
13				115	55	60	570	765	355	270		2,190	37
22	315	255	355	60	60	60	295					1,400	23
16			60		415	160	280	170				1,085	18

* December includes only tour log data for 5 days

Average hrs/year/tour guide= 291
Median hrs/year/tour guide= 203

TABLE F: SUMMARY OF 2016 CAVE TOUR VISITORS FANTASTIC CAVERNS, GREENE COUNTY MISSOURI												
Number of Tour Visitors												
Day	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December***
1		10	90	285	228	367	684	576	128	321	195	27
2		27	85	317	326	387	1029	515	273	278	57	113
3	54	19	86	337	298	550	1155	549	799	167	195	110
4	67	30	105	319	410	639	687	582	832	120	184	127
5	39	166	305	123	415	517	685	731	602	84	296	52
6	27	97	259	209	563	452	566	1071	228	188	290	
7	18	89	244	305	286	345	579	806	106	203	80	
8	33	36	216	215	324	457	801	495	184	332	168	
9	42	49	278	347	327	463	823	479	220	347	139	
10	14	40	312	212	306	1045	768	485	309	262	73	
11	27	33	395	238	331	691	615	449	360	194	186	
12	25	92	535	141	401	626	488	596	171	181	266	
13	23	238	550	140	450	478	452	721	105	154	375	
14	12	217	555	143	380	340	562	703	140	379	129	
15	42	140	590	471	327	491	743	355	149	368	203	
16	163	79	589	300	370	840	979	249	266	384	54	
17	82	45	597	283	340	571	816	166	365	268	79	
18	90	39	672	315	399	731	684	254	285	125	133	
19	3	146	718	358	303	630	629	266	157	271	161	
20	15	224	570	364	381	377	711	464	149	395	211	
21	8	204	383	258	425	498	735	348	184	484	194	
22	114	44	348	374	430	518	885	156	172	466	220	
23	137	32	375	405	285	536	1260	188	263	432	224	
24	74	24	456	344	310	658	922	158	481	165		
25	15	56	470	152	273	783	705	162	276	153	455	
26	55	109	563	202	463	690	582	240	180	186	440	
27	20	239	251	253	530	470	565	405	183	255	200	
28	168	182	298	279	887	499	639	393	132	133	45	
29	79	57	253	506	882	557	618	150	74	232	53	
30	114		301	435	809	519	956	116	302	215	46	
31	126		354		319		844	93		71		
Totals	**1,560**	**2,726**	**11,274**	**8,028**	**11,905**	**15,971**	**20,610**	**11,737**	**8,075**	**7,143**	**5,099**	**289**

Number of Visitors, 2016 **104,417**

* December includes only tour log data for 5 days

VI. Sampling and Analysis Documentation

[*Documents Provided in a Separate .pdf File*]

VI. References

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
www.dnr.mo.gov

MEMORANDUM

STATE OF MISSOURI
GLEN J. YOUNG
RG
2003003605
8/25/16
REGISTERED GEOLOGIST

6 pages + attachments

DATE: August 25, 2016

TO: Kyle O'Rourke, Environmental Specialist,
Hazardous Waste Program,
Division of Environmental Quality (DEQ)

FROM: Peter Bachle, Geologist
Geological Survey Program,
Missouri Geological Survey (MGS)

SUBJECT: Abbreviated Geohydrologic Summary of Fantastic Caverns Site

LOCATION: Section 33, Township 30 North, Range 22 West, Ebenezer 7.5-Minute Quadrangle, Greene County, Missouri
Approximately 38.2879° North Latitude and 93.3593° West Longitude

LOCATION AND PHYSIOGRAPHIC SETTING

The Fantastic Caverns site is a show cave located within a rural area roughly 2.8 miles northwest of Springfield, Missouri. The cave is known to extend nearly 1 mile to the southwest. Elevation at the site is approximately 1130 feet above mean sea level based upon topographic maps.

The Fantastic Caverns site lies within the Springfield Plateau of the Ozark Plateau sub-province of the Interior Highlands physiographic province in Missouri. This area is characterized by rolling upland hills with relative relief of as much as 400 feet (Fenneman, 1938).

GROUNDWATER PATHWAY

Mississippian-age limestone lies beneath the site and constitutes the Springfield Plateau Aquifer that produces up to 10 gallons per minute. The Springfield Plateau Aquifer is known to provide water for 225 of the 496 wells within 4 miles of the site. This aquifer is up to 120 feet thick beneath the site and overlies the Ozark Confining Unit.

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The Ozark Confining Unit is 5 to 12 feet thick in this portion of Missouri. This confining unit forms a leaky aquitard that separates the Springfield Plateau and Ozark aquifers. Within 4 miles of the site, 477 wells penetrated the Ozark Confining unit. Of these wells, 270 are cased through the confining unit.

Ordovician- and Cambrian-age dolomite and sandstone beneath the site constitute the Ozark Aquifer (Imes and Smith, 1990). This aquifer is known to provide water for 477 of the 496 recorded non-monitoring wells and produces up to 800 gallons per minute within 4 miles of the site. Based upon information from the Public Drinking Water Program, Water Information Management System (WIMS), and Logmain databases, the local wells do not draw water from greater than 1,404 feet in depth.

Cambrian-age dolomite and shale form the St. Francois Confining Unit that separates the Ozark Aquifer from the underlying St. Francois Aquifer. According to well records, the St. Francois Aquifer is not used within 4 miles of the site.

The MGS databases contain records of five municipal, two community public, nine non-community public, and 480 domestic wells within a 4-mile radius of the Fantastic Caverns site. The nearest domestic drinking water well on record is located approximately 0.25 mile northwest of the site. The nearest public well on record is at the site.

Prior to 1987, registry of private wells was not required. Therefore, existing older wells may not be included in the database. Also, proper well registration may not have been submitted for some wells. Because of these exceptions, the databases may not accurately depict all of the water well usage in this area. Since a public water supply district does not cover most of the well survey area, most residential homes and businesses outside of the Springfield and Willard municipalities are likely to have a water well.

Figure 1 illustrates the approximate locations of the 496 known non-monitoring wells within a 4-mile radius of the site. Table 1 lists specific technical attributes (total and casing depth, static water level, date drilled, yield, etc.) of the non-monitoring wells. Figure 2 illustrates the bedrock geology and former mining activity near the site. Table 2 lists the geohydrologic properties (thickness, lithology, nature of porosity and permeability, hydraulic conductivity, and hydrologic unit) of the strata beneath the site. Stratigraphic unit descriptions are based on logged wells located within a 2-mile radius of the site.

Springfield Plateau Aquifer

Stratigraphy

Mississippian-Age Formations: The Mississippian-age rocks beneath the site are divided into the Burlington Limestone, Reeds Spring-Elsey Formations, and Pierson Limestone. These formations consist of fossiliferous limestone and chert (Thompson, 1995). The

Mississippian-age rocks in this aquifer range from 85 to 120 feet thick beneath the site. Dissolution of the shallow bedrock has resulted in well-developed karst features. These features can include uneven bedrock surfaces with cutters and pinnacles along with cave and sinkhole formation. The Fantastic Caverns is itself a large karst feature.

Hydrology

The hydraulic conductivity of the Springfield Plateau Aquifer is roughly 7.8×10^{-3} cm/sec (Imes and Smith, 1990). Due to the karstic nature of the formations, hydraulic conductivity, permeability, and gradient characteristics may vary dramatically over short distances. Within the 4-mile target area, eighteen wells of record are completed solely within the Springfield Plateau Aquifer. Of the 496 recorded wells, 207 are open to both the Springfield Plateau and Ozark Aquifers.

While there is no site specific groundwater flow data for the Springfield Plateau Aquifer, regional groundwater flow near the site may be toward the northwest. Depth to groundwater beneath the site ranges from 60 to 120 feet.

Based upon dye traces, sinkholes that are located up to 3 miles south-southwest of the site are hydraulically connected to the Fantastic Caverns subsurface watershed. Based on the dye trace data, there appears to be a groundwater divide located roughly 3 to 4 miles south of the site in the vicinity of the Springfield Municipal Airport. The groundwater divide is inferred by dye traces GR053 (Springfield Airport Sink) and GR107 (Litton Sinkhole). During the GR053 dye trace study, dye was injected into a sinkhole at the Springfield Airport and was recovered at Fantastic Caverns Spring, but no indication of dye was reported at Ritter Springs. During the GR107 dye trace study, dye was injected into the Litton Sinkhole and was recovered at Ritter Springs, but not at Fantastic Caverns Spring, Williams Spring or Bunge Spring. The groundwater divide appears to cause groundwater along the northern end of the Springfield Regional Airport to travel north-northeast toward Fantastic Caverns Spring and the groundwater east of the Airport (in the vicinity of the Litton property) to travel to the east-northeast toward Ritter Springs.

Ozark Confining Unit

Stratigraphy

Mississippian-Age Formation: The Ozark Confining Unit beneath the site consists of the Mississippian-age Compton Limestone. This formation is composed of argillaceous (silty) limestone (Water Resources Program, unpublished). The Compton Limestone ranges from 5 to 12 feet thick beneath the site and forms an effective barrier to the underlying Ozark Aquifer where it is not compromised by faults or open boreholes.

Hydrology

The hydraulic conductivity of the Ozark Confining Unit ranges from 1.0×10^{-5} to 5.0×10^{-6} cm/sec (Imes and Emmett, 1994). Of the 496 known wells within 4 miles of the site, 478 penetrate this unit, of which 270 are cased through this unit.

Ozark Aquifer

Stratigraphy

Ordovician-Age Dolomite: The Ordovician-age rocks beneath the site are divided into the Cotter and Jefferson City dolomites, Roubidoux Formation, and Gasconade Dolomite. The Cotter and Jefferson City dolomites are primarily silty dolomite with a few, thin sandstone beds. The Roubidoux and Gasconade formations consist primarily of dolomite and cherty dolomite with occasional sandstone and cherty sandstone beds (Thompson, 1995). The Ordovician-age rocks beneath the site range from 837 to 885 feet thick.

Cambrian-Age Formations: The Cambrian-age Eminence and Potosi Dolomites consist of medium- to coarsely crystalline dolomite with nodular chert (Thompson, 1995). Porosity is mostly vug and intercrystalline types with lesser amounts of fractures and channels (Woody et.al., 1996). The Cambrian-age rocks beneath the site range from 355 to 370 feet thick.

Hydrology

The hydraulic conductivity of the Ozark Aquifer ranges from 1×10^{-4} to 1×10^{-5} cm/sec (Davis, 1969; Imes, 1990). The Cotter and Jefferson City Dolomites lie on the less conductive end of this range. Of the wells of record within the 4-mile target area, 477 are known to be completed in the Ozark Aquifer.

The groundwater flow direction within this aquifer is not known. According to well data, the static water level within the Ozark Aquifer in the Springfield area is considerably lower (200 to 400 feet) than that of the overlying Springfield Plateau Aquifer.

St. Francois Confining Unit

Stratigraphy

Cambrian-Age Formations: The Cambrian-age Derby-Doerun Dolomite and Davis Formation of the St. Francois Confining Unit consist of a sequence of argillaceous dolomite with alternating shale and siltstone that is greater than 50 feet thick beneath the site (Water Resource Program, unpublished).

Hydrology

The St. Francois Confining Unit is an effective barrier to downward groundwater movement with a hydraulic conductivity range of 3×10^{-11} to 9×10^{-13} cm/sec (Kleeschulte & Seeger, 2000).

KARST FEATURES

The site lies within a karst setting with 261 known sinkholes, 45 springs, and several losing stream segments found within 4 miles of the site. Figure 3 illustrates the dye

traces, losing stream segments, and known sinkholes within 4 miles of the site. Table 3 lists the known springs.

STRUCTURAL FEATURES

Figure 2 illustrates the thirteen fault and fold traces found within 4 miles of the site. Most of the structural features are east-west aligned and are mapped within 0.4 to 0.9 mile north and south of the site. The degree that the structural features influence groundwater at the site is not known. However, the faults may cause the Ozark Confining Unit to be a leaky aquitard.

FORMER MINES

Four former subsurface lead mines lie within 1 to 1.9 miles of the site. The mines located west of the site are known to be 70 and 84 feet deep while the mines to the east lack depth information. The mine locations are illustrated on Figure 2.

SURFACE WATER PATHWAY

Potential Point of Entry (PPE)

Surface water leaving the site travels downslope for approximately 400 feet before entering a tributary of Little Sac River. This point is the Potential Point of Entry (PPE) for the purpose of determining the Target Distance Limit (TDL). The PPE lies at approximately 37.2895° north latitude and 93.3596° west longitude. From the PPE, surface water flows north along the tributary of Little Sac River for approximately 0.1 mile before reaching the Little Sac River. From this union, Little Sac River flows north for roughly 14.9 miles before reaching the TDL. The TDL for this site is located at approximately 37.4225° north latitude and 93.3894° west longitude.

Miscellaneous Surface Water Characteristics

There are no known surface drinking water intakes within 15 miles downstream of the site. Surface water drainage area topographically up gradient of the site is not known due to the unknown extent of the cave system. However, based upon water dye traces, it may be much greater than 500 acres. The 2-year, 24-hour rainfall is approximately 3.85 inches (Weather Bureau, 1961).

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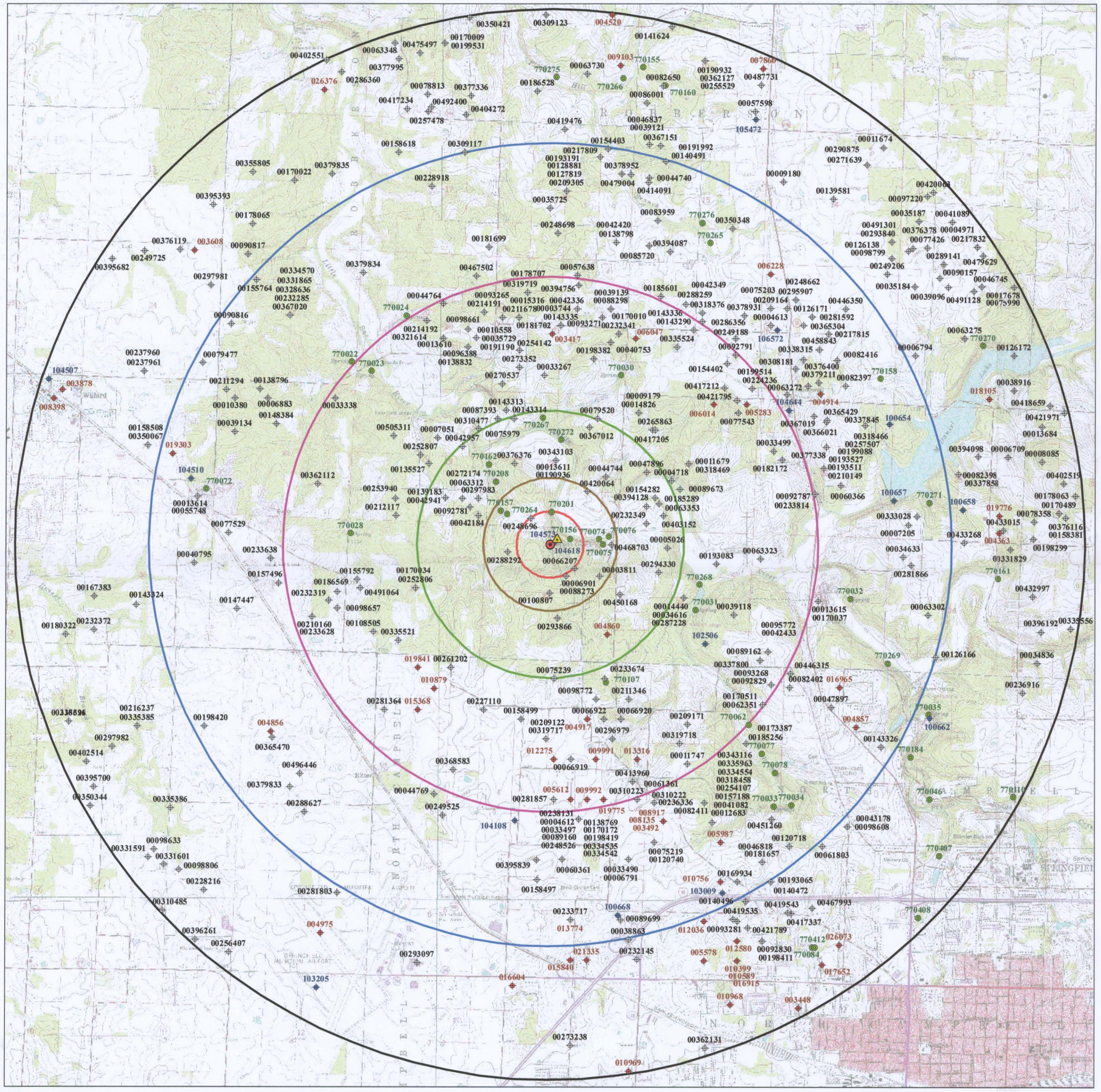
Figure 1:
Four-Mile Well Survey
Fantastic Caverns Site
Greene County, Missouri
July 29, 2016



Target Limits

- 0.25 Mile
- 0.5 Mile
- 1 Mile
- 2 Mile
- 3 Mile
- 4 Mile

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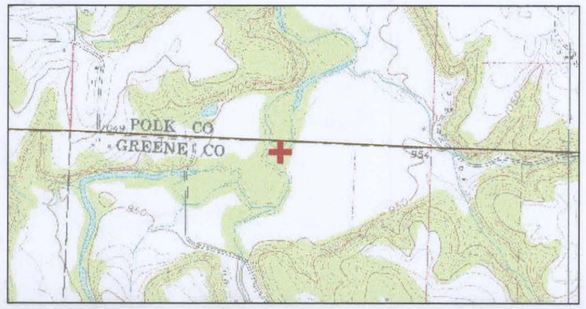
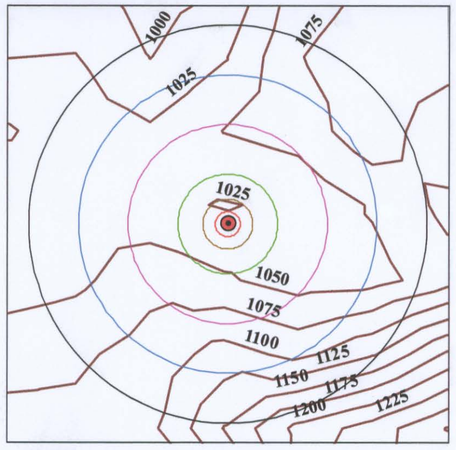
- Fantastic Caverns site
- Potential Point of Entry (PPE)
- Well from Public Drinking Water Program
- Certified well from the Well Information Management System (WIMS)
- Well from MDNR/MGS sample well-log library (Logmain)
- Spring from MDNR/MGS database
- Groundwater elevation contour
- 15-mile downstream limit



15-mile downstream target limit located at 37.4225°N Lat. & 93.3894°W Long.



Regional groundwater elevation within 4 miles of the site.

Site location within
Greene County, Missouri

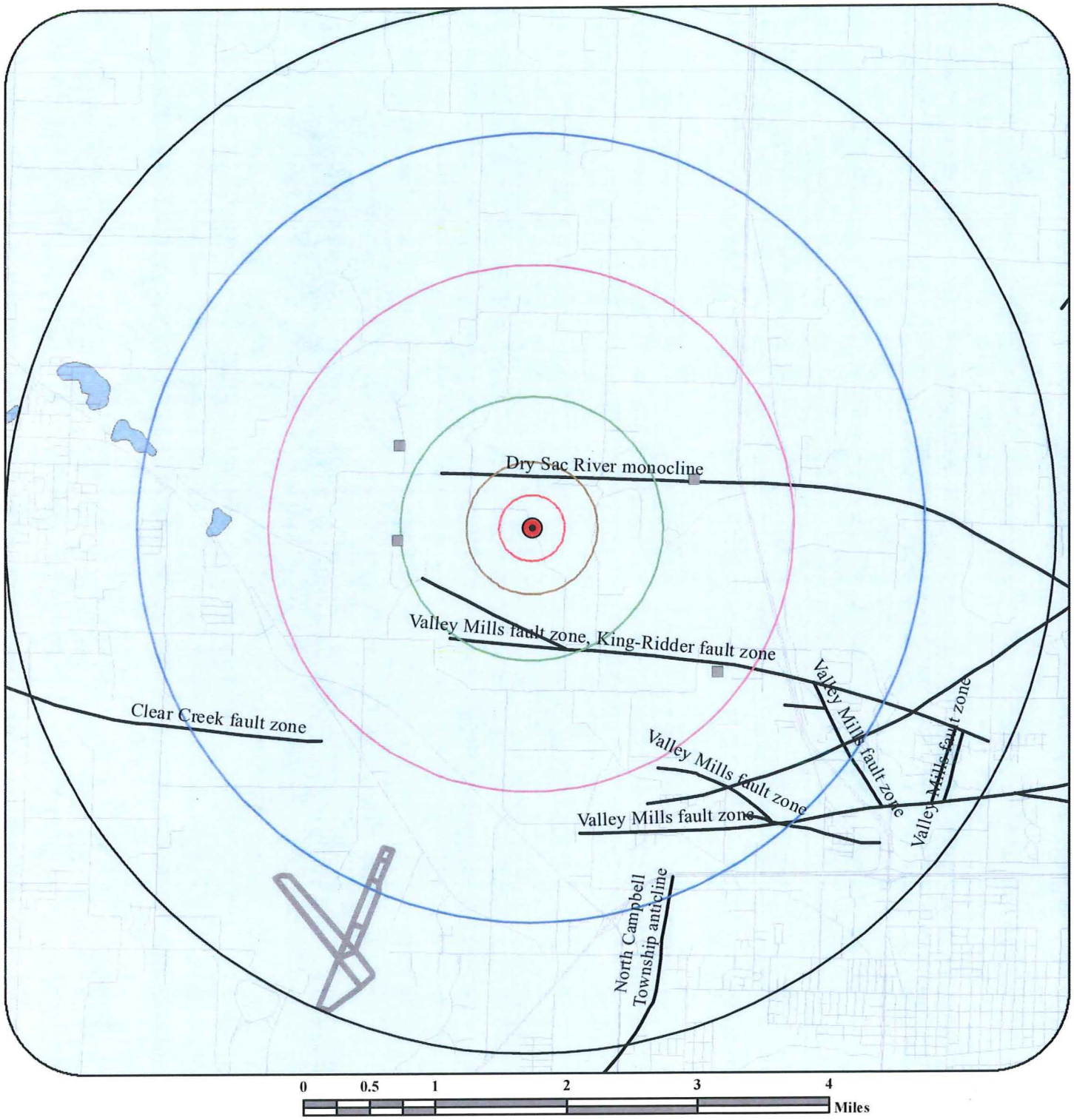


Figure 2:
Geology and Structures within 4 Miles of the Fantastic Caverns Site

Target Limits
- 0.25 Mile
- 0.5 Mile
- 1 Mile
- 2 Mile
- 3 Mile
- 4 Mile

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W E
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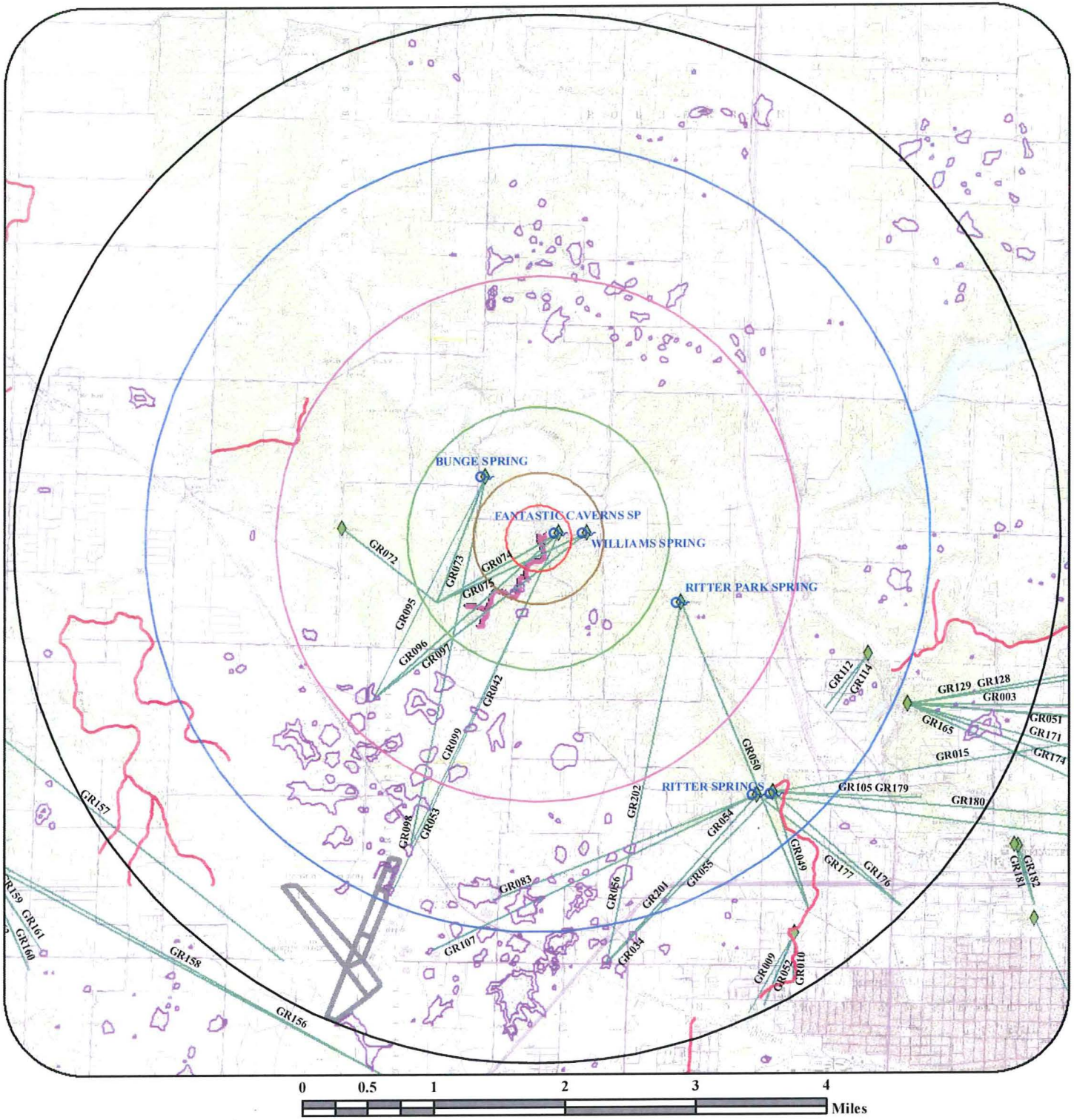
- Fantastic Caverns site
- Fault & fold trace
- Former lead mine
- Roads
- Airport

Mississippian-age Strata
- Warsaw Fm. limestone
- Burlington Limestone
- Compton Limestone

Site location within Greene County, Missouri

Figure 3:
Dye Traces, Losing Streams, & Sinkholes within 4 Miles of the Fantastic Caverns Site



Target Limits
- 0.25 Mile
- 0.5 Mile
- 1 Mile
- 2 Mile
- 3 Mile
- 4 Mile

N
W E
S

- Fantastic Caverns
- Spring
- Dye trace
- Dye recovery point
- Gaining stream segment
- Losing stream segment
- Known sinkhole
- Airport

Site location within Greene County, Missouri

Table 1: Well Data for the Fantastic Caverns Site

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

0 to 0.25 Mile

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
PDWP	104573	180	--	--	--	1962	Non-community Public	Fantastic Caverns	Springfield Plateau	--
PDWP	104618	360	252	--	60	1986	Non-community Public	Fantastic Caverns	Ozark Aquifer	50
WIMS	248696	405	105	1130	90	2000	Domestic	--	Springfield & Ozark	--

Wells found within 0 to 0.25 mile of the site: 3

0.25 to 0.5 Mile

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	3811	265	147	--	120	1987	Domestic	--	Ozark Aquifer	60
WIMS	6901	405	147	1200	120	1987	Domestic	--	Ozark Aquifer	120
WIMS	66207	420	151	1140	120	1991	Domestic	--	Ozark Aquifer	50
WIMS	88273	405	--	1200	--	1992	Domestic	--	Springfield & Ozark	--
WIMS	100807	510	359	--	140	1994	Domestic	--	Ozark Aquifer	60
WIMS	288292	405	210	1160	120	2002	Domestic	--	Ozark Aquifer	60
WIMS	420064	325	105	--	90	2008	Domestic	--	Springfield & Ozark	50
WIMS	468703	340	105	--	60	2012	Domestic	--	Springfield & Ozark	60

Wells found within 0.25 to 0.5 mile of the site: 8

0.5 to 1 Mile

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	5026	325	84	1000	90	1987	Domestic	--	Springfield & Ozark	50
WIMS	13611	355	210	1100	90	1989	Domestic	--	Ozark Aquifer	40
WIMS	42184	350	151	1150	100	1990	Domestic	--	Ozark Aquifer	40
WIMS	42941	312	152	1145	80	1991	Domestic	--	Ozark Aquifer	35
WIMS	42957	437	--	1110	--	1991	Domestic	--	Springfield & Ozark	--
WIMS	44744	355	160	1090	100	1989	Domestic	--	Ozark Aquifer	35
WIMS	47896	275	185	1170	90	1991	Domestic	--	Ozark Aquifer	60
WIMS	63312	325	189	1115	90	1991	Domestic	--	Ozark Aquifer	60
WIMS	63353	285	168	1120	60	1991	Domestic	--	Ozark Aquifer	100
WIMS	92781	375	235	--	40	1993	Domestic	--	Ozark Aquifer	70
WIMS	139183	450	233	1145	110	1995	Domestic	--	Ozark Aquifer	40
WIMS	143314	355	105	1115	120	1995	Domestic	--	Springfield & Ozark	50
WIMS	154282	345	105	--	96	1996	Domestic	--	Springfield & Ozark	45
WIMS	185289	325	105	--	90	1997	Domestic	--	Springfield & Ozark	80
WIMS	190936	330	100	--	--	1997	Domestic	--	Springfield & Ozark	50
WIMS	232349	330	123	1120	--	1999	Domestic	--	Ozark Aquifer	60
WIMS	272174	415	100	1130	120	2001	Domestic	--	Springfield & Ozark	50
WIMS	293866	510	210	1140	150	2002	Domestic	--	Ozark Aquifer	30
WIMS	294330	405	126	1170	150	2002	Domestic	--	Ozark Aquifer	70
WIMS	297983	350	180	1130	90	2002	Domestic	--	Ozark Aquifer	50

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	343103	400	105	--	--	2004	Domestic	--	Springfield & Ozark	60
WIMS	367012	308	--	--	175	2005	Domestic	--	Springfield & Ozark	50
WIMS	376376	445	--	--	195	2006	Domestic	--	Springfield & Ozark	45
WIMS	394128	505	105	--	120	2006	Domestic	--	Springfield & Ozark	50
WIMS	403152	350	189	--	81	2007	Domestic	--	Ozark Aquifer	40
WIMS	450168	370	105	--	151	2012	Domestic	--	Springfield & Ozark	25
Logmain	4860	246	14	1213	105	1938	Domestic	Valdrick	Springfield & Ozark	--

Wells found within 0.5 to 1 mile of the site: 27

1 to 2 Miles

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
PDWP	102506	500	160	--	--	1974	Non-community Public	Ritter Springs Park	Ozark Aquifer	--
WIMS	3744	350	126	--	120	1987	Domestic	--	Ozark Aquifer	35
WIMS	4718	285	210	1100	120	1988	Domestic	--	Ozark Aquifer	35
WIMS	7051	300	152	--	20	1988	Domestic	--	Ozark Aquifer	30
WIMS	9179	385	252	1200	100	1988	Domestic	--	Ozark Aquifer	60
WIMS	10558	405	273	1150	120	1988	Domestic	--	Ozark Aquifer	60
WIMS	11679	355	150	1200	100	1987	Domestic	--	Ozark Aquifer	60
WIMS	11747	330	195	1200	100	1988	Domestic	--	Ozark Aquifer	30
WIMS	13610	408	275	1150	100	1989	Domestic	--	Ozark Aquifer	100
WIMS	14440	330	150	1120	90	1987	Domestic	--	Ozark Aquifer	50
WIMS	14826	350	--	1150	--	1989	Domestic	--	Springfield & Ozark	--
WIMS	15316	430	263	--	90	1989	Domestic	--	Ozark Aquifer	40
WIMS	33267	388	254	1180	120	1989	Domestic	--	Ozark Aquifer	60
WIMS	33338	415	153	1170	90	1989	Domestic	--	Ozark Aquifer	30
WIMS	33499	560	--	--	230	1990	Domestic	--	Springfield & Ozark	12
WIMS	34616	355	150	1100	90	1989	Domestic	--	Ozark Aquifer	35
WIMS	35729	430	--	--	--	1989	Domestic	--	Springfield & Ozark	--
WIMS	39118	405	189	1200	100	1990	Domestic	--	Ozark Aquifer	70
WIMS	39139	385	273	1220	150	1990	Domestic	--	Ozark Aquifer	60
WIMS	40753	420	202	1230	120	1991	Domestic	--	Ozark Aquifer	40
WIMS	42336	455	273	1200	120	1990	Domestic	--	Ozark Aquifer	70
WIMS	42349	430	--	--	200	1990	Domestic	--	Springfield & Ozark	30
WIMS	42433	480	232	--	120	1990	Domestic	--	Ozark Aquifer	45
WIMS	44764	405	273	1140	120	1989	Domestic	--	Ozark Aquifer	30
WIMS	62351	561	261	1180	50	1991	Domestic	--	Ozark Aquifer	50
WIMS	63323	425	225	1200	120	1991	Domestic	--	Ozark Aquifer	70
WIMS	66919	610	389	1235	200	1992	Domestic	--	Ozark Aquifer	60
WIMS	66920	610	375	1260	200	1992	Domestic	--	Ozark Aquifer	100
WIMS	66922	610	369	1250	300	1992	Domestic	--	Ozark Aquifer	60
WIMS	75239	425	315	1205	150	1992	Domestic	--	Ozark Aquifer	30
WIMS	75979	400	173	1060	85	1992	Domestic	--	Ozark Aquifer	50
WIMS	77543	425	213	--	120	1992	Domestic	--	Ozark Aquifer	70
WIMS	79520	365	273	1175	120	1993	Domestic	--	Ozark Aquifer	100

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	87393	308	190	1085	70	1992	Domestic	--	Ozark Aquifer	120
WIMS	88298	385	273	--	150	1992	Domestic	--	Ozark Aquifer	60
WIMS	89162	551	317	1170	175	1994	Domestic	--	Ozark Aquifer	40
WIMS	89673	325	215	1065	120	1993	Domestic	--	Ozark Aquifer	90
WIMS	92791	300	170	1260	150	1993	Domestic	--	Ozark Aquifer	55
WIMS	92829	600	160	1150	200	1993	Domestic	--	Ozark Aquifer	35
WIMS	93265	420	200	--	120	1993	Domestic	--	Ozark Aquifer	35
WIMS	93268	540	175	1185	120	1993	Domestic	--	Ozark Aquifer	45
WIMS	93271	420	150	1220	120	1993	Domestic	--	Ozark Aquifer	60
WIMS	95772	405	252	--	120	1994	Domestic	--	Ozark Aquifer	35
WIMS	96388	350	204	1200	90	1993	Domestic	--	Ozark Aquifer	60
WIMS	98657	445	105	1200	150	1994	Domestic	--	Springfield & Ozark	35
WIMS	98661	405	105	1200	80	1994	Domestic	--	Springfield & Ozark	100
WIMS	98772	480	180	--	150	1993	Domestic	--	Ozark Aquifer	35
WIMS	108505	425	210	--	150	1994	Domestic	--	Ozark Aquifer	60
WIMS	135527	365	189	--	90	1995	Domestic	--	Ozark Aquifer	150
WIMS	138832	450	295	1180	200	1995	Domestic	--	Ozark Aquifer	30
WIMS	143290	415	100	--	150	1996	Domestic	--	Springfield & Ozark	55
WIMS	143313	312	105	--	60	1995	Domestic	--	Springfield & Ozark	50
WIMS	143335	395	100	--	120	1995	Domestic	--	Springfield & Ozark	40
WIMS	143336	455	100	--	150	1995	Domestic	--	Springfield & Ozark	45
WIMS	154402	400	260	--	120	1996	Domestic	--	Ozark Aquifer	60
WIMS	155792	385	170	1175	120	1996	Domestic	--	Ozark Aquifer	20
WIMS	158499	585	105	1240	180	1996	Domestic	--	Springfield & Ozark	50
WIMS	170010	475	113	1230	150	1997	Domestic	--	Springfield & Ozark	60
WIMS	170034	435	100	--	--	1997	Domestic	--	Springfield & Ozark	60
WIMS	170511	650	337	1190	165	1999	Domestic	--	Ozark Aquifer	50
WIMS	178707	385	126	--	120	1997	Domestic	--	Ozark Aquifer	80
WIMS	181702	388	106	1170	150	1997	Domestic	--	Springfield & Ozark	90
WIMS	182172	400	340	1180	160	1997	Domestic	--	Ozark Aquifer	80
WIMS	186569	510	232	1190	170	1998	Domestic	--	Ozark Aquifer	40
WIMS	191190	377	105	1180	--	1998	Domestic	--	Springfield & Ozark	40
WIMS	193083	348	147	--	120	1998	Domestic	--	Ozark Aquifer	40
WIMS	198382	435	100	--	180	1998	Domestic	--	Springfield & Ozark	60
WIMS	199514	450	260	--	200	1998	Domestic	--	Ozark Aquifer	654
WIMS	209122	455	126	--	--	1998	Domestic	--	Ozark Aquifer	60
WIMS	209171	455	100	1220	150	1998	Domestic	--	Springfield & Ozark	60
WIMS	210160	445	105	--	200	1998	Domestic	--	Springfield & Ozark	40
WIMS	211346	428	120	--	165	1999	Domestic	--	Ozark Aquifer	80
WIMS	211678	425	105	1190	150	1998	Domestic	--	Springfield & Ozark	30
WIMS	212117	388	105	1267	90	1999	Domestic	--	Springfield & Ozark	50
WIMS	214191	450	274	1180	210	1999	Domestic	--	Ozark Aquifer	--
WIMS	214192	450	253	--	200	1999	Domestic	--	Ozark Aquifer	40
WIMS	224236	400	260	--	160	1999	Domestic	--	Ozark Aquifer	60

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	227110	405	105	1250	180	1999	Domestic	--	Springfield & Ozark	40
WIMS	232319	902	380	--	150	2001	Domestic	--	Ozark Aquifer	60
WIMS	232341	391	168	1240	200	1999	Domestic	--	Ozark Aquifer	60
WIMS	233628	585	189	--	120	1999	Domestic	--	Ozark Aquifer	120
WIMS	233674	585	294	1230	160	2000	Domestic	--	Ozark Aquifer	45
WIMS	252806	570	358	--	210	2001	Domestic	--	Ozark Aquifer	60
WIMS	252807	550	232	--	165	2001	Domestic	--	Ozark Aquifer	40
WIMS	253940	325	210	1120	100	2000	Domestic	--	Ozark Aquifer	80
WIMS	254142	425	105	1230	120	2000	Domestic	--	Springfield & Ozark	50
WIMS	261202	425	105	1250	200	2000	Domestic	--	Springfield & Ozark	30
WIMS	265863	405	105	--	150	2001	Domestic	--	Springfield & Ozark	70
WIMS	270537	350	105	--	120	2001	Domestic	--	Springfield & Ozark	60
WIMS	273352	510	232	1120	130	2001	Domestic	--	Ozark Aquifer	40
WIMS	281364	625	220	1240	170	2001	Domestic	--	Ozark Aquifer	60
WIMS	281857	425	105	1250	200	2001	Domestic	--	Springfield & Ozark	60
WIMS	287228	456	120	--	200	2002	Domestic	--	Ozark Aquifer	60
WIMS	296979	505	105	--	210	2003	Domestic	--	Springfield & Ozark	40
WIMS	310477	325	189	1040	60	2003	Domestic	--	Ozark Aquifer	60
WIMS	318469	400	210	--	80	2003	Domestic	--	Ozark Aquifer	60
WIMS	319717	610	337	--	198	2004	Domestic	--	Ozark Aquifer	50
WIMS	319718	570	296	--	198	2004	Domestic	--	Ozark Aquifer	40
WIMS	319719	450	296	--	200	2003	Domestic	--	Ozark Aquifer	60
WIMS	321614	450	105	--	90	2003	Domestic	--	Springfield & Ozark	45
WIMS	335521	485	105	--	210	2004	Domestic	--	Springfield & Ozark	45
WIMS	335524	425	105	--	180	2004	Domestic	--	Springfield & Ozark	50
WIMS	337800	425	126	1170	245	2004	Domestic	--	Ozark Aquifer	45
WIMS	362112	485	105	--	210	2005	Domestic	--	Springfield & Ozark	45
WIMS	368583	610	359	--	230	2006	Domestic	--	Ozark Aquifer	60
WIMS	394756	455	273	1191	150	2008	Domestic	--	Ozark Aquifer	60
WIMS	413960	505	105	--	150	2007	Domestic	--	Springfield & Ozark	50
WIMS	417205	365	105	--	90	2014	Domestic	--	Springfield & Ozark	60
WIMS	417212	425	105	--	270	2014	Domestic	--	Springfield & Ozark	60
WIMS	421795	415	105	1241	180	2010	Domestic	--	Springfield & Ozark	60
WIMS	491064	505	210	--	150	2014	Domestic	--	Ozark Aquifer	40
WIMS	505311	305	105	--	90	2015	Domestic	--	Springfield & Ozark	60
Logmian	3417	125	6	1200	105	1935	Domestic	Butcher	Springfield Plateau	--
Logmian	4917	230	68	1238	--	1938	Domestic	Hardesty	Springfield & Ozark	1
Logmian	5283	285	--	1247	--	1938	Domestic	Ramsey	Springfield & Ozark	--
Logmian	5612	355	--	1259	--	1939	Domestic	Pamplin	Springfield & Ozark	10
Logmian	6014	310	6	1185	--	1939	Domestic	Dawes	Springfield & Ozark	10
Logmian	6047	146	13	1234	90	1940	Domestic	Fox	Springfield & Ozark	1
Logmian	9991	335	30	1246	185	1947	Domestic	McKinley	Springfield & Ozark	8
Logmian	9992	380	--	1275	225	1947	Domestic	Helbig	Springfield & Ozark	10
Logmian	10879	330	142	1285	220	1949	Domestic	Davis	Ozark Aquifer	4

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
Logmian	12275	235	35	1254	170	1953	Domestic	Walton	Springfield & Ozark	5
Logmian	13316	330	23	1243	190	1954	Domestic	Blalock	Springfield & Ozark	20
Logmian	15368	335	150	1240	225	1956	Domestic	Bunselmeyer	Ozark Aquifer	13
Logmian	19775	315	50	1247	167	1961	Domestic	Durbin	Springfield & Ozark	10
Logmian	19841	367	75	1272	--	1961	Domestic	Glendenning	Springfield & Ozark	21

Wells found within 1 to 2 miles of the site: 126

2 to 3 Miles

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
PDWP	100654	1366	253	--	130	1954	Municipal	City of Springfield	Ozark Aquifer	1137
PDWP	100657	1403	315	--	114	1954	Municipal	City of Springfield	Ozark Aquifer	437
PDWP	100668	800	402	--	231	1968	Community Public	Country Squire Village	Ozark Aquifer	--
PDWP	103009	640	340	1220	180	1997	Non-community Public	Northwest Baptist Church	Ozark Aquifer	40
PDWP	104108	640	--	--	200	1999	Non-community Public	Evergreen Church	Ozark Aquifer	--
PDWP	104510	--	360	--	--	--	Non-community Public	Conco Quarries	Ozark Aquifer	--
PDWP	104644	480	80	--	--	--	Non-community Public	Wee Care Devel. Center	Springfield & Ozark	--
PDWP	106572	635	566	1270	220	2013	Non-community Public	Crossroads Eagle Stop	Ozark Aquifer	100
WIMS	4612	308	105	--	130	1987	Domestic	--	Springfield & Ozark	80
WIMS	4613	385	84	--	120	1987	Domestic	--	Springfield & Ozark	60
WIMS	6791	465	210	1300	150	1988	Domestic	--	Ozark Aquifer	60
WIMS	6883	385	252	1130	100	1988	Domestic	--	Ozark Aquifer	120
WIMS	7205	375	154	--	120	1988	Domestic	--	Ozark Aquifer	30
WIMS	10380	305	252	1200	100	1988	Domestic	--	Ozark Aquifer	100
WIMS	12683	330	80	1250	90	1987	Domestic	--	Springfield & Ozark	30
WIMS	13614	504	315	1200	128	1988	Domestic	--	Ozark Aquifer	30
WIMS	13615	405	252	1150	120	1989	Domestic	--	Ozark Aquifer	35
WIMS	33490	460	--	1270	270	1990	Domestic	--	Springfield & Ozark	--
WIMS	33497	420	117	--	250	1990	Domestic	--	Ozark Aquifer	--
WIMS	34633	405	280	--	120	1989	Domestic	--	Ozark Aquifer	35
WIMS	35725	430	215	1200	120	1989	Domestic	--	Ozark Aquifer	50
WIMS	39134	405	294	1150	120	1990	Domestic	--	Ozark Aquifer	40
WIMS	40795	450	205	1205	120	1989	Domestic	--	Ozark Aquifer	45
WIMS	41082	540	360	--	150	1989	Domestic	--	Ozark Aquifer	35
WIMS	42420	400	185	--	150	1990	Domestic	--	Ozark Aquifer	45
WIMS	44740	305	150	--	150	1989	Domestic	--	Ozark Aquifer	30
WIMS	44769	430	231	1250	150	1989	Domestic	--	Ozark Aquifer	60
WIMS	46818	445	231	1222	130	1990	Domestic	--	Ozark Aquifer	25
WIMS	47897	400	160	1160	120	1991	Domestic	--	Ozark Aquifer	60
WIMS	55748	425	329	--	90	1990	Domestic	--	Ozark Aquifer	70
WIMS	57638	345	210	1200	130	1990	Domestic	--	Ozark Aquifer	30
WIMS	60361	385	210	1280	120	1990	Domestic	--	Ozark Aquifer	60
WIMS	60366	365	231	1160	120	1990	Domestic	--	Ozark Aquifer	120
WIMS	61361	400	222	1240	150	1991	Domestic	--	Ozark Aquifer	50
WIMS	63272	345	240	1195	120	1991	Domestic	--	Ozark Aquifer	100

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	63302	605	315	1240	180	1991	Domestic	--	Ozark Aquifer	25
WIMS	75203	365	210	1350	150	1991	Domestic	--	Ozark Aquifer	40
WIMS	75219	465	168	1210	150	1992	Domestic	--	Ozark Aquifer	25
WIMS	77529	425	84	--	150	1992	Domestic	--	Springfield & Ozark	40
WIMS	79477	425	315	--	150	1992	Domestic	--	Ozark Aquifer	80
WIMS	82397	520	--	--	150	1993	Domestic	--	Springfield & Ozark	--
WIMS	82402	375	60	1175	150	1993	Domestic	--	Springfield & Ozark	35
WIMS	82411	375	83	1210	150	1993	Domestic	--	Springfield & Ozark	35
WIMS	82416	520	--	1250	150	1992	Domestic	--	Springfield & Ozark	60
WIMS	83959	335	150	1165	120	1992	Domestic	--	Ozark Aquifer	40
WIMS	85720	250	201	--	90	1992	Domestic	--	Ozark Aquifer	60
WIMS	89160	551	295	--	--	1994	Domestic	--	Ozark Aquifer	60
WIMS	89699	425	252	1260	90	1993	Domestic	--	Ozark Aquifer	90
WIMS	90816	550	360	1240	170	1993	Domestic	--	Ozark Aquifer	40
WIMS	92787	325	210	1100	60	1993	Domestic	--	Ozark Aquifer	60
WIMS	120718	425	105	1180	150	1994	Domestic	--	Springfield & Ozark	60
WIMS	120740	565	105	1230	250	1994	Domestic	--	Springfield & Ozark	35
WIMS	126171	400	100	--	180	1994	Domestic	--	Springfield & Ozark	55
WIMS	127819	396	300	--	90	1995	Domestic	--	Ozark Aquifer	30
WIMS	128881	325	300	--	60	1994	Domestic	--	Ozark Aquifer	90
WIMS	138769	435	100	--	150	1995	Domestic	--	Springfield & Ozark	50
WIMS	138796	435	100	1120	90	1995	Domestic	--	Springfield & Ozark	40
WIMS	138798	312	100	--	90	1995	Domestic	--	Springfield & Ozark	45
WIMS	140491	405	105	--	150	1995	Domestic	--	Springfield & Ozark	100
WIMS	143326	415	140	--	120	1995	Domestic	--	Ozark Aquifer	45
WIMS	147447	425	170	1200	150	1995	Domestic	--	Ozark Aquifer	35
WIMS	148384	425	105	1140	150	1996	Domestic	--	Springfield & Ozark	40
WIMS	154403	300	--	--	--	1996	Domestic	--	Springfield & Ozark	--
WIMS	155764	425	210	--	96	1996	Domestic	--	Ozark Aquifer	60
WIMS	157188	745	281	--	150	1996	Domestic	--	Ozark Aquifer	35
WIMS	157496	601	303	--	150	1996	Domestic	--	Ozark Aquifer	40
WIMS	158497	615	105	1305	180	1996	Domestic	--	Springfield & Ozark	50
WIMS	169934	585	105	1225	200	1996	Domestic	--	Springfield & Ozark	30
WIMS	170037	435	140	--	--	1997	Domestic	--	Ozark Aquifer	100
WIMS	170172	580	104	--	190	1997	Domestic	--	Springfield & Ozark	45
WIMS	173387	710	316	--	280	1997	Domestic	--	Ozark Aquifer	30
WIMS	181657	416	106	--	200	1997	Domestic	--	Springfield & Ozark	35
WIMS	181699	368	106	1200	150	1997	Domestic	--	Springfield & Ozark	60
WIMS	185256	305	105	--	--	1997	Domestic	--	Springfield & Ozark	25
WIMS	185601	400	244	--	160	1997	Domestic	--	Ozark Aquifer	60
WIMS	191992	365	105	--	120	1997	Domestic	--	Springfield & Ozark	40
WIMS	193191	467	105	--	125	1997	Domestic	--	Springfield & Ozark	50
WIMS	193511	400	105	--	90	1998	Domestic	--	Springfield & Ozark	60
WIMS	193527	400	105	--	--	1998	Domestic	--	Springfield & Ozark	--

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	198419	555	100	--	180	1998	Domestic	--	Springfield & Ozark	60
WIMS	198420	431	105	--	120	1998	Domestic	--	Springfield & Ozark	60
WIMS	199088	410	147	--	240	1998	Domestic	--	Ozark Aquifer	40
WIMS	209164	410	160	--	--	1998	Domestic	--	Ozark Aquifer	50
WIMS	209305	310	100	--	100	1999	Domestic	--	Springfield & Ozark	60
WIMS	210149	425	105	--	100	1998	Domestic	--	Springfield & Ozark	60
WIMS	211294	400	127	--	90	1999	Domestic	--	Ozark Aquifer	60
WIMS	217809	330	100	--	90	1999	Domestic	--	Springfield & Ozark	60
WIMS	217815	373	160	--	120	1999	Domestic	--	Ozark Aquifer	60
WIMS	228918	400	280	--	90	1999	Domestic	--	Ozark Aquifer	60
WIMS	232285	310	120	--	160	2001	Domestic	--	Ozark Aquifer	40
WIMS	233638	645	378	1220	150	2000	Domestic	--	Ozark Aquifer	120
WIMS	233717	588	105	1210	200	1999	Domestic	--	Springfield & Ozark	--
WIMS	233814	305	105	1120	90	1999	Domestic	--	Springfield & Ozark	50
WIMS	236336	550	253	1250	200	2000	Domestic	--	Ozark Aquifer	40
WIMS	238131	425	105	--	180	2000	Domestic	--	Springfield & Ozark	30
WIMS	248526	425	105	--	120	2000	Domestic	--	Springfield & Ozark	40
WIMS	248662	505	105	--	210	2000	Domestic	--	Springfield & Ozark	80
WIMS	248698	505	105	1210	120	2000	Domestic	--	Springfield & Ozark	60
WIMS	249188	400	260	1270	180	2001	Domestic	--	Ozark Aquifer	60
WIMS	249525	630	295	--	210	2000	Domestic	--	Ozark Aquifer	40
WIMS	254107	465	105	--	210	2000	Domestic	--	Springfield & Ozark	40
WIMS	257507	400	105	--	100	2000	Domestic	--	Springfield & Ozark	50
WIMS	281592	390	190	1220	--	2001	Domestic	--	Ozark Aquifer	40
WIMS	281866	445	189	1210	160	2001	Domestic	--	Ozark Aquifer	50
WIMS	286356	365	105	1220	--	2003	Domestic	--	Springfield & Ozark	60
WIMS	288259	405	105	1220	140	2002	Domestic	--	Springfield & Ozark	--
WIMS	288627	630	253	--	200	2002	Domestic	--	Ozark Aquifer	70
WIMS	295907	520	100	--	222	2002	Domestic	--	Springfield & Ozark	60
WIMS	308181	420	273	--	200	2003	Domestic	--	Ozark Aquifer	--
WIMS	310222	425	105	1240	180	2003	Domestic	--	Springfield & Ozark	40
WIMS	310223	425	105	1250	180	2003	Domestic	--	Springfield & Ozark	40
WIMS	318376	415	105	--	330	2003	Domestic	--	Springfield & Ozark	40
WIMS	318458	440	100	--	--	2003	Domestic	--	Springfield & Ozark	60
WIMS	318466	560	100	--	180	2003	Domestic	--	Springfield & Ozark	60
WIMS	328636	410	105	--	130	2003	Domestic	--	Springfield & Ozark	40
WIMS	331865	385	105	--	150	2004	Domestic	--	Springfield & Ozark	40
WIMS	333028	460	200	--	90	2004	Domestic	--	Ozark Aquifer	40
WIMS	334535	510	100	--	200	2004	Domestic	--	Springfield & Ozark	60
WIMS	334542	550	100	--	150	2004	Domestic	--	Springfield & Ozark	40
WIMS	334554	735	120	--	120	2004	Domestic	--	Ozark Aquifer	60
WIMS	334570	385	105	--	90	2004	Domestic	--	Springfield & Ozark	60
WIMS	335963	510	105	--	240	2004	Domestic	--	Springfield & Ozark	40
WIMS	337845	365	105	1180	200	2005	Domestic	--	Springfield & Ozark	60

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	338315	390	126	1210	165	2004	Domestic	--	Ozark Aquifer	60
WIMS	343116	510	105	--	90	2005	Domestic	--	Springfield & Ozark	30
WIMS	350348	410	255	--	--	2005	Domestic	--	Ozark Aquifer	60
WIMS	365304	510	105	--	180	2005	Domestic	--	Springfield & Ozark	40
WIMS	365429	385	105	--	270	2006	Domestic	--	Springfield & Ozark	70
WIMS	365470	565	--	--	280	2006	Domestic	--	Springfield & Ozark	60
WIMS	366021	355	120	--	--	2006	Domestic	--	Ozark Aquifer	60
WIMS	367019	545	105	--	120	2005	Domestic	--	Springfield & Ozark	45
WIMS	367020	425	105	--	130	2005	Domestic	--	Springfield & Ozark	45
WIMS	376400	500	105	--	160	2006	Domestic	--	Springfield & Ozark	60
WIMS	377338	385	105	--	120	2007	Domestic	--	Springfield & Ozark	60
WIMS	378931	380	252	--	180	2006	Domestic	--	Ozark Aquifer	80
WIMS	378952	540	126	--	180	2006	Domestic	--	Ozark Aquifer	120
WIMS	379211	585	105	--	360	2006	Domestic	--	Springfield & Ozark	60
WIMS	379833	550	255	--	165	2006	Domestic	--	Ozark Aquifer	60
WIMS	379834	450	169	--	--	2006	Domestic	--	Ozark Aquifer	40
WIMS	394087	545	--	--	160	2006	Domestic	--	Springfield & Ozark	45
WIMS	395839	500	102	--	240	2007	Domestic	--	Springfield & Ozark	60
WIMS	414091	450	211	--	100	2008	Domestic	--	Ozark Aquifer	60
WIMS	446315	485	294	--	135	2010	Domestic	--	Ozark Aquifer	50
WIMS	446350	415	106	--	150	2010	Domestic	--	Springfield & Ozark	60
WIMS	451260	335	105	--	90	2010	Domestic	--	Springfield & Ozark	40
WIMS	458843	405	294	--	140	2012	Domestic	--	Ozark Aquifer	50
WIMS	467502	460	105	--	180	2013	Domestic	--	Springfield & Ozark	60
WIMS	479004	410	210	--	101	2014	Domestic	--	Ozark Aquifer	40
WIMS	496446	485	105	--	120	2015	Domestic	--	Springfield & Ozark	40
Logmain	3492	60	8	1230	23	1935	Domestic	Nelson	Springfield Plateau	--
Logmain	4856	60	--	1258	--	1938	Domestic	Prophet	Springfield Plateau	--
Logmain	4857	350	--	1180	60	1938	Domestic	Montgomery	Springfield & Ozark	3
Logmain	4914	90	4	1171	--	1938	Domestic	Murray	Springfield Plateau	1
Logmain	5987	328	105	1242	90	1940	Domestic	Greenwade	Springfield & Ozark	20
Logmain	6228	210	--	1227	--	1940	Domestic	Yates	Springfield & Ozark	--
Logmain	8135	81	16	1230	--	1942	Domestic	Dickens	Springfield Plateau	--
Logmain	8917	57	16	1300	14	1945	Domestic	Emerson	Springfield Plateau	2
Logmain	10756	330	27	1279	230	1947	Domestic	Morris	Springfield & Ozark	2
Logmain	13774	205	88	1278	110	1955	Domestic	Shoemate	Springfield & Ozark	9
Logmain	16965	335	17	1195	140	1953	Domestic	Selph	Springfield & Ozark	3
Logmain	19303	366	--	1286	180	1960	Domestic	Race	Springfield & Ozark	10

Wells found within 2 to 3 miles of the site: 161

3 to 4 Miles

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
PDWP	100658	1401	302	--	144	1954	Municipal	Springfield	Ozark Aquifer	757
PDWP	100662	1404	148	--	96	1915	Municipal	City of Springfield	Ozark Aquifer	2100

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
PDWP	103205	750	375	1260	--	1978	Community Public	Spfld-Branson Reg. Airport	Ozark Aquifer	--
PDWP	104507	1130	380	1240	178	1961	Municipal	City of Willard	Ozark Aquifer	600
PDWP	105472	--	--	--	--	--	Non-community Public	Virgil's Bar & Self Storage	Unknown	--
WIMS	4971	430	217	--	175	1987	Domestic	--	Ozark Aquifer	25
WIMS	6709	405	261	--	120	1988	Domestic	--	Ozark Aquifer	30
WIMS	6794	305	210	1300	100	1988	Domestic	--	Ozark Aquifer	70
WIMS	8085	308	171	1250	130	1988	Domestic	--	Ozark Aquifer	80
WIMS	9180	325	210	1300	120	1988	Domestic	--	Ozark Aquifer	60
WIMS	11674	350	152	1270	145	1988	Domestic	--	Ozark Aquifer	30
WIMS	13684	375	153	1200	180	1989	Domestic	--	Ozark Aquifer	70
WIMS	17678	365	236	--	110	1988	Domestic	--	Ozark Aquifer	50
WIMS	34836	405	--	1237	--	1990	Domestic	--	Springfield & Ozark	--
WIMS	35184	470	151	--	60	1989	Domestic	--	Ozark Aquifer	60
WIMS	35187	425	165	1260	150	1989	Domestic	--	Ozark Aquifer	45
WIMS	38863	568	211	1240	150	1990	Domestic	--	Ozark Aquifer	25
WIMS	38916	308	--	1165	--	1990	Domestic	--	Springfield & Ozark	--
WIMS	39096	365	--	1220	--	1989	Domestic	--	Springfield & Ozark	--
WIMS	39121	405	210	1215	150	1990	Domestic	--	Ozark Aquifer	80
WIMS	41089	435	276	1265	290	1990	Domestic	--	Ozark Aquifer	35
WIMS	43178	435	182	1235	120	1990	Domestic	--	Ozark Aquifer	25
WIMS	46745	365	--	1230	--	1990	Domestic	--	Springfield & Ozark	--
WIMS	46837	325	210	1200	130	1990	Domestic	--	Ozark Aquifer	50
WIMS	57598	350	161	--	120	1990	Domestic	--	Ozark Aquifer	60
WIMS	61803	417	211	1210	120	1991	Domestic	--	Ozark Aquifer	25
WIMS	63275	345	--	--	--	1991	Domestic	--	Springfield & Ozark	--
WIMS	63348	405	252	1160	120	1991	Domestic	--	Ozark Aquifer	120
WIMS	63730	288	170	1130	60	1991	Domestic	--	Ozark Aquifer	100
WIMS	75990	425	173	--	150	1992	Domestic	--	Ozark Aquifer	60
WIMS	77426	400	241	1260	90	1992	Domestic	--	Ozark Aquifer	100
WIMS	78358	445	293	1265	250	1992	Domestic	--	Ozark Aquifer	40
WIMS	78813	450	--	1195	--	1994	Domestic	--	Springfield & Ozark	--
WIMS	82398	420	155	1240	180	1993	Domestic	--	Ozark Aquifer	35
WIMS	82650	300	170	1130	70	1992	Domestic	--	Ozark Aquifer	60
WIMS	86001	325	161	1140	180	1992	Domestic	--	Ozark Aquifer	45
WIMS	90157	385	231	1230	150	1993	Domestic	--	Ozark Aquifer	60
WIMS	90817	510	315	1165	180	1993	Domestic	--	Ozark Aquifer	40
WIMS	92830	325	270	--	150	1993	Domestic	--	Ozark Aquifer	80
WIMS	93281	460	180	1205	120	1993	Domestic	--	Ozark Aquifer	40
WIMS	97220	400	100	--	120	1994	Domestic	--	Springfield & Ozark	60
WIMS	98608	500	456	--	160	1994	Domestic	--	Ozark Aquifer	60
WIMS	98633	465	105	1235	200	1994	Domestic	--	Springfield & Ozark	100
WIMS	98799	440	100	1250	120	1994	Domestic	--	Springfield & Ozark	45
WIMS	98806	480	--	1240	--	1994	Domestic	--	Springfield & Ozark	--
WIMS	126138	420	160	1260	120	1994	Domestic	--	Ozark Aquifer	45

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	126166	580	150	--	150	1994	Domestic	--	Ozark Aquifer	55
WIMS	126172	460	100	--	--	1994	Domestic	--	Springfield & Ozark	65
WIMS	139581	417	294	--	150	1995	Domestic	--	Ozark Aquifer	30
WIMS	140472	584	105	--	130	1995	Domestic	--	Springfield & Ozark	40
WIMS	140496	545	105	--	150	1995	Domestic	--	Springfield & Ozark	30
WIMS	141624	300	200	--	60	1995	Domestic	--	Ozark Aquifer	60
WIMS	143324	455	100	1190	120	1995	Domestic	--	Springfield & Ozark	50
WIMS	158381	300	210	--	60	1996	Domestic	--	Ozark Aquifer	80
WIMS	158508	440	100	--	200	1996	Domestic	--	Springfield & Ozark	40
WIMS	158618	285	147	--	60	1996	Domestic	--	Ozark Aquifer	60
WIMS	167383	456	106	--	210	1996	Domestic	--	Springfield & Ozark	90
WIMS	170009	415	100	1210	150	1997	Domestic	--	Springfield & Ozark	60
WIMS	170022	390	100	--	160	1997	Domestic	--	Springfield & Ozark	80
WIMS	170489	490	270	--	200	1999	Domestic	--	Ozark Aquifer	40
WIMS	178063	400	325	--	180	1997	Domestic	--	Ozark Aquifer	60
WIMS	178065	425	220	1210	--	1997	Domestic	--	Ozark Aquifer	80
WIMS	180322	550	316	1145	280	1997	Domestic	--	Ozark Aquifer	--
WIMS	186528	450	169	--	100	1998	Domestic	--	Ozark Aquifer	40
WIMS	190932	350	100	--	120	1997	Domestic	--	Springfield & Ozark	50
WIMS	193065	348	273	1200	70	1998	Domestic	--	Ozark Aquifer	150
WIMS	198299	509	106	1260	--	1998	Domestic	--	Springfield & Ozark	45
WIMS	198411	556	180	1200	--	1998	Domestic	--	Ozark Aquifer	--
WIMS	199531	400	147	--	90	1998	Domestic	--	Ozark Aquifer	60
WIMS	216237	428	105	--	180	1999	Domestic	--	Springfield & Ozark	35
WIMS	217832	495	126	1240	--	1999	Domestic	--	Ozark Aquifer	60
WIMS	228216	625	126	--	140	1999	Domestic	--	Ozark Aquifer	80
WIMS	232145	500	280	--	160	1999	Domestic	--	Ozark Aquifer	60
WIMS	232372	500	100	--	150	2000	Domestic	--	Springfield & Ozark	55
WIMS	236326	510	190	--	170	2000	Domestic	--	Ozark Aquifer	--
WIMS	236916	650	295	1250	265	2000	Domestic	--	Ozark Aquifer	50
WIMS	237960	445	105	1220	180	2000	Domestic	--	Springfield & Ozark	60
WIMS	237961	445	105	1230	180	2000	Domestic	--	Springfield & Ozark	60
WIMS	249206	400	189	--	180	2000	Domestic	--	Ozark Aquifer	60
WIMS	249725	550	295	1190	190	2000	Domestic	--	Ozark Aquifer	40
WIMS	255529	450	211	--	180	2002	Domestic	--	Ozark Aquifer	40
WIMS	256407	425	240	--	150	2000	Domestic	--	Ozark Aquifer	60
WIMS	257478	347	105	1120	120	2000	Domestic	--	Springfield & Ozark	40
WIMS	271639	511	105	--	210	2001	Domestic	--	Springfield & Ozark	30
WIMS	273238	551	340	--	300	2001	Domestic	--	Ozark Aquifer	40
WIMS	281803	630	253	--	200	2002	Domestic	--	Ozark Aquifer	70
WIMS	286360	305	210	1050	90	2003	Domestic	--	Ozark Aquifer	50
WIMS	289141	425	105	1240	210	2002	Domestic	--	Springfield & Ozark	40
WIMS	290875	455	290	--	200	2002	Domestic	--	Ozark Aquifer	50
WIMS	293097	600	105	--	200	2001	Domestic	--	Springfield & Ozark	175

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	293840	490	168	1260	180	2002	Domestic	--	Ozark Aquifer	--
WIMS	297981	400	200	--	150	2002	Domestic	--	Ozark Aquifer	40
WIMS	297982	400	180	--	150	2002	Domestic	--	Ozark Aquifer	50
WIMS	309117	425	105	--	180	2003	Domestic	--	Springfield & Ozark	40
WIMS	309123	305	105	1130	120	2003	Domestic	--	Springfield & Ozark	40
WIMS	310485	445	105	1240	150	2003	Domestic	--	Springfield & Ozark	50
WIMS	318691	450	148	--	130	2003	Domestic	--	Ozark Aquifer	40
WIMS	331591	490	254	--	165	2006	Domestic	--	Ozark Aquifer	60
WIMS	331601	510	233	--	165	2006	Domestic	--	Ozark Aquifer	60
WIMS	331829	465	105	1250	270	2004	Domestic	--	Springfield & Ozark	40
WIMS	335385	450	232	--	260	2005	Domestic	--	Ozark Aquifer	50
WIMS	335386	490	254	--	231	2005	Domestic	--	Ozark Aquifer	30
WIMS	335556	505	147	--	180	2005	Domestic	--	Ozark Aquifer	45
WIMS	337858	425	105	--	--	2005	Domestic	--	Springfield & Ozark	--
WIMS	350067	450	100	--	--	2005	Domestic	--	Springfield & Ozark	--
WIMS	350344	450	190	--	--	2005	Domestic	--	Ozark Aquifer	--
WIMS	350421	610	275	--	165	2005	Domestic	--	Ozark Aquifer	60
WIMS	355805	430	105	1200	100	2005	Domestic	--	Springfield & Ozark	40
WIMS	362127	425	105	--	150	2005	Domestic	--	Springfield & Ozark	50
WIMS	362131	645	105	--	120	2005	Domestic	--	Springfield & Ozark	60
WIMS	367151	450	147	--	110	2006	Domestic	--	Ozark Aquifer	60
WIMS	376116	510	212	--	280	2006	Domestic	--	Ozark Aquifer	40
WIMS	376119	450	231	--	--	2006	Domestic	--	Ozark Aquifer	--
WIMS	376378	645	126	--	180	2006	Domestic	--	Ozark Aquifer	65
WIMS	377336	365	126	--	130	2007	Domestic	--	Ozark Aquifer	55
WIMS	377995	410	105	--	90	2006	Domestic	--	Springfield & Ozark	50
WIMS	379835	510	148	--	100	2006	Domestic	--	Ozark Aquifer	60
WIMS	394098	605	105	--	180	2006	Domestic	--	Springfield & Ozark	45
WIMS	395393	510	210	--	120	2009	Domestic	--	Ozark Aquifer	30
WIMS	395682	420	252	--	150	2007	Domestic	--	Ozark Aquifer	80
WIMS	395700	480	189	--	210	2006	Domestic	--	Ozark Aquifer	75
WIMS	396192	650	296	--	320	2007	Domestic	--	Ozark Aquifer	50
WIMS	396261	590	293	--	165	2007	Domestic	--	Ozark Aquifer	45
WIMS	402514	484	180	--	--	2007	Domestic	--	Ozark Aquifer	60
WIMS	402519	504	273	--	280	2007	Domestic	--	Ozark Aquifer	60
WIMS	402551	344	120	--	65	2007	Domestic	--	Ozark Aquifer	40
WIMS	404272	380	105	--	100	2007	Domestic	--	Springfield & Ozark	60
WIMS	417234	185	105	--	70	2015	Domestic	--	Springfield & Ozark	150
WIMS	417337	485	105	--	70	2008	Domestic	--	Springfield & Ozark	40
WIMS	418659	460	105	--	120	2008	Domestic	--	Springfield & Ozark	45
WIMS	419476	350	105	--	210	2007	Domestic	--	Springfield & Ozark	40
WIMS	419535	460	259	1260	120	2008	Domestic	--	Ozark Aquifer	60
WIMS	419543	460	273	1208	120	2008	Domestic	--	Ozark Aquifer	80
WIMS	420063	605	105	--	240	2008	Domestic	--	Springfield & Ozark	35

Non-monitoring wells located within 4 miles of the Fantastic Caverns site.

Source	Well ID	Depth	Casing	Elev.	SWL	Date	Use	Owner	Geohydrologic Unit	Yield
WIMS	421789	500	252	1269	120	2011	Domestic	--	Ozark Aquifer	60
WIMS	421971	400	105	1256	150	2009	Domestic	--	Springfield & Ozark	80
WIMS	432997	345	105	--	150	2011	Domestic	--	Springfield & Ozark	50
WIMS	433015	500	275	1202	200	2009	Domestic	--	Ozark Aquifer	60
WIMS	433268	510	260	--	160	2008	Domestic	--	Ozark Aquifer	40
WIMS	467993	545	105	--	120	2012	Domestic	--	Springfield & Ozark	40
WIMS	475497	405	126	--	--	2014	Domestic	--	Ozark Aquifer	50
WIMS	479629	410	105	--	150	2013	Domestic	--	Springfield & Ozark	50
WIMS	487731	465	105	--	150	2014	Domestic	--	Springfield & Ozark	60
WIMS	491128	405	105	--	120	2014	Domestic	--	Springfield & Ozark	35
WIMS	491301	510	105	--	150	2015	Domestic	--	Springfield & Ozark	40
WIMS	492400	390	105	--	90	2015	Domestic	--	Springfield & Ozark	40
Logmain	3448	127	21	1278	30	1935	Domestic	Holt	Springfield Plateau	--
Logmain	3608	149	15	1198	100	1936	Domestic	Shelton	Springfield Plateau	1
Logmain	3878	216	17	1235	50	1936	Domestic	Mincks	Springfield Plateau	7
Logmain	4363	345	--	1240	--	1937	Domestic	Parks	Springfield & Ozark	--
Logmain	4520	216	16	1200	108	1937	Domestic	Tuck	Springfield Plateau	--
Logmain	4975	150	31	1258	82	1938	Domestic	Prophet	Springfield Plateau	--
Logmain	5578	430	18	1251	190	1948	Domestic	Berg	Springfield & Ozark	3
Logmain	7860	275	--	1225	54	1942	Domestic	Schmidt	Springfield & Ozark	10
Logmain	8398	182	--	1237	--	1943	Domestic	Slatten	Springfield Plateau	--
Logmain	9103	250	19	1194	140	1946	Domestic	Smith	Springfield & Ozark	5
Logmain	10399	432	197	1243	195	1948	Domestic	Healey	Ozark Aquifer	5
Logmain	10589	--	--	1289	--	1948	Domestic	Berg	Springfield & Ozark	--
Logmain	10968	170	20	1314	--	1947	Domestic	Vaughn	Springfield Plateau	1
Logmain	10969	150	18	1293	--	1947	Domestic	Roelofsz	Springfield Plateau	5
Logmain	12036	168	49	1234	85	1952	Domestic	Sell	Springfield Plateau	5
Logmain	12580	339	120	1267	255	1953	Domestic	McCoy	Ozark Aquifer	2
Logmain	15840	465	31	1264	275	1957	Domestic	Loser	Springfield & Ozark	12
Logmain	16604	487	151	1269	270	1957	Domestic	Miller	Ozark Aquifer	10
Logmain	16915	425	21	1270	255	1957	Domestic	Keller	Springfield & Ozark	11
Logmain	17652	460	12	1246	--	1958	Domestic	Lyons	Springfield & Ozark	--
Logmain	18105	278	61	1157	90	1959	Domestic	Stone	Springfield & Ozark	30
Logmain	19776	380	35	1245	160	1961	Domestic	Morris	Springfield & Ozark	20
Logmain	21335	148	28	1271	124	1962	Domestic	Goodman	Springfield Plateau	5
Logmain	26073	500	70	1240	340	1968	Domestic	Tinsley	Springfield & Ozark	20
Logmain	26376	195	17	1068	53	1967	Domestic	Wallace	Springfield Plateau	10

Wells found within 3 to 4 miles of the site: 171

Table 2: Aquifer, Stratigraphy, and Hydrology of the Fantastic Caverns Site

System	Stratigraphic Unit	Thickness (feet)	Lithology	Nature of Porosity and Permeability	Hydraulic Conductivity (cm/sec)	Hydrologic Unit
Mississippian	**Burlington Limestone, Reeds Spring-Elsey Formation, and Pierson Limestone**	85 - 120	Cherty, coarse-grained, fossiliferous limestone	Limestone bedding seperations, fractures, and dissolution features; High permeability	7.8×10^{-3}	**Springfield Plateau Aquifer**
Mississippian	**Compton Limestone**	5 - 12	Argillaceous limestone and shale	Bedding seperations, fractures, and possible dissolution features; Moderately low permeability	1×10^{-5} - 5×10^{-6}	**Ozark Confining Unit**
Ordovician	**Cotter and Jefferson City Dolomites, Roubidoux Formation, and Gasconade Dolomite**	837 - 885	Dolomite, cherty dolomite, sandstone, dolomitic sandstone, argillaceous dolomite, and minor shales	Bedding seperations and fractures; Moderate permeability	1×10^{-4} - 1×10^{-5}	**Ozark Aquifer**
Cambrian	**Eminence and Potosi Dolomites**	355 - 370				
Cambrian	**Derby-Doe Run Dolomites and Davis Formation**	> 50	Medium-crystalline dolomite with beds of silt, shale, and sand	Bedding seperations and fractures; Low permeability	3×10^{-11} - 9×10^{-13}	**St. Francois Confining Unit**

Data is from Davis, 1969; Imes and Smith, 1990; Imes and Emmett, 1994; and Water Resources Program, unpublished.

Table 3: Springs located within 4 miles of the Fantastic Caverns Site.

GISID	PRIMARY NAME	LOCATION	SECTION	TOWNSHIP	RANGE	ELEVATION	FLOW
770156	FANTASTIC CAVERNS SP	NE1/4, NW1/4, NE1/4	33	30N	22W	1100	No flow data
770157	PARRISH SPRING	SW1/4, SW1/4, SW1/4	28	30N	22W	1085	100 gpm - 1 cfs
770158	RHOADES SPRING	NE1/4, SE1/4, SE1/4	23	30N	22W	1080	10-100 gpm
770160	FLINTHILL CAVE SPRING	SW1/4, NW1/4, SW1/4	10	30N	22W	1150	10-100 gpm
770161	UPWELLING SPRING	NW1/4, SE1/4, NE1/4	36	30N	22W	1160	10-100 gpm
770162	UNNAMED SPRING	NW1/4, NW1/4, SW1/4	28	30N	22W	1160	No flow data
770022	GRACE SPRING	NE1/4, SE1/4, SE1/4	19	30N	22W	1040	1-10 gpm
770023	BETHESDA SPRING	SW1/4, SW1/4, SW1/4	20	30N	22W	1060	No flow data
770024	UNNAMED SPRING	SW1/4, SE1/4, NW1/4	20	30N	22W	1070	No flow data
770028	STODDARD SPRING	NW1/4, NW1/4, NW1/4	32	30N	22W	1120	1-10 gpm
770030	WEILAND SPRING	NE1/4, SE1/4, SE1/4	21	30N	22W	1195	10-100 gpm
770031	RITTER PARK SPRING	NW1/4, NW1/4, SE1/4	34	30N	22W	1075	10-100 gpm
770032	UNNAMED SPRING	SE1/4, SW1/4, NE1/4	35	30N	22W	1130	No flow data
770033	RITTER SPRING (WEST)	SE1/4, SE1/4, NE1/4	4	29N	22W	1125	1-10 cfs
770034	RITTER SPRING (EAST)	NW1/4, NW1/4, SW1/4	3	29N	22W	1125	1-10 cfs
770035	FULBRIGHT SPRING	SW1/4, NW1/4, NW1/4	2	29N	22W	1120	1-10 cfs
770046	UNNAMED SPRING	SE1/4, SW1/4, NW1/4	2	29N	22W	1200	No flow data
770062	UNNAMED SPRING	NW1/4, NE1/4, NE1/4	4	29N	22W	1095	No flow data
770072	QUARRY WALL SPRING	NE1/4, SE1/4, SE1/4	25	30N	23W	1210	No flow data
770074	WILLIAMS SPRING	NW1/4, NE1/4, NE1/4	33	30N	22W	1090	1-10 cfs
770075	UNNAMED SPRING	NE1/4, NE1/4, NE1/4	33	30N	22W	1110	No flow data
770076	UNNAMED SPRING	NE1/4, NE1/4, NE1/4	33	30N	22W	1080	No flow data
770077	UNNAMED SPRING	NW1/4, SE1/4, NE1/4	4	29N	22W	1110	No flow data
770078	FIREPLACE SPRING	SE1/4, SE1/4, NE1/4	4	29N	22W	1110	No flow data
770084	VICH SPRING	SE1/4, NE1/4, SW1/4	3	29N	22W	1260	No flow data
770107	UNNAMED SPRING	NW1/4, NE1/4, NE1/4	5	29N	22W	1245	No flow data
770110	UNNAMED SPRING	NE1/4, SE1/4, SE1/4	2	29N	22W	1210	No flow data
770184	UNNAMED SPRING	SE1/4, NE1/4	3	29N	22W	1130	No flow data
770201	PERTUCHE SPRING	SE1/4, SW1/4	28	30N	22W	1050	1-10 gpm
770208	BUNGE SPRING	SW1/4, NW1/4, SW1/4	28	30N	22W	1160	No flow data
770264	BUNGIE SPRING	SE1/4,SW1/4,SW1/4	28	30N	22W	1095	No flow data
770265	FILLED SINK SPRING	NW1/4,SW1/4,SE1/4	15	30N	22W	1180	No flow data
770266	HILLSIDE SPRING	SE1/4,NE1/4,SE1/4	9	30N	22W	1120	No flow data
770267	JOHNSTON SPRING	SE1/4,NE1/4,NW1/4	28	30N	22W	1070	No flow data
770268	JUNCTION SPRING	SW1/4,SW1/4,NE1/4	34	30N	22W	1070	No flow data
770269	LINE SPRING	SW1/4,SW1/4,SW1/4	36	30N	22W	1095	No flow data
770270	MCDANIEL SPRING	NE1/4,NW1/4,SE1/4	24	30N	22W	1150	No flow data
770271	MCDANIEL SOUTH SPRING	SW1/4,NE1/4,SW1/4	25	30N	22W	1130	No flow data
770272	RIMSTONE CAVE SPRING	NW1/4,SW1/4,NE1/4	28	30N	22W	1050	No flow data
770275	SPRINGHOUSE SPRING	SE1/4,NE1/4,SW1/4	9	30N	22W	1085	No flow data
770276	UNNAMED SPRING	SW1/4,NW1/4,SE1/4	15	30N	22W	1185	No flow data
770407	DICKERSON PARK SPRING	900E/W, 7150S/N	2	29N	22W	1170	10-100 cfs
770408	AMITY CAVE SPRING	2700N/S, 200E/W	2	29N	22W	1235	No flow data
770412	UNNAMED SPRING	1450E/W, 1340N/S	3	29N	22W	1210	No flow data

Springs are from MGS spring database. Locations were autoplotted be ArcView from UTM coordinates. Projected springs have not been field checked.

April 7, 2003

Mr. Scott Clardy, Director
Environmental Public Health Section
Missouri Department of Health and Senior Services
930 Wildwood
Jefferson City, MO 65109

RE: Litton Site, Greene County, Missouri

Dear Mr. Clardy:

The Missouri Department of Natural Resources is requesting that the Missouri Department of Health and Senior Services (DHSS) conduct sampling of private drinking water wells downgradient from the Litton Site in Greene County, Missouri.

Interconnect Technologies Division, Litton Systems, Incorporated (ITD), has been conducting investigations and remediation at the Litton Site under a Consent Agreement since 1993. The Litton Site is located at 4811 West Kearney Street, adjacent to the Springfield-Branson Regional Airport, in Springfield, Missouri. The current facility is an active manufacturer of printed circuit boards and has been in operation at this location since 1968. Groundwater movement at the site is generally north-northwest. In addition, a major joint system exists, trending northwest-southeast toward a drainage channel and sinkhole on airport property. The department sampled three downgradient private wells in 1995, and no VOCs were detected at that time. The sample results are enclosed.

In February 2002, the Forrester Group, on behalf of the airport, prepared a "Report of Environmental Monitoring Activities EER Incident #010920-0740-NRB" following a jet fuel spill on airport property. Volatile organic compounds (VOCs) that are not expected to be related to the airport's spill or operations were discovered during the EER investigation. Several of these VOCs are present at significant concentrations in Big Williams Spring and the Little Sac River at Fantastic Spring. Upon review, the department believes that Litton is the primary source of the VOCs found in thoes two locations.

In a letter dated December 26, 2002, the department requested that ITD address off-site impacts to groundwater. After subsequently meeting with the department, the company committed to re-evaluate current data and conduct further investigation.

Any off-site sampling that is undertaken by ITD is likely to be conducted late in 2003. The department re-sampled Big William Spring on March 12, 2003. In the meantime, we do not expect that private drinking water wells are likely to be affected by the site; however as a precautionary measure we are requesting that DHSS locate private drinking water wells in the downgradient vicinity of the Litton Site and sample those wells for VOCs. The karst geology of the area obviously complicates efforts to identify sample locations. We recommend that DHSS confer with Mr. Kurt Hollman of the department's Geological Survey and Resource Assessment Division regarding selection of private wells for sampling.

Your assistance in this matter is greatly appreciated. A brief history of the Litton Site, site location map and a site map are enclosed. I am also enclosing a copy of portions of the "Report of Environmental Monitoring Activities EER Incident #010920-0740-NRB", including appendices containing data tables and a well survey. Also enclosed are two letters concerning the report, which are dated March 6, 2003, and December 26, 2002.

You may contact Mr. Kurt Hollman at (573) 368-2129. If you have any questions or need additional information, please contact Ms. Hannah Humphrey of my staff at (573) 751-8629.

Sincerely,

HAZARDOUS WASTE PROGRAM

Cherri Baysinger
Chief, Superfund Section

CB:hht

Enclosures

c: Mr. Todd Blanc, DHSS
Mr. Kurt Hollman, Geological Survey and Resource Assessment Division
Mr. Kevin Mattson, Southwest Regional Office

Missouri Department of Health and Senior Services
P.O. Box 570, Jefferson City, MO 65102-0570 Phone: 573-751-6400 FAX: 573-751-6010
RELAY MISSOURI for Hearing and Speech Impaired 1-800-735-2966 VOICE 1-800-735-2466

Julia M. Eckstein
Director

Matt Blunt
Governor

Litton Systems Inc. Site
Site Reassessment
Reference # 36

June 29, 2006

Dennis Stinson, Chief
Superfund Section
Hazardous Waste Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

Re: Volatile organic compound (VOC) levels in air samples collected at Fantastic Caverns near Springfield, Missouri

Dear Mr. Stinson:

As requested by the Missouri Department of Natural Resources (MDNR), the Missouri Department of Health and Senior Services (MDHSS) has reviewed the available air sampling data collected inside Fantastic Caverns to determine whether detected levels of VOCs are a concern for workers and visitors in the cave.

As an initial screening, sample results were compared to the U.S. Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goals (PRGs). EPA Region 9 Ambient Air PRGs are risk-based concentrations that are considered to be health protective for cancer or non-cancer health effects from long-term chronic exposure, and are based on a residential exposure scenario. As noted in the data table provided by MDNR, the only contaminant detected that exceeded PRGs was Trichloroethene (TCE).

Given that workers and visitors in the cave would be expected to be exposed less frequently and for a shorter duration than receptors in a residential setting, sample results for TCE were also compared with the federal Agency for Toxic Substances and Disease Registry's Minimal Risk Levels. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. These screening levels are used to identify contaminants and potential non-cancer health effects that may be of concern. MRLs are derived for acute (1 - 14 days), intermediate (>14 days - 364 days), and chronic (365 days and longer) exposure durations. ATSDR's acute inhalation MRL for TCE is 10,748 $\mu g/m^3$ or 2,000 parts per billion. The intermediate inhalation MRL for TCE is 537 $\mu g/m^3$ or 100 parts per billion. A chronic inhalation MRL for TCE has not been derived.

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Of the samples collected, only two samples had detectable levels of TCE, 150 $\mu g/m^3$ and 53 $\mu g/m^3$, both of which were collected from underneath the bridge area estimated to be approximately 10 feet below where the tour tram passes overhead. Samples collected from breathing height at the tour turn-around point where the tour pauses for approximately 20 minutes for a presentation were non-detect for TCE.

Considering that the concentrations of TCE detected in the cave air are well below both the acute and intermediate inhalation MRLs, potential exposure by workers or visitors is not expected to pose any adverse health risk from acute or intermediate-duration exposures.

Additionally, it is unlikely that long-term, chronic exposures to concentrations of TCE in cave air would occur in this situation because the stream suspected to contain TCE and other VOCs is dry much of the year. Also, TCE was not detected in the samples which were collected from breathing height in the area of the turn-around point, where exposures would be most likely to occur. If conditions change, however, and TCE is detectable in areas where exposures would likely occur, workers exposed to elevated levels over a long period of time could have the potential for adverse non-cancer health effects and could also be at increased risk of developing cancer.

Because limited sampling is available and only two rounds of sampling actually occurred from areas with likely exposure potential, MDHSS would recommend additional monitoring to ensure that long-term exposure is not of concern.

If you have any questions or concerns, please contact Ms. Michelle Hartman of my staff at (573) 751-6102.

Sincerely,

Gale M. Carlson, Chief
Bureau of Environmental Epidemiology

GMC/KC/MDH/rb

FANTASTIC CAVERNS

Date January 1-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 22° am. Sunny 38° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1248400	/	6602
End	2653583	1248400	/	6602

No tours - Flooding in Cave

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO COUNTER	SCHEDULE	LUNCH
Sue	8-5	✓
PHOTO LAB		
Jackie	8-5	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	✓
Blaine	9-5	✓
Brandon	10-5	✓

FANTASTIC CAVERNS

Date January 2 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 24° am. Sunny 48° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268400		6602
End	2653583	1268400		6602

No Cave Tours - Flooding

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	12-5
PHOTO LAB		
Jackie	8-5	✓

GUIDE	SCHEDULE	LUNCH
Joey	8-4:30	11:25
Blaine	9-5	12:10
Brandon	11-4	—

FANTASTIC CAVERNS

A	C
18880	17562
18963	17587

111

Date January 3rd, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 36° am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268400	/	6602
End	2653583	1268417	/	6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	1	1	840	840	935	1	55
Brandon	10	1	950	950	1050	3	60
Brandon	4	11	1055	1105	205	1	60
Rick	13		1130	1130	230	4	60
Brandon	23	111	1210	1210	110	4	60
Rick	17	1	1230	1230	130	3	60
Brandon	20	1	130	130	230	2	60
Rick	21		145	145	245	2	60
Brandon	7	1	250	250	350	2	60
Rick	6	111	330	330	430	1	60
Brandon	2		415	410	500	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5:00	✓
PHOTO LAB		
Marci	8-5	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	
Brandon	9-5:00	

FANTASTIC CAVERNS

67

Date January 4th, 2015

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 27° am. Sunny 36° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	2684117		6606
End	2653583	2684484		6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	8		8:55	8:55	9:55	—	60
Joey	6		10:50	10:50	11:50	—	60
Emily	8	1	11:15	11:15	12:15	—	60
Rick	2		12:00	12:00	12:55	—	60
Joey	5		12:30	12:30	1:25	—	55
Rick	2		1:00	1:00	2:00	—	60
Emily	4	1	1:55	1:55	2:55	—	60
Joey	11	1	3:00	3:00	3:55	—	55
Emily	14		3:35	3:35	4:30	—	55
Joey	7		4:15	4:15	5:00	—	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scott	8-5:00	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓
Rick	9-2:00	—
Joey	9-5:00	✓

FANTASTIC CAVERNS

39

Date January 5th, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 34° am. Sunny 39° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268484	—	6606
End	2653583	1268523	—	6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	14	1	1225	1230	125	—	60
Joey	9	1	115	115	210	—	55
Emily	2		210	210	305	—	55
Joey	3		240	240	335	—	55
Emily	10		330	325	425	—	60
Joey	2		415	415	515	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Marci	8-5:00	
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	—
Joey	9-5:00	

FANTASTIC CAVERNS

27

Date January 6th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Overcast 39° am. Overcast 41 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268523	/	6606
End	2653588	1268550	/	6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		900	900	955	—	55
Joey	2		1030	1030	1130	—	60
Emily	5		1130	1130	1235	—	55
Joey	4		1215	1215	115	—	60
Emily	4		1355	130	230	—	55
Joey	4		200	205	300	—	55
Joey	6		315	315	415	—	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Marci	8-5	
Scot	8-5	
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-400	
Joey	9-500	

FANTASTIC CAVERNS

18

Date January 7- 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Rain 40° am. Misting 44° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268550		6601
End	2653583	1268568		6666

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3		11:20	11:20	12:20	—	62
Rick	8	III	12:30	12:40	130	—	50
Blaine	7		130	130	235	—	65
						—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	✓ 12
Blaine	9-5	✓

FANTASTIC CAVERNS

31

Date January 8, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 45° am. Cloudy 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268568		6606
End	2653583	1268599		6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	1		9:00	9:00	9:40	✓	40
Blaine	9	1	9:55	9:55	11:00	✓	65
Dog Rick	7	1	12:30	12:30	1:15	✓	45
Blaine	4		1:45	1:45	2:35	✓	50
Blaine	2		2:50	2:50	3:45	✓	55
Rick	8		3:30	3:30	4:25	✓	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	11:55 ✓
Blaine	9-5	11:55 ✓

FANTASTIC CAVERNS

42

Date January 9, 2018

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Snow 32° am. Cloudy 26° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653580	1268595		6606
End	2653583	1268641		6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3		945	945	1040	1	55
Rich	2		1035	1035	1135	1	60
Blaine	6		1110	1110	1205	0	55
Rich	6		1155	1155	1250	1	55
Blaine	3		1235	1235	135	1	60
Rich	4		150	150	250	1	60
Blaine	15	11	245	245	340	4	55
Rich	3	1	335	335	420	1	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	✓
PHOTO LAB		
Madi	8-5	✓

GUIDE	SCHEDULE	LUNCH
Katie	8-430	
Blaine	9-5	✓
Rich	9:30 — 4:30	✓

FANTASTIC CAVERNS

14

Date January 10, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Snow 14° am. Sunny 21° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268641	/	6606
End	2653583	1268657	/	6606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	3		10:20	10:25	11:10	1	45
Rick	3		11:10	11:10	12:05	1	55
Rick	7		1:20	1:20	2:10	1	50
Rick	1		2:15	2:15	3:10	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5:00	11:45
PHOTO LAB		
Nadi	8-5:00	11:45

GUIDE	SCHEDULE	LUNCH
Katy	8-4:30	out
Rick	9-5:00	12:10

FANTASTIC CAVERNS

28

Date January 11, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 37° am. Sunny 43° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268657	—	6606
End	2653583	1268685	—	6608

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
Rick	2		8:50	8:50	9:40	—
Joey	5	1	11:00	11:00	12:00	—
Rick	3		11:30	11:30	12:30	—
Rick	9		2:30	2:30	3:25	—
Joey	4		3:10	3:15	4:15	

55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH

FANTASTIC CAVERNS

25

Date 12, January 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 31° am. Sunny 39° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268685		06608
End	2653583	1268710		06608

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	1		920	925	1015	—	50
Emily	2		1050	1050	1145	—	55
Joey	5		1140	1140	1130	—	50
Emily	7		1225	1230	130	—	60
Joey	2		100	100	155	—	55
Emily	6		150	155	250	—	55
Joey	2	III	240	245	340	—	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	✓
Marci	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-430	✓
Joey	9-5	✓

FANTASTIC CAVERNS

23

Date January 13, 2015

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather P. Cloudy 43° am. Sunny 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268710	/	6608
End	2653583	1268733	/	6608

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	5	HH	8:30	8:30	9:20	—	50
Joey	3	1	10:20	10:20	11:00	—	40
Emily	6		11:50	11:55	1:00	—	65
Joey	4		12:40	12:45	1:40	—	55
Emily	5	1	2:20	2:20	3:20	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5:00	✓
PHOTO LAB.		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	11:00 ✓
Joey	9-5:00	✓

FANTASTIC CAVERNS

12

Date January 14th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 40° am. Sunny 61° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268733	/	6608
End	2653583	1268741	/	6608

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6		1240	1245	135	—	50
Blaine	2		120	120	215	—	55
Rich	2		220	220	320	—	60
Rich	2	11	330	330	420	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	✓
Joey	9-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rick	8-430	✓
Blaine	9-500	✓ 1150

FANTASTIC CAVERNS

42

Date January 15, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 45° am. Cloudy 38° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268745	/	6608
End	2653583	1268787	/	6608

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Dog Rick	2		10:20	10:20	10:15	✓	55
Blaine	6	11	10:50	10:50	11:50	✓	60
Rick	8		11:25	11:25	12:25	✓	60
Joey	6		12:00	12:05	1:00	✓	55
Blaine	2		1:00	1:00	1:50	✓	50
Rick	8	11	1:55	1:55	2:50	✓	55
Blaine	4		3:00	3:05	3:55	✓	50
Rich	4		3:30	3:30	4:30	✓	60
Blaine	2		4:15	4:15	5:00	✓	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓
Joey	9-5 training	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	12:30 ✓
Blaine	9-5	✓

FANTASTIC CAVERNS

163

Date: January 16, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 23° am. Sunny 34° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653583	1268787		6608
End	2653746	1268787		6610

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
	Emily	2		9:00	9 -	955	1	55
	Katy	6	111	10 -	10 -	1055	2	55
	Blaine	9		1045	1045	1145	2	60
	Katy	7	1	1120	1120	1220	2	60
	Em	12	111	1150	1150	1250	3	60
	Blaine	12	11	1220	1220	120	5	60
	Katy	15	11	100	1 -	205	3	65
	Blaine	11	11	130	135	130	1	55
53	Katy Em	47/6	owasso ok	2 -	210	305	3	55
	Blaine	12	111	240	240	335	2	55
PB	Katy	21	11	315	315	415	4	60
	Em	3		345	345	440	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	9-5	1210 ✓
Madi	8-9	1210 ✓
Jackie		1125 ✓
PHOTO LAB		
Marci	8-5	1135 ✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	1105 ✓
Katy	9-5	1225 ✓
Blaine	10-3	—

FANTASTIC CAVERNS

82

Date January 17th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Snow 23° am. Sunny 19° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653746	1268787	/	6610
End	2653828	1268787	/	6619

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	4	111	10:15	10:15	1:10	1	55
Katy	2		10:35	10:35	1:40	1	65
Blaine	6		11-	11-	12	0	60
Brandon	4		11:55	11:55	1:05	1	70
Blaine	19	11	12:30	12:30	1:35	5	65
Katy	13		1-	1-	2:15	1	75
Brandon	13	1	1:30	1:30	2:50	2	80
Blaine	6		2-	2-	3	2	60
Katy	9		2:30	2:30	3:40	2	70
Brandon	6	1	3:45	3:45	5:05	2	80

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	9-5:00	12:00 ✓
Jackie		11:45 ✓
PHOTO LAB		
Marci	8-5:00	11:45 ✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	11:25 ✓
Katy	9-5:00	12:30 ✓
Blaine	10-3:00	— H

MLK Luther King

FANTASTIC CAVERNS

90

Date January 18-2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cold-Sunny 4° am. Sunny 25° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1268787	/	6619
End	2653828	1268883	/	6622

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3	1	845	845	945	1	60
Joey	3		925	925	1015	1	50
Blaine	12	1/1	1030	1030	1130	2	60
Joey	9		11-	11-	1155	1	55
Blaine	12	1	1145	1145	1235	2	50
Joey	11		1230	1230	130	3	60
Blaine	19		115	120	210	1	50
Joey	5		2-	2-	305	0	65
Blaine	7		230	230	335	2	65
Joey	3	1	310	310	410	0	60
Blaine	6		345	345	430	1	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	12
PHOTO LAB		
Marci	8-5	12

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	1:40
Joey	9-5	1:30

FANTASTIC CAVERNS

3

Date January 19th, 2015

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Overcast 27° am. Sleet Overcast 25° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1268883	/	6622
End	2653828	1268886	/	6622

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
Rick	2		8:40	8:40	9:40	— 60
Joey	1		12:05	12:05	1:05	— 60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	✓
Joey	9-5:00	

FANTASTIC CAVERNS

15

Date January 20, 2015

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Light Ice 27° am. Overcast 27° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1268886	/	6622
End	2653828	1268901	/	6622

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	2		1240	1240	140	—	60
Joey	4	1	145	145	245	—	60
Joey	4		250	250	350	—	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	1240
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Joey	9-5	1130

FANTASTIC CAVERNS

8

Date January 21st, 2015

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Snow 27° am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1268901	/	6622
End	2653828	1268909	/	6622

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		11:45	11:45	12:45	—	60
Brandon	2		1:15	1:15	2:15	—	60
Brandon	2		2:35	2:35	3:35	—	60
Rick	2		3:05	3:05	3:55	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		1:25
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	1:25
Rick	9-5:00	/

FANTASTIC CAVERNS

114

Date January 22, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 27° am. Cloudy 32° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1268909	/	6622
End	2653828	1269023	/	6622

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey/Blaine Jan	39	McBride	10:00	10:00	11:30	/	90
Emily	4		11:25	11:25	12:25	/	60
Joey/Blaine Jan	40	McBride	12:10	12:10	1:40	/	90
Rick	6		1:10	1:10	2:25	/	70
Emily	12		1:45	1:45	2:45	/	60
Emily	2		3:30	3:30	4:30	/	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓
Rick	9-5	✓
Joey	9:00-2:00	—
Blaine	9:30-2:30	—
Jan	9:30-2:30	—

FANTASTIC CAVERNS

137

Date January 23, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 24° am. P Cloudy 35° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269023		6622
End	2653828	1269161		6624

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick/Blaine Joey	49	Logan Logan	10:15	10:15	11:45	✓	90
Emily	2		10:55	10:55	11:35	1	60
Brandon	17	IIII	11:30	11:30	12:45	2	75
Blaine	8	1	12:00	12:00	1:05	0	65
PB Emily	14	1	12:40	12:45	1:45	4	60
Brandon	5	1	1:20	1:20	2:30	✓	70
Emily	17		2:00	2:10	3:15	2	65
Brake down Brandon	10		2:40	2:40	4:10	6 comp	
Emily	14		3:15	3:30	4:30	2	60
Brandon	2		4:10	4:20	5:05	0	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓
PHOTO LAB		
Madi	8-5	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓
Brandon	9-5	✓
Rick	9:30 ~~2:30~~ 12:00	H sick
Blaine	9:30 ~~2:30~~ 1:00	H
Joey	9:30 ~~2:30~~ 12:30	H

FANTASTIC CAVERNS

74

Date January 24th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 36° am. Sunny 48° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269161	/	6624
End	2653828	1269235	/	6627

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	1		10:00	10 05	11 05	0	60
Blaine	17		11 05	11 05	12 00	4	55
Brandon	11		11 45	11 50	1 00	3	70
Blaine	4		12 20	12 20	1 15	1	55
Brandon	14		1 00	1 10	2 10	0	60
Blaine	11	11	1 55	1 55	2 55	2	60
Brandon	7		2 25	2 40	3 40	1	60
Blaine	9	11	4 05	4 00	5 00	3	80

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sid		11 55
PHOTO LAB		
Mardi		✓

GUIDE	SCHEDULE	LUNCH
Brandon	8 - 4 30	11 15
Katy	~~9 - 5 00~~	SICK
Blaine	10 30 - 5 00	1:20

FANTASTIC CAVERNS

15

Date January 25th, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Overcast 48° am. sunny 48° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269235	/	6627
End	2653828	1269250	/	6627

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		9:15	9:15	10:15	—	60
Rick	2		10:10	10:10	11:00	—	50
Rick	3		11:45	11:45	12:45	—	60
Emily	2		1:30	1:30	2:30	—	60
Rick	2	1	2:00	2:00	2:50	—	60
Emily	2		2:30	2:35	3:30	—	
Emily	2		3:35	3:35	4:25	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		12:30
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓
Rick	9-5:00	12:45

FANTASTIC CAVERNS

	Adults	Child
Begin	118963	17587
END	118985	17620

55

Date January 26th, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Overcast 31° am. Sunny 39° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269250	/	6627
End	2653828	1269250	/	6627

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	2	1	9:55	9:55	10:55	—	60
Blaine Rick	33	RHill	10:30	10:30	12:00	—	90
Brandon	4	1	12:00	12:00	1:00	—	60
Emily	3		12:30	12:30	1:30	—	60
Blaine	2		1:35	1:35	2:35	—	60
Emily	2		2:05	2:05	3:05	—	60
Blaine	6		3:35	3:35	4:35	—	60
Emily	3		4:15	4:15	5:05	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	
Emily	9-5:00	
Rick	9-2:00	
Brandon	9-2:00	
Marci	9:30-2:30	

FANTASTIC CAVERNS

	Adult	Child
Begin	118985	17620
End	119000	17620
	20	
Begin	1120001	
End	1120006	

Date January 27th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 35° am. Sunny 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS.
Begin	2653828	1269250	—	6627
End	2653828	1269250	—	6627

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		9:15	9:15	10:45	—	60
Blaine	4	1	10:45	10:45	11:45	—	60
Rick	4		11:55	11:55	1:10	—	75
Blaine	6		12:45	12:50	1:50	—	
Blaine	2	1	2:15	2:15	3:15	—	
Rick	2		2:45	2:45	3:45	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5:00	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	✓
Blaine	9-5:00	✓

FANTASTIC CAVERNS

	Adult	Child
Begin	1120006	17628
End	1120054	17740
	168	

Date January 28th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 45° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269250	/	6627
End	2653828	1269250	/	6630

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	4		850	850	1000	—	70
Marci Matt	41	Harrison	950	950	1050	—	60
Brandon	2		1005	1000	1055	—	50
Rick Blaine (Jan)	44	Hollister Adv	1120	1025	1155	—	85
Brandon	5		1055	1100	1210	—	70
Matt	2		1150	1145	1245	—	60
Blaine Rick Jan	43	Hollister Adv	1200	1200	130	—	90
Marci	2		1245	1245	145	—	60
Matt	4		120	120	230	—	70
Marci	5		200	200	300	—	60
Rick	6	1	245	245	345	—	60
Marci	2		330	330	425	—	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Siot		1215
PHOTO LAB		
—		

GUIDE	SCHEDULE	LUNCH
Brandon	8 - 12	—
Marci	8 - 430	✓
Blaine	9 - 200	—
Rick	9 - 500	1:35 ✓
Jan	930 - 230	—

FANTASTIC CAVERNS

29

Date January 29-2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 30° am. Sunny 63° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653828	1269250	/	06630
End	2653907	1269250	/	06631

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		915	915	1025	—	65
Blaine Rick	45		930	950	11:05	—	75
Rich	4	11	1130	1130	1225	—	65
Emily	4		1200	1200	100	—	60
Matt	8		1245	1245	145	—	60
Emily	9	1	130	130	230	—	60
Matt	7	11	305	305	410	✓	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	9-5	✓
	Gift Shop	
Sue	8-5	✓ 11:25
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓ 11:20
Rich	9-5 (12:30)	H
Blaine	9-11	✓ H

Home early

FANTASTIC CAVERNS

114

Date: January 30 - 2016

Day: Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather: 40° sunny am. 60° clear pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2653907	1249250	/	6431
End	2654023	1269250	/	6637

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
y	Emily	2	/	9:20	9:20	10:15	1	55
y	Katy	11	III	10:15	10:20	11:15	3	55
y	Emily	9	-	11:10	11:10	12:05	0	55
G	Katy	20	~~IIII~~ III	11:50	11:55	12:50	3	55
G	Emily	9	-	12:40	12:40	1:40	3	60
B	Katy	14	IIII	1:30	1:40	2:50	3	70
PB R.	Emily	21	II	2:10	2:10	3:10	5	60
	Katy	6	-	2:45	2:55	3:45	0	50
	Emily	16	~~IIII~~	3:45	3:45	4:40	1	55
	Katy	6	IIII	4:05	4:05	5:00	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jacy	9-5	12:00 ✓
PHOTO LAB		
Mari	8-5	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	12:05 ✓
Katy	9-5-	11:20 ✓

FANTASTIC CAVERNS

126

Date January 31st, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 49° am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1269250	/	6637
End	2654023	1269376	/	6642

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	1		930	930	1030	1	60
Katy	4		1010	1010	1110	2	60
Brandon	9		1055	1055	1105	2	80
Katy	24	1111	1130	1140	1240	4	60
Brandon	21	1111	1225	1225	130	4	65
Katy	20		120	1205	205	0	60
B Brandon	16	1	135	135	235	1	60
Katy	19		215	225	325	1	40
Brandon	5		305	310	410	1	60
Katy	9		355	400	500	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		1110
PHOTO LAB		
Marci		1230

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	
Katy	9-5:00	

FANTASTIC CAVERNS

10

Date Feb 1, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 34° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1269376		066421
End	2654023	1269386		066441

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	4		11:00	11:00	11:50	—	50
Joey	2		12:00	12:00	12:50	—	50
Rich	2		1:00	1:05	2:00	—	60
Joey	2		3:00	3:00	3:55	—	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Rich	8-4:30	✓ 11:53
Joey	9-5	✓ 12:55

FANTASTIC CAVERNS

27

Date Feb 2, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 52° am. Sunny 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1269386		06644
End	2654023	1269413		06644

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	5		10:30	10:30	11:25	—	55
Joey	7		12:00	12:00	1:00	—	60
Blaine	2	1 dog	12:50	12:50	1:45	—	50
Joey	6	1	1:00	1:00	1:50	—	50
Blaine	5		2:30	2:30	3:25	—	55
Blaine	2		3:30	3:30	4:20	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-5	1:15
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	✓
Joey	9-5	✓ 1:00

FANTASTIC CAVERNS

19

Date February 3rd, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 32° am. Sunny 38° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1269413	/	6644
End	2654023	1269432	/	6644

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2		10:30	10:32	11:30	/	60
Joey	2		11:10	11:10	12:10	/	60
Blaine	2	1	12:00	12:00	12:50	/	50
Joey	3		1:00	1:00	1:50	/	50
Blaine	4		1:30	1:30	2:40	/	70
Joey	4		2:15	2:20	3:15	/	55
Blaine	2		2:50	2:50	3:30	/	40

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	✓
Joey	9-5	✓

FANTASTIC CAVERNS

30

Date February 4 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 25° Sunny am. Sunny 42° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1269432		6644
End	2654023	1269462		6644

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		845	845	955	—	70
Rich	1		1030	1030	1130	—	60
Emily	4		12	12	105	—	65
Rich	1		1245	1245	130	—	45
Emily	9	11	245	245	335	—	50
Emily	13		345	345	435	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	1130
Rich	9-5	1130

FANTASTIC CAVERNS

166

Date February 5 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 27° am. Sunny 50° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654023	1249462		6644
End	2654189	1249462		6648

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		915	915	1015	—	60
Blaine	2		950	945	945	—	60
Rick Jan	27	Tab Bapt	10 —	10 —	11 35	—	95
Emily	2	—	10 15	10 20	11 20	—	60
Blaine	10	—	11 —	11 05	11 50	—	50
Emily	11	111	11 30	11 35	12 25	—	50
Rick, Blaine Jan	68	Sequoia	12	12 05	1 40	—	95
Matt	9	—	12 15	12 15	1 25	—	70
Emily	16	1	1 00	1 00	1 55	—	55
Matt	2	—	1 35	1 45	1 35	—	50
Emily	6		2 20	2 25	3 15	—	50
Rick	9	1	3 —	3 —	3 50	—	50
Emily	3	11	3 45	3 50	4 35	—	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	9:30 - 2	—
Sue G.S.	8-5	11 ✓
PHOTO LAB		

GUIDE	SCHEDULE		LUNCH
Emily	8-4:30		12 25 ✓
Mari	9-5	— Sick —	
Rick	9-5	ADV	1 40 ✓
Blaine	9-2	ADV	—
Jan	9-2	ADV	—
Matt	(GA'S)		

FANTASTIC CAVERNS

97

Date February 6, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 29° am. Clear 50° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654189	1269462		6648
End	2654286	1269462		6653

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
	Katy	2	–	9 10	9 10	10 15	1	65
	Blaine	6	1	10 30	10 30	11 25	1	55
(PB)	Katy	12	111	11 00	11 05	12 05	3	60
(Dog)	Marci	15	111	11 45	11 40	12 40	3	55
	Blaine	12	1	12 45	12 45	1 45	0	60
	Katy	8	–	1 15	1 20	2 20	0	60
pb	Blaine	13	1	1 50	1 55	2 45	2	50
	Katy	9	1	2 30	2 30	3 30	3	60
	Blaine	19	1	3 20	3 20	4 15	5	55
	Katy	1	1	4 10	4 10	4 50	1	40

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-9	✓
Joey	9-5	✓
PHOTO LAB		
Madi	9 -	
Marci	8 -	✓

GUIDE	SCHEDULE	LUNCH
Marci	8 -	1 00 ✓
Katy	9-5	12 10 ✓
Blaine	9-5	11 25 ✓
Emily	8 -	Sick

15

FANTASTIC CAVERNS

89

Date February 7th, 2015

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 34° am. Overcast 48° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654286	1269462		6653
End	2654375	1269462		06653

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	2		850	850	950	1	60
Rich	4		930	930	1020	1	50
Brandon	6	11	1030	1030	1145	0	70
Rich	12		1100	1100	1155	2	55
Rich	14		1200	1200	100	4	60
Brandon	8		1250	100	212	3	72
Rick	22	IIII	130	130	230	5	60
Brandon	14	11	205	215	330	2	75
Rich	4	1 dog	300	300	400	0	60
Brandon	3	1	330	340	445	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	9-5	✓
Jackie	8-5	✓ 12:15
PHOTO LAB		
Madi	8-500	✓ 11:40

GUIDE	SCHEDULE	LUNCH
Brandon	8-430	✓ 11:45
Rick	9-500	✓
Emily	10-500 Sick	—

FANTASTIC CAVERNS

36

Date February 8 - 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather 30° Cloudy am. Cloudy 32° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654375	1269462	/	6453
End	2654411	1269462	/	6453

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3		11 -	11 -	12	—	60
Emily	4		12 -	12 -	110	—	70
Blaine	2		1245	1245	135	—	50
Emily	11		145	145	235	—	50
Emily	7	111	3 -	3 -	355	—	55
Blaine	9		345	345	435	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1130
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Blaine	8 - 4:30	1205
Emily	9 - 5	1125
Randy	12-5	TR
Laura	12-5	
Ron	12-5	
Katy M	12-5	
Daniel	12-5	
Vic	12-5	

FANTASTIC CAVERNS

49

Date February 9, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 28° am. Sunny 33° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654411	1269462	/	6653
End	2654460	1269462	/	6656

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	6		9:00	9:05	10:05	1	60
Joey	4		9:45	9:45	10:40	2	55
Blaine	6	1	10:40	10:40	11:40	0	60
Joey	8		11:55	11:55	1:00	4	55
Blaine	2		12:25	12:25	1:20	0	55
Joey	9	111	1:40	1:45	2:45	1	60
Blaine	9		2:35	2:35	3:30	3	65
Joey			3:00	3:00	4:00	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	12:05 ✓
PHOTO LAB		
Marci	9-5	12:30 ✓
Mandy	8-2	✓
Pam	8-2	✓

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	✓
Joey	9-5	1:10 ✓
Jan	8-4:30	✓
Emily	8-1	—
Randy	8-4:30	✓
Laura	8-4:30	✓
Ron	8-4:30	✓
Katy	8-1	—
Daniel	8-1	—
Vic	8-1	—

FANTASTIC CAVERNS

40

Date Feb. 10. 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 20° am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654460	1269462		665k
End	2654500	1269462		665k

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	1		920	920	1020	1	60
Joey	4		1105	1118	1205	0	55
Blaine	3		1145	1145	1245	1	60
Rick	9	11	1220	1220	125	3	65
Joey	2		1—	1—	155	1	55
Blaine	15	02 comm cent	135	135	255	1	80
Joey	4		305	305	4—	1	55
Rick	2		345	345	435	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	12.10 ✓
PHOTO LAB		
Pam	8-5	✓
Marci	8-12	—
Amanda	8-5	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	1105 ✓
Joey	9-5	1220 ✓
Blaine	11-4	—
Jan	8-3	✓
Randy	8-4:30	✓
Laura	8-4:30	✓
Ron	8-4:30	✓

FANTASTIC CAVERNS

33

Date Feb 11, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654500	1769462		06656
End	2654533	1769462		06656

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	5		10:00	10:00	10:55	2	55
Rich	1		11:00	11:00	12:00	1	60
Emily	3		12:00	12:05	1:00	0	55
Rich	8	III	12:30	12:30	1:30	2	60
Rich	10	IIII	3:00	3:00	3:55	2	55
Emily	6	II	3:40	3:40	4:40	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Mali	8-5	12:25
PHOTO LAB		
Marci	8-~~5~~ 12	—
Ken	8-5	11:30
Mandy	8-5 Tn.	11:30

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	✓ 11:20
Rich	9-5	✓ 12:00

FANTASTIC CAVERNS

92

Date February 12, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 25 am. Clear 44° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654533	1269462		6656
End	2654625	1269462		6658

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	4		9:40	9:40	10:40	—	60
Rick	7		10:15	10:15	10:30	—	75
Blaine	7		11:15	11:15	12:10	—	55
Emily	9		11:50	11:50	12:45	—	55
Blaine	4		12:30	12:30	12:25	—	55
Rick	8		1:00	1:00	1:55	—	55
Emily	20		1:30	1:30	2:30	—	60
Blaine	5	1	2:00	2:00	2:55	—	55
Rick	2		2:30	2:30	3:25	—	55
Emily	14	1	3:00	3:05	4:00	—	55
Rick	12		3:45	3:45	4:35	—	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-9	11:20 ✓
Joey	9-5	11:50 ✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	11:15 ✓
Rick	9-5	12:30 ✓
Blaine	10-3	—

FANTASTIC CAVERNS

238

Date Feb. 13 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 32° cloudy am. 32° cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654421	1269442		66658
End	2654863	1269462		66658

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		8:45	8:45	9:45	1	60
Katy	3		9:45	9:45	11:45	2	80
Blaine	24	11	10:30	10:30	11:30	2	60
Rick	15	III	10:50	10:50	11:45	2	55
Emily	18	IIII	11:20	11:20	12:15	4	55
Blaine	24	III	11:50	11:50	12:45	5	55
Rick	21	IIII	12:15	12:15	1:05	4	45
Katy	21	IIII	12:35	12:35	1:35	3	60
Emily	20	II	1:20	1:20	2:20	3	60
Blaine	17	I	1:45	1:45	2:45	3	60
Rick	19	IIIIII	2:15	2:15	3:15	4	60
Katy	15	II	2:40	2:40	3:40	5	60
Emily	18	IIII	3:00	3:00	3:55	4	55
Blaine	15	I	3:30	3:30	4:25	2	55
Rick	2	I	3:45	3:45	4:35	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	9-5	12 - ✓
PHOTO LAB		
Mami	8-5	11:10 ✓
Sue	8-	11:45 ✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	12:20 ✓ (L)
Blaine	9-5	12:50 ✓ (L)
Rick	10-5	1:10 ✓
Katy	9-5	1:40 ✓ L

FANTASTIC CAVERNS

217

Date February 14, 2011

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Overcast 27° am. Overcast 36° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2654863	1269462	✓	16658
End	2655080	1269462	✓	16678

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	5		8:45	8:45	9:55	1	75
Katu	2		9:30	9:35	10:30	1	55
Emily	5	1	10:15	10:15	11:05	1	55
Rick	14		10:50	10:50	11:45	3	50
Blaine	23	1111	11:20	11:20	12:20	5	
Katy	13	1111	11:40	11:40	12:40	3	
Emily	25	1	12:05	12:05	1:00	3	
Rick	19	11	12:25	12:25	1:20	5	
Blaine	17		12:45	12:50	1:45	5	
Emily	22	1	1:45	1:15	2:00	2	
Rich	10		1:40	1:40	2:40	4	
Katy	16		2:00	2:00	3:00	3	
Blaine	14	1	2:40	2:40	3:35	1	
Rick	15	11	3:00	3:00	4:00	4	
Blaine	12	1111	3:30	3:30	4:25	2	
Katy	4		4:10	4:10	5:00	0	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	9-5:00	✓
PHOTO LAB		
Marci	8-5:00	✓

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	✓
Katy	9-5:00	✓
Emily	10-3:00	— H
Rick	10:30-4:00	✓ H
Ron	8-4:30	
Daniel	8-4:30	
Vic	8-4:30	

FANTASTIC CAVERNS

140

Date February 15 - 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 30° am. Sunny 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655080	1269442		6478
End	2655222	1269442		6685

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
	Marci	2		845	845	945	1	60
	Joey	6		950	950	1045	2	55
	Marci	9		1020	1020	1120	0	60
	Joey	10	1	1055	1055	1150	4	55
PB	Marci	11	1111	1135	1135	1235	1	60
	Joey	17	1	1220	1220	120	5	60
PB	Marci	16	1	105	105	2 -	2	55
	Joey	18	11	145	145	245	2	60
	Marci	14	111	215	215	320	4	65
PB	Joey Brandon	32	1	250	250	355	8	65
	Marci	3	11	345	345	440	9	55
	Joey	2		455	455	455	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1130
PHOTO LAB		
Manda	8-5	12
Alex	12-4 TR	—

GUIDE	SCHEDULE	LUNCH
Marci	8-4:30	1235
Joey	9-5	1150
Rick	9:30-5 — Home Sick	—
Katy	12-4 TR	—
Jan	8-4:30	1120
Randy	8-4:30	12
Brandon	12-4	—
Ron	12-5 TR	—
Dan	12-5 TR	—
Vic	12-5 TR	—

FANTASTIC CAVERNS

79

Date February 16, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 39° am. Cloudy 44° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655222	1269462	/	6685
End	2655301	1269462	/	6685

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	5		940	940	1035	2	
Joey Rick Blaine	43		1000	1000	1125	2	
Emily	2		1045	1045	1145	1	
Rick	2	11	1115	1115	1220	1	
Joey	6		1215	1215	115	1	
Blaine	2		100	100	155	1	
Emily	4		130	130	225	0	55
Blaine	10	11	205	205	305	4	60
Blaine	5	1	310	315	415	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	✓ 11:55
Madi	9-2	—
PHOTO LAB		
Marci	8-5	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-430	
Blaine	9-500	
Rick	8-100	—
Joey	8-100	—
Daniel	8-430	
Vic	8-430	
Randy	9-500	
Laura	9-500	
Ron	9-500	

FANTASTIC CAVERNS

45

Date February 17, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 33° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655301	1269462	/	6685
End	2655346	1269462	/	6685

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Scot	6		8:35	8:35	9:25	2	50
Rick	5		10:15	10:20	11:10	1	55
Randy	4		10:50	10:50	11:50	1	60
Daniel	3	1	11:30	11:30	12:25	0	55
Rick	6		11:50	11:50	12:50	2	60
Randy	3	1	12:40	12:40	1:40	1	60
Rick	6		1:20	1:25	2:25	0	60
Daniel	5		2:00	2:05	3:10	1	65
Vic	7		3:50	3:50	4:55	2	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5:00	✓
PHOTO LAB		
Alex	8-5:00	✓
Pam	8-5	✓
Marci	9-5:00	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	Sick
Rick	9-5:00	✓
Daniel	8-4:30	12 ✓
Vic	8-4:30	1125 ✓
Randy	8-4:30	✓
Jan	8-3:00	✓
Lanna	9-5:00	Quit
Ron	9-5:00	1125 ✓

FANTASTIC CAVERNS

39

Date February 18-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. Sunny 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655346	1269442		6685
End	2655389	1269462		6687

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		935	935	1030	0	55
Daniel	2		1010	1010	1105	0	55
Blaine	7	1	1030	1030	1130	3	60
Brandon	2		1120	1120	1220	1	60
Randy	4		1135	1135	1235	2	60
Vic	4		1155	1155	1255	1	60
Ron	4	1	1220	1220	110	1	50
Brandon	2		110	110	205	1	55
Randy	2		140	141	240	0	60
Ron	8		215	215	310	5	55
Randy	2		405	405	500	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1255 ✓
PHOTO LAB		
Amanda	8-5	1220 ✓

GUIDE	SCHEDULE		LUNCH	
Blaine	8-430		1135 ✓	H
Brandon	9-200		—	H
Jan	8-430	NT	1220 ✓	
Vic	8-430 (8-1)	—	H	H
Daniel	8-430		1135 ✓	
Randy	9-500		1220 ✓	
Ron	9-500		1135 ✓	

FANTASTIC CAVERNS

144

Date February 19-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 59° am. Sunny 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2455389	1269442		4687
End	2455523	1269484		4687

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	5	-	9:30	9:30	10:20	2	50
Rick	3	-	9:55	9:55	10:55	1	60
Emily	6	-	10:45	10:45	11:45	1	60
Blaine/Ron Randy/Jan	67	-	10:40	10:40	12:45	3	105
Rick	7	1	11:30	11:30	12:30	1	60
Randy	5	-	12:10	12:10	1:10	2	60
Ron	18	11	1:15	1:15	2:05	3	50
Emily	2	-	1:45	1:45	2:35	1	50
Rick	14		2:10	2:10	3:15	3	65
Em.	15	1	3:45	3:45	4:40	3	55
Rick	2		4:10	4:10	5:05	0	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	11:00 ✓
Joey	9-2	—
PHOTO LAB		
Mara	8-1	—
Alex	1-5	—

GUIDE	SCHEDULE		LUNCH	
Emily	8-4:30		11:50 ✓	
Rick	9-5		12:33 ✓	
Blaine	8-12	ADV	—	H
Randy	9-2	ADV	—	H
Ron	9-2	ADV	—	H
Jan	9-2	ADV	—	H

FANTASTIC CAVERNS

224

Date February 20 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 55° am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	26555723	1269484		6687
End	26557148	1269484		6702

+ = pre board

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
R	Katy	4	-	8:30	8:30	9:30	1	60
Y	Marci	10	1	9:30	9:30	10:22	1	55
R	Katy	12	11	10:00	10:05	10:55	2	50
B	Rick	21	1111	10:30	10:30	11:25	8	55
R	Brandon	8	11	11:00	11:00	11:55	2	55
B	Rick	26	1	11:30	11:35	12:30	7	55
G	Katy	21	1111	11:50	11:50	12:40	4	50
B	Brandon	11	11	12:40	12:40	1:30	2	50
R	Rick	17	1111	1:05	1:05	2:00	2	55
Y	Marci	14	1111	1:35	1:35	2:30	3	55
R	Brandon	25	11111	2:00	2:00	3:00	4	60
Y	Katy	22	1111 11	2:30	2:30	3:25	4	55
G	Marci	11	-	2:45	2:50	3:50	5	60
B	Katy	19	1	3:30	3:30	4:25	5	55
	Marci	3	1	4:10	4:10	5:00	2	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	9-5	1:00 ✓
Sue GS	8-5	12:30 ✓
PHOTO LAB		
Pam	8-5	12:00 ✓
Alex	8-5	12:30 ✓

GUIDE	SCHEDULE	LUNCH
Katy	8-4:30	11 ✓
Marci	9-5	12:30 ✓
Rick	10-3	—
Brandon	10-3	—

FANTASTIC CAVERNS

204

Date February 21st, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny am. Sunny 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655748	1269484	0	6702
End	2655952	1269484	1	6706

+ = preboard

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
R	Vic	8	1	9:10	9:12	10:20	3	70
G	Daniel	6	–	9:45	9:45	10:40	1	55
Y	Katy	2	–	10:10	10:10	11:10	1	60
G	Brandon	19	–	10:45	10:45	11:45	4	60
R	Randy	20	111	11:05	11:05	12:05	6	60
B	Ron	21	1111	11:20	11:30	12:30	6	60
+G	Vic	13	1	11:45	11:45	12:45	1	60
Y	Katy	12	–	12:15	12:15	1:20	2	65
G	Daniel	7	1	12:40	12:40	1:40	3	60
R	Randy	15	–	1:00	1:05	2:10	5	65
G	Brandon	10	–	1:15	1:15	2:25	0	70
B	Vic	20	11	1:30	1:30	2:30	4	60
G	Ron	18	1111	1:50	1:55	3:05	4	70
B	Daniel	14	111	2:30	2:30	3:25	4	55
R	Randy	13	1	3:00	3:00	4:05	1	65
Y	Brandon	2	–	3:30	3:30	4:20	1	50
R	Ron	4	–	4:00	4:00	4:30	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	9-5:00	✓
Jackie	8-5	✓
PHOTO LAB		
Amanda	8-5:00	12:05 ✓

GUIDE	SCHEDULE		LUNCH
* Daniel	8-4:30	Home	11:40 ✓
* Vic	8-4:30	Home 3:30	12:30 ✓
* Katy	8-4:30	Home 2:30	11:30 ✓
Brandon	9-5:00		11:45 ✓
Randy	9-5:00		12:15 ✓
Ron	9-5:00		12:35 ✓

FANTASTIC CAVERNS

44

Date February 22, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 36° am. Sunny 54° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655952	1269484		6706
End	2655952	1269528		6710

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	3		10:10	10:10	11:20	2	70
Vic	6		10:35	10:35	11:45	2	70
Daniel	6		12:10	12:15	1:15	2	60
Vic	4		12:50	12:50	2:10	1	75
Daniel	10		1:30	1:40	2:40	2	60
Vic	4		2:20	2:25	3:25	0	60
Blaine	2		3:05	3:05	4:15	0	70
Vic	6		3:30	3:35	4:45	2	70
Rick	3	1	4:15	4:15	5:05	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jackie	8-5	12:15
PHOTO LAB		
Alex	8-5	12:30

GUIDE	SCHEDULE	LUNCH
Blaine	8-4:30	12:00
Rick	9-5	12:00
Daniel	8-4:30	2:50
Vic	8-4:30	12:00

FANTASTIC CAVERNS

32

Date Feb 23, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 37° am. Cloudy 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655952	1269528		06710
End	2655952	1269562		06710

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		8:30	8:30	9:30	1	60
Blaine	6		10:30	10:30	11:30	1	60
Ron	3	1	11:00	11:00	12:00	1	63
Vic	6	1	12:00	12:05	1:10	2	55
Randy	11		2:00	2:00	3:10	0	70
Ron	4	11	4:00	4:00	5:00	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5:00	11:35 ✓
PHOTO LAB		
Amanda	8-5:00	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	11:35 H ✓
Daniel	8-4:00	H ✓
Vic	8-4:30	H ✓
Blaine	9-5:00	H ✓
Randy	9-5:00	✓
Ron	9-5:00	✓
Jan	9-3:00	H

FANTASTIC CAVERNS

24

Date February 24, 2016

Day Sun. Mon. Tues. (Wed) Thurs. Fri. Sat.

Weather: 39° Overcast am. 34° Overcast pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655950	1269562		6710
End	2655978	1269562		6710

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	1		10 55	10 55	11 50	1	55
Joey	7	1	12 50	12 50	12 50	1	60
Emily	10		1 30	1 30	2 25	2	55
Emily	6	11	3 30	3 35	4 25	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Pam	8-5	12 10
GS		
Jackie	8-5	11 40
Rhonda	8-3 TR	11 10
PHOTO LAB		
Marci	8-5	11 20

GUIDE	SCHEDULE	LUNCH
Emily	8 45	11 55
Joey	9 50	11 35
Jan	8-3 TR	11 10

FANTASTIC CAVERNS

56

Date February 25 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 32° am. Cloudy 37° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2455978	1269562	/	6712
End	2455978	1269618	/	6712

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	4		950	950	100	0	50
Brandon	9	11	11-	11-	1155	2	55
Joey	5	11	1150	1150	1250	1	60
Randy	6		1215	1215	115	2	60
Brandon	2		1240	1240	145	1	65
Joey	12		115	120	220	2	60
Randy	10		145	150	250	1	60
Joey	1		245	245	335	0	50
Joey	4		345	345	440	2	55
Randy	3		415	415	510	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1155 ✓
Rhonda - GS -	8-3	1115 ✓
PHOTO LAB		
Mari	8-5	1115 ✓

GUIDE	SCHEDULE	LUNCH
Joey	8-4:30	1125 ✓
Brandon	9-2	—
Randy	12-5	—

14

FANTASTIC CAVERNS

109

Date February 26-2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 30° am. Sunny 49° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2655978	1269618		6712
End	2656087	1269618		6714

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	5	1	930	930	1040	0	70
Emily Daniel (Jan)	29	[illegible]	1000	10 –	1135	0	95
Ron	3	1	1045	1045	1200	2	75
Rich	11	11	1130	1130	1220	3	50
Jan	9	11	12 –	12 –	1 –	2	60
Daniel	5		1235	1235	140	2	65
Ron	27	mensvhed 1	100	110	220	2	70
Rich	5		130	130	235	1	65
Ron	4		215	225	330	1	65
Rick	3	1	245	245	345	0	60
Ron	10		330	330	430	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	9-2	— H
Sue	8-5 (GS)	✓12:00
PHOTO LAB		
Marci	8-5	✓11:05

GUIDE	SCHEDULE	LUNCH
Rich	8-4:30	12:25
Ron	9-5	✓12:05
Emily	8-1	— H
Daniel	9-2	— H
Jan	9-2	— H

FANTASTIC CAVERNS

239

Date Feb 21, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 34° am. Sunny 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2656087	1269618		6714
End	2656327	1269618		6720

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
	Katy	10		930	930	1030	2	60
	Ron	6	III	1030	1030	1125	0	55
	Brandon	13	II	11—	11—	12—	2	60
B	Katy	23		1120	1120	1230	6	60
R	Ron	15	I	1135	1135	1230	3	55
R	Brandon	22	IIII	1210	1210	120	5	70
	Matt	18	II	1230	1235	140	4	65
	Ron	24		100	100	200	3	60
	Katy	24	~~IIII~~	130	130	235	6	65
	Brandon	18	III	200	200	305	2	65
M	Ron + Matt	41	IIII	230	230	340	12	70
b	Katy	17		3—	3—	400	1	60
	Brandon	4		330	330	425	1	55
	Katy	4	I	410	410	455	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	✓
PHOTO LAB		
Alex	8-5	No Show
Marci	9-5	✓

GUIDE	SCHEDULE	LUNCH
Katy	8-4:30	✓
Marci	9-5 Photo lab	
Brandon	10-5	✓
Ron	10-3	— H

FANTASTIC CAVERNS

182

Date Feb 28, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 53° am. Partly Cloudy 70° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2656327	1769618		6720
End	2656527	1769618		6728

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		840	845	945	1	65
Daniel	4		910	910	1015	1	65
Rich	4	1	950	950	1050	1	60
Ron	11	1	1030	1030	1130	2	60
Daniel	21	Dog	1115	1115	1215	4	60
Rich	18	11	12	12	1255	4	55
Daniel	5		1230	1230	125	1	55
Ron	20	11 Dog	100	100	200	4	60
Rich	25	Dog 11:30	135	140	230	4	50
Daniel	24	1	205	205	300	2	55
Ron	23	Dog 11	230	230	340	4	70
Rich	13		3	3	405	4	65
Ron	6		350	350	505	1	75
Rich	3	1	430	430	520	0	50
Ron	3	1	520	520	610	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nodi	9-6	12:45
	Gift Shop	
Rhonda	8-5 H	12:00
PHOTO LAB		
Amanda	8-6	12:00

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	11:35
Daniel	9-2 H	—
Rich	10-6 H	1:00

FANTASTIC CAVERNS

57

Date Feb 29, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 45° am. Sunny 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2656527	1269618		6728
End	2656584	1269618		6797

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	2		9:50	9:50	10:55	0	65
Randy	5	11	10:45	10:45	11:45	1	60
Ron	4		11:15	11:15	12:10	0	55
Vic	5	1	11:35	11:35	12:40	0	65
Randy	10	1	12	12	1:00	3	60
Ron	9	1	12:30	12:30	1:35	0	65
Vic	2	11	1:30	1:30	2:35	1	65
Randy	16	1	2	2:05	3:05	5	60
Ron	4		2:45	2:45	3:45	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-2	12:30
Joey	12-4	1:30
Jackie 65	9-5	12:30
PHOTO LAB		
Marci	8-4	12:00
Alex	1-6	—

GUIDE	SCHEDULE	LUNCH
Vic	8-4:30	12:45
Randy	9-5	1:05
Ron	10-6	1:35
Emily	12-4 (OTR)	—

FANTASTIC CAVERNS

90

Date March 1 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather rain 50° am. Clear 48 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2656584	1269618	/	6737
End	2656680	1269618		6737

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	4	-	8 30	8 30	9 20	2	50
Blaine	2	-	9 15	9 15	10 20	0	65
Vic Randy Ron	35	Bldg 1	10 -	9 50	11 55	5	125
Blaine	8	11	10 30	10 30	11 30	2	60
Rick	1	-	11 -	11 -	12 -	0	60
Blaine	10	-	11 30	11 35	12 40	3	65
Randy	5	-	12 30	12 30	1 25	0	55
Vic	3	1	12 50	12 50	2 -	0	70
Blaine	9	-	1 50	1 50	2 50	2	60
Randy	3	-	2 45	2 45	3 50	1	65
Blaine	5	1	3 15	3 15	4 20	3	65
Randy	2	-	4 00	4 10	5 00	1	60
Blaine	3	-	4 45	4 45	5 35		50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4	12 -
Joey	11-6	1 15
Jackie GS	9-5	12 35
PHOTO LAB		
Marci	8-1	—
Mandy	1-6	—

GUIDE	SCHEDULE	LUNCH
Rick	8-3:30	12 -
Blaine	9-5:30	12 45
Vic	9-2	—
Randy	10-6	1 30
Ron	9-2	—
Karen (FV)	10-3	—

FANTASTIC CAVERNS

Hand issue

adult	Child
1120055	0017741
1120109	0017773

85

Date March 2, 2016

Day Sun. Mon. Tues. (Wed) Thurs. Fri. Sat.

Weather Frosty 30° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin				6737
End				6737

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	1	11	9:45	9 45	10 30	1	45
Ron Randy Jan	48	Christ Chrs.	10 00	10 10	11 50	6	100
Blaine	7		10 55	10 55	12 -	2	65
Rick	5	11	11 20	11 20	12 20	2	60
Ron	5	1	12 -	12 -	12 45	1	45
Randy	3		12 30	12 30	1 30	1	60
Jan	2		1 30	1 30	2 20	1	50
Rich	8	Dog	2 10	2 10	3 10	1	60
Ron	3		2 40	2 40	3 40	1	60
RON	4		4 -	4 -	5 -	2	60
Blaine	3		4 45	4 45	5 45	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 4 00	12 05
Sue	11 - 6 00	2:00
Nicole	(TR) 10 - 2 H	—
Jackie	9 - 5 00	12 35
PHOTO LAB		
Mandi	8 - 1 00 H	—
Alex	1 - 6 00	—

GUIDE	SCHEDULE	LUNCH
Rick	8 - 3 30	12 25
Blaine	9 - 5 30	12 10
Randy	10 - 3 00 H	—
Ron	10 - 6 00	12 50
Jan	8 - 3 00 H	12:00
Karen	(TR) 8 - 1 H	—

FANTASTIC CAVERNS

Hand issue

Adult	Child
1120109	17773
1120171	0017797

86

Date March 3 - 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather 40° Pt cloudy am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin				6737
End				

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy Daniel Ron	37		945	945	1120	8	95
Brandon	6	11	1030	1030	1140	0	70
Sid	4		11—	1105	1200	0	55
Ron	3		1130	1130	1245	3	75
Daniel	2		1205	1205	100	1	55
Randy	4		1230	1230	130	2	60
Daniel	2		110	110	205	1	55
RON	11		140	140	245	1	65
Randy	6	11	205	205	300	3	55
Ron	6	11	245	255	400	2	65
Randy	4	1	330	330	430	0	
Randy	1		435	435	530	0	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE		LUNCH
Sue	8-11	H	11:05
Mark	11-6		11:40
Brade	10-2 Tr	H	—
PHOTO LAB			
Mary	8-1	H	—
Mandy	1-6		—

GUIDE	SCHEDULE		LUNCH
Randy	8-530		1125
Ron	9-6		1250
Daniel	9-2	H	—
Brandon	8-12	H	—
Karen	10-3 TR	H	—

FANTASTIC CAVERNS

105

Date March 4, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Fog 34° am. clear 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	26566680	12691618		6739
End	26566785	12691618		6743

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	3		930	930	1020	1	50
Emily	6	1	10	10	1055	2	55
Daniel	5	D09	1030	1030	1130	3	60
Rich	10	-	1100	1100	1205	4	65
Emily	15	-	1145	1145	1245	3	60
Daniel	2	-	1210	1210	1 12	0	60
Daniel	15	-	1 15	1 15	215	2	60
Emily	7		145	145	245	1	60
Daniel	16	III	245	245	345	4	60
Emily	9	1	320	320	430	3	70
Daniel	15	II	415	415	515	6	60
Emily	2	-	500	505	600	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4 H	12:22
Joey	11-6	1:50
Rhonda	9-5	120
PHOTO LAB		
Marci	8-3	130
Mandy	1-6	—

GUIDE	SCHEDULE	LUNCH
Rich	8-1 H	—
Emily	9-6	12 55
Daniel	10-5:30	2:22

FANTASTIC CAVERNS

305

Date March 5, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Clear 41° am. Sunny 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2656785	1269618		6743
End	2657090	1269618		6750

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	4	-	8:45	8:45	9:40	1	55
Katy	2	-	9:10	9:10	10:20	1	70
Brandon	7	II	9:45	9:45	10:40	2	55
Ron	15	IIIII	10:10	10:10	11:10	3	60
Katy	6	-	10:30	10:30	11:25	0	55
Brandon	14	III	11:20	11:20	12:05	2	65
Vic	21	IIIII	11:35	11:35	12:50	2	75
Ron	24	I	11:55	11:55	1:-	5	65
Katy	24	III	12:25	12:25	1:20	2	55
Brandon	22	IIIII	12:45	12:50	1:50	3	60
Vic	19	II	1:10	1:15	2:10	6	55
Ron	20	IIII II	1:45	1:45	2:50	5	65
Katy	20	I	2:05	2:00	3:10	2	70
Brandon	23	II	2:30	2:30	3:35	3	65
Ron/Vic	49	11	3:-	3:00	4:20	14	80
Brandon	23	I	3:40	3:40	4:50	6	70
Katy	12		4:10	4:10	5:-	3	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4 H	11:35
Madi	11 - 6	1:20
Jackie (GS)	9 - 5	12:05
PHOTO LAB		
Mandy	8 - 3	1:20
Alex	1 - 6	—

GUIDE	SCHEDULE	LUNCH
Ron	8 - 3:30 H	11:15
Brandon	9 - 4:30 H	12:15
Katy	9 - 5:30	11:25
~~Emily~~	~~10:30 - 6~~	
Vic	11 - 6	2:15

FANTASTIC CAVERNS

259

Date March 6, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 56° am. Cloudy 50° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2657090	1269618	/	6750
End	2657349	1269618	/	6760

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	5		9:-	9:-	10:-	1	60
Vic	11	III	9:30	9:30	10:40	3	70
Randy	23	I	10:-	10:-	11:00	6	60
Rich	17	IIII	10:30	10:30	11:25	5	55
Blaine	21	-	11:30	11:30	12:20	1	50
Vic	13	III	11:45	11:45	12:45	3	60
Rick	24	III	12:20	12:20	1:15	3	55
Randy	17	-	12:45	12:50	1:50	1	60
Blaine	21	II	1:30	1:30	2:25	1	55
Vic	21	III	2:-	2:-	3:05	5	65
Randy/Rick	36	IIII	2:30	2:30	3:30	5	60
Blaine	20	IIII	3:05	3:05	3:55	4	50
Vic	16	I	3:30	3:30	4:35	2	65
Randy	9	II	4:00	4:00	4:55	2	55
Blaine	2	II	4:45	4:45	5:35	1	50
Vic	6	I	5:30	5:30	6:40	3	70!

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4 H	11:30
Joey	11-7	1:30
Jackie	9-5 (GS) H	12:45
PHOTO LAB		
Marci	8-3	
Alex	1-7	

GUIDE	SCHEDULE	LUNCH
Rich	8-3:30 H	11:30
Vic	9-6:30	1:00
Randy	9-4:30 H	12:-
Blaine	10:30-7	2:30
Karen	1-6 (TR)	

FANTASTIC CAVERNS

244

Date 3-7-16

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Clear 59° am. Cloudy 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2657349	1269618		6760
End	2657593	1269618		6771

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3	–	9:00	9:00	9:50	1	50
Ron	5	–	9:30	9:30	10:25	1	55
JAN, EMILY BLAINE	50	–	10:10	10:10	11:45	0	95
Ron	9	–	10:30	10:30	11:25	1	55
Vic	9	11	11:00	11:00	12:00	1	60
Ron	10	11	11:35	11:35	12:25	3	50
JAN, EMILY VIC	50	–	12	12	1:30	0	90
Blaine	18	11	12:15	12:15	1:10	1	55
Ron	24	–	1:00	1:00	1:55	3	55
Joey	10	–	1:35	1:35	2:35	3	50
Jan	3	–	2:00	2:00	2:55	1	55
Blaine	15	–	2:20	2:20	3:15	1	55
RON	5	–	2:45	2:45	3:40	0	55
Emily	14	III	3:15	3:15	4:10	1	55
Vic	9	IIII	3:30	3:30	4:25	0	55
Emily	2		4:30	4:30	4:25	0	55
Nicole	2		4:45	4:45	5:45	1	60
Emily	5		5:30	5:30	6:20	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-4	12:15
Nicole	1-7	3:10
Jackie	9-5 (GS)	1:30
PHOTO LAB		
Alex	8-3	
Melissa	1-5	
Marci	1-7	

GUIDE	SCHEDULE	LUNCH
Blaine	8-3:30 H	1:15
Jari	8-3:00 H	1:30
Ron	9-4:00 H	12:25
Emily	9-6:30	1:45
Vic	10:30-7	4:40
Karen	10-3 (TR)	H

FANTASTIC CAVERNS

216

Date Teusday March, 8, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 56°F pt. sun am Rain 65° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2657593	1269618	—	6771
End	2657809	1269618	—	6773

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	5		8 35	8 35	9 30	1	55
Ron	13	111	10 10	10 10	11 05	4	55
Randy/Rick Daniel	53	[illegible]	10 75	10 25	12 00	1	75
Brandon	10		10 40	10 40	11 45	0	65
Blaine/Ron	35	1	11 15	11 15	12 10	2	55
Brandon	14		11 45	11 45	12 50	2	45
Randy	5		12 05	12 05	1 10	2	65
Blaine	18		12 35	12 35	130	5	55
Brandon	13		12 55	12 55	1 50	1	55
Daniel	9	1	1 50	1 50	245	2	55
RON	14	DOG	215	215	310	3	55
Blaine	10	11	245	245	335	3	50
Daniel	6	1	315	315	410	2	55
RON	9	DOG	345	345	440	1	55
Blaine	2		415	415	505	1	50
Blaine	4		515	515	605	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	11-7	12 25
PHOTO LAB		
Pam	8-4	12:00
Marci	9-2	—
Melissa	8-3 Tr	12:00
Mandy	1-7	

GUIDE	SCHEDULE	LUNCH
Rick	8-2	12 00
Randy	9-2	—
Brandon	9-2	—
Daniel	9-4:30	12 00
Ron	9-6:30	12 20
Blaine	10:30-7	1 35

FANTASTIC CAVERNS

278

Date March 9, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 57° am. Cloudy 60° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2657809	1269618	/	6773
End	2658088	1269618	/	6774

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	3		9-	9-	10-	1	60
Brandon	8		930	935	1030	0	55
Emily Daniel Jan	52	Clinton School	10-	1005	1135	1	90
Blaine	7	III	1015	1020	1115	0	55
Vic	13	Dog	1045	1045	11	3	60
Brandon	10	11	1130	1130	1240	3	70
Blaine	8	1	12-	12-	100	3	60
Daniel Emily Jan	64	Ozark Group	1215	1215	150	0	95
Vic	22		1235	1240	150	4	70
Blaine Branden	24/15	Saints III	130	130	220	3	50
Vic	14	11	2-	205	305	1	60
Blaine	16	III	230	230	325	2	55
Emily	15	III	305	305	4-	4	55
Brandon	4		330	330	435	2	65
Vic	2	11	350	355	450	1	55
Emily	3		430	430	530	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-4	11:10
Sue	11-7	1:55
Rhonda	9-5	12:20
PHOTO LAB		
Mandy	8-12	—
Alex	1-7	
Melissa	8-3	1125
Pam	8-4	1125

GUIDE	SCHEDULE	LUNCH
Blaine	8-3:30 11	11:20
Jan	8-2	—
Daniel	9-2	—
Brandon	9-4:30	12 45
Emily	9-6:30	2-
Vic	10:30-7	12-
Richard	12-5 (TR)	--
Karen	8-1 (TR) 11	—

FANTASTIC CAVERNS

312

Date THU, March 10

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Rain 58° am. Cloudy 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2658088	1269618		6774
End	2658400	1269618		6782

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	4	–	9:30	9:30	10:30	1	60
Daniel	8	–	9:50	9:50	10:40	2	50
Vic Emily	28	CLINTON –	10:05	10:05	11:40	0	95
Rick	5	1	10:20	10:20	11:10	1	50
Ron	17	III	10:45	10:45	11:45	4	60
Randy	36	CHROT	11:00	11–	12–	2	60
Daniel	19	Day III	11:15	11:20	12:15	5	55
Emily	23	III I	11:45	11:45	12:40	4	60
Vic	9	–	12:00	12:05	1:00	2	55
Rick	15	1	12:30	12:30	1:20	1	50
Ron	13	–	1:00	1:00	2:00	3	60
Daniel	6	–	1:20	1:20	2:15	2	55
Randy	11	II	1:40	1:40	2:50	3	60
Rick	10	1	2:25	2:25	3:25	1	60
Ron	18	–	2:55	2:55	3:55	6	60
Emily Daniel	67	–	3:10	3:10	4:10	7	60
Ron	21	1	4:00	4:00	5–	3	60
Daniel	2		4:30	4:30	5:35	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE		LUNCH
Joey	8-4	H	11:10
Madi	11-7		2:10
Jackie	9-5	H	12:40
PHOTO LAB			
Marci	8-12	H	–
Pam	11-7		
Melissa	1-5		–

GUIDE	SCHEDULE		LUNCH
Rick	8-3:30	H	11:15
Randy	8-3:30	H	12:15
Vic	9-1	H	–
Daniel	9-6:30		12:25
Emily	9-4:30	H	12:45
Ron	10:30-7		2:00
Karen	8-1	H	–
Richard	8-1	H	–

FANTASTIC CAVERNS

395

Date March 11, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 50° am. Cloudy 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2658400	1269618	/	6782
End	2658797	1269918	/	6799

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	3		850	850	945	1	55
Daniel	10	1	925	925	1010	0	45
Tom	7	11	945	945	1040	3	55
RON	4		10—	10—	11—	0	60
Blaine	7	11	1015	1015	1110	3	55
Brandon Emily	44	Edna	1030	1030	1130	0	60
Rick	13	11	1045	1045	1145	1	60
Daniel	17	1111	1115	1115	1210	1	55
Rm Blaine	71	Allen 1	1130	1130	1230	6	60
Brandon	25	111	1150	1145	1245	2	60
Randy Tom	32	Rosie	12—	12—	130	5	90
Rick	24	1	1215	1215	105	2	50
Emily Blaine	29	THREE	1245	1245	110	7	8
Daniel	13		120	120	215	0	55
Ron	20	111	145	145	245	3	60
Blaine	16	1	210	210	300	4	50
Randy	14	1	230	230	330	2	60
Emily	8	1111	310	315	410	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Tom	8	1	330	330	425	1	55
Brandon	15	1	350	350	445	3	55
DANIEL	7	[illegible]	420	420	415		55
Daniel	9		520	520	620	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4	105
Nicole	1-7	330
Sachie	9-5 (GS)	✓
PHOTO LAB		
Mark	8-3	✓
Alex	1-7	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-3:30	1250
Tom	8-4:30	110
Emily	9-4:30	12—
Daniel	9-6:30	220
Blaine	10-3	—
Rick	10:30-7	115
Brandon	10-6:30	1250
Randy	11-4	—

FANTASTIC CAVERNS

535

Date March 12 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather drizzle 50° am. 52° drizzle pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2658797	1249618		6794
End	2659333	269618		6805

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	4		8 50	8 50	9 45	0	55
Randy	12		9 15	9 15	10 20	4	65
Daniel	21		9 50	9 50	9 45	4	45
Vic	24	1 IIII	10 15	10 15	11 15	3	60
Randy	14	1	10 30	10 30	11 30	2	60
Emily	8	1	10 45	10 45	11 50	3	65
Daniel	26	1	11 10	11 10	12 05	6	55
Ron	21	1	11 30	11 30	12 35	3	65
Vic	25	III	11 50	11 50	12 55	6	65
Emily	23	1	12 10	12 10	1 00	1	50
Randy	23	dog	12 30	12 30	1 30	4	60
Daniel	22	II	12 50	12 50	1 40	6	50
Ron	22	1	1 10	1 10	2 10	5	60
Emily	25	Pre 1	1 30	1 30	2 35	5	65
Vick	23	1	1 50	1 50	2 55	1	65
Randy	23	III	2 10	2 10	3 10	5	60
Ron Daniel	47	IIII	2 20	2 35	3 50	4	75
Vic Randy	48	IIIII	3 10	3 15	4 10	7	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Matt Emily	49	III IIIII	3 30	3 30	4 40	3	60
Ron Daniel	35	II	3 50	3 55	4 50	7	50
Vic	25	1	4 30	4 30	5 25	0	55
Emily	10		5 10	5 10	6 00	1	50
Daniel	6		5 30	5 30	6 35	1	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4	12 05
Nicole	1-7	3 30
Rhonda	65 9-5	12 35
PHOTO LAB		
Marci	8-3	✓
Alex	1-7	✓

GUIDE	SCHEDULE	LUNCH
Daniel	8-3:30	12 10
Randy	9-4:30	11 35
Vic	10-5:30	1 05
Emily	10:30-6	2 40
Ron	11-7	5 30
Katy	9-6:30 - Call	Sicli

FANTASTIC CAVERNS

550

Date March 13, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 56° Foggy am. Cloudy 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2659333	1269618	—	06805
End	2659883	1269618	—	6817

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	1	1	8:50	8:50	9:40	1	50
Ron	19	2005 IIII	9:45	9:45	10:45	4	60
Brandon	17	1	10:15	10:15	11:10	5	55
Vic	21	II	10:40	10:40	11:40	6	60
Blaine	23	II	11:05	11:05	11:55	3	50
Rick/Ron	30	III	11:25	11:25	12:20	8	55
Brandon	24	III	11:50	11:50	12:40	6	50
Vic	28	I	12:10	12:10	1:00	3	50
Blaine	25	III	12:30	12:30	1:20	5	50
Rick	23	IIII	12:50	12:50	1:40	3	50
Brandon/Ron	47	IIII	1:15	1:15	2:10	11	55
Vic/Blaine	38	I	1:35	1:35	2:30	7	55
Rick	22	II	2:15	2:15	3:10	5	55
Blaine	22	II	2:35	2:35	3:30	2	55
Ron	23	IIII	2:50	2:50	3:45	4	55
Brandon/Rick	45	II	3:10	3:10	4:05	6	55
Vic	24	II	3:30	3:30	4:25	3	55
Ron/Joey	51	IIII	4:00	4:00	4:55	12	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	16	-	4:20	4:25	5:20	4	55
Vic	18	1	4:50	4:55	5:55	2	60
Brandon	12	1	5:25	5:25	6:25	3	60
Rick	9	II	6:00	6:00	7:00	3	60
Brandon	8	-	7:00	7:00	7:50	3	50

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-3	11:15
Joey	11-8	1:30
PHOTO LAB		
Alex	8-3	
Mandy	1-8	

GUIDE	SCHEDULE	LUNCH
Blaine	8-3:30	12:00
Ron	9-4:30	12:25
Brandon	9-6:30	12:45
Vic	1030-6	2:40
Rick	11-8	145
Karen	2-7 training	
Richard	8-1 training	
Katy	11-8 called in sick	

FANTASTIC CAVERNS

555

Date March - 14 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Fog 50° am. Sunny 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2659883	1269618		6817
End	2660138	1269618		6824

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	5	-	9:10	9:10	10:05	2	55
Daniel	6	-	9:35	9:35	10:30	1	55
Vic	16	II	10:00	10:00	10:55	4	55
Randy	13	II	10:25	10:25	11:25	3	60
Ron	21	I	10:45	10:50	11:40	7	50
Jan	23	III	11:15	11:15	12:20	2	65
Rick	24	IIII	11:35	11:30	12:30	2	60
Daniel	23	II	11:50	11:50	1:00	4	70
Randy	20	II	12:05	12:05	1:15	4	70
Ron	22	IIII	12:20	12:20	1:25	4	65
Jan	21	IIII I	12:40	12:50	1:45	4	55
Vic	22	III	1:05	1:05	2:10	4	65
Randy/Rick	49	III	1:20	1:25	2:30	6	65
Daniel	23	IIII	1:45	1:45	2:45	7	60
Jan	24	II	2:05	2:10	3:00	5	50
Ron	26	IIIII	2:20	2:30	3:25	6	55
Randy Daniel	45	IIIIII	2:45	2:50	3:50	4	60
Joey	23	IIII	3:10	3:10	4:10	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron/Vic	50	IIII	3:35	3:30	4:35	11	65
Jan	20	IIIIII	3:45	3:50	4:50	3	60
Daniel	15	III	4:05	4:05	5:-	2	55
Randy	24	IIII	4:30	4:30	5:35	7	65
Ron	12		5:-	5:-	6:0	3	70
Jan	9	I	5:30	5:30	6:20	3	50
Ron	5		6:15	6:15	7:10	2	55
Jan	6		6:45	6:45	7:35	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4	11:45
Sue	11 - 8	3:15
Rhonda	9 - 5	✓
PHOTO LAB		
Melissa	8 - 3	✓
Mandy	1 - 8	✓

GUIDE	SCHEDULE	LUNCH
Rick	8 - 1	—
Vic	9:30 - 5	2:10
Daniel	9 - 4:30	1:00
Randy	10 - 5:30	3:55
Ron	10:30 - 8	1:40
Jan	11 - 7:30	3:10
Richard	8 - 1	—

FANTASTIC CAVERNS

590

Date March 15 - 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather 57° sunny am. cloudy 70° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2660438	1269618	/	6821
End	2661030	1269618	/	6824

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		845	845	945	1	60
Blaine	4		915	915	1015	2	60
Richard	10	IIII	945	945	1040	4	55
Randy Rich Dan	65	Crush	10 -	10 -	1135	1	95
Blaine	23	IIII	1015	1015	1110	4	55
Ron	25	IIII	1045	1045	1145	4	60
Richard	23	II	11 -	11 -	12 -	4	60
Blaine	25		1120	1120	1210	4	50
Scot	24	I	1135	1135	1225	6	50
Ron	20	I	1150	1150	1250	5	60
Daniel Randy Rich	66	Crush	12 -	12 -	130	1	90
Richard Scot	24	IIII	1215	1215	110	5	55
Blaine	42	IIII	1245	1245	145	8	60
Richard Mark	20	IIII	120	120	210	2	50
Daniel Ron	30		135	135	230	8	55
Blaine	50	IIII	150	150	250	9	60
Vic	25	IIII	205	205	305	3	60
Randy	23	II	230	230	325	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	17	II	250	250	350	4	60
Ron	11	IIII	315	315	420	3	65
Randy	16	IIII	335	335	440	2	70
Daniel	12	III	4 -	4 -	450	5	50
Richard	14	IIII	430	430	535	4	65
Richard	4		540	540	640	2	60
Daniel	3	I	610	610	710	1	60

INFO. COUNTER	SCHEDULE		LUNCH
Sue	8-4	H	145
Madi	11-8		295
Jackie (OS)	9-5	H	✓
PHOTO LAB			
Mandy	8-3	H	1 -
Melissa	3-8		—
Pam	1-8		430

GUIDE	SCHEDULE		LUNCH
Ron	8-5	H	110
Vic	2 -	H	
Blaine	9 - 2	H	—
~~Emily~~	~~10:30 - 8~~	SICK	
Richard	9 - 6:30	H	215
Rich	9-2	H	—
Daniel	10 - 8:00		255
Randy	9-4:30	H	150
Karen	9-2 + R w/ ADV	H	—

FANTASTIC CAVERNS

589

Date March 16, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sa

Weather 41 Sunny am. Cloudy 61 pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PAS
Begin	2661030	1269618		6824
End	2661621	1269618		6831

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	2		8:35	8:35	9:30	1	55
Vic	10	卌	9:20	9:20	10:20	3	60
Rick	17	III	9:45	9:45	10:35	4	50
Emily	9	II	10:15	10:15	11:10	3	55
Daniel Randy Jan	33	SW Sch.	10:30	10:35	12:00	0	85
Vic	16	–	10:55	10:55	11:55	5	60
Richard	25	I	11:15	11:15	12:15	4	60
Rick	26	II	11:30	11:30	12:25	7	55
Ron	26	III	11:45	11:55	12:00	7	65
Vic/Emily	49	卌	12:00	12:10	1:20	12	70
Rick Richard	45	III	12:30	12:35	1:40	12	65
Daniel	20	III	12:50	12:50	1:45	5	55
Randy	23	III	1:10	1:10	2:10	5	60
Jan	19	II PL	1:30	1:35	2:25	1	55
Ron/Emily	49	IIII	1:45	1:45	2:45	4	60
Richard	18	卌 I	2:00	2:00	3:00	5	60
Rick/Vic	40	卌	2:15	2:15	3:15	7	60
Randy	20	II	2:35	2:35	3:30	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
Daniel	13	II	2:50	2:50	3:50	2
Emily	25	II	3:20	3:20	4:40	3
Ron	25	III	3:45	3:45	5:00	5
Vic	24	卌 II	4:00	4:00	5:05	2
Daniel	17	II	4:15	4:15	5:15	3
Richard	16	–	4:50	4:50	5:45	3
Ron	5	–	5:20	5:20	6:40	0
Richard	11	I	6:00	6:00	6:55	3
Ron	8	II	6:30	6:40	7:40	2

INFO. COUNTER	SCHEDULE	LUNCH
Pam	8-5	11:45
Joey	11-8	2:45
GS		
Rhonda	8-5	✓
Nicole	10-3	–
PHOTO LAB		
Marci	8-4	1:15
Melissa	1-8	3:15

GUIDE	SCHEDULE		LUNCH
Karen	8-1 (Tr.)		–
Jan	8-2	H	12:00
Emily	9-4:30	H	11:20
Randy	9-4:30	H	12:10
Vic	9-4:30	H	1:20
Daniel	9-5:30	H	12:00
Rick	9:30-5	H	1:45
Richard	11-7:30		3:00
Ron	11:30-8		1:15

FANTASTIC CAVERNS

597

Date Thurs. 3-17-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Clear 47° am. Sunny 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2660621	1269618		6831
End	2662220	1269618		6839

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	4	-	8:45	8:45	9:35	1	50
Randy	10	II	9:10	9:10	10:10	3	60
Brandon	8	IIII	9:40	9:40	10:40	1	60
Emily	13	-	10:20	10:20	11:10	2	50
Jan/Vic/Rick	56	carter	10:05	10:05	11:40	0	90
Brandon	24	III	10:50	10:50	11:50	3	60
Randy	20	IIIII	11:10	11:10	12:10	1	60
Emily	22	IIIIIII	11:30	11:30	12:30	2	60
Jan/Vic/Rick	56	Carter one	11:45	11:45	1:15	3	90
Ron/Brandon	55	IIIIII	12:05	12:05	1:05	7	60
Richard	28	II	12:20	12:20	1:35	4	75
Randy/Emily	50	IIIII	12:45	12:50	2:05	7	65
Ron	17	II	1:05	1:10	2:30	5	80
Vic/Richard	48	III	1:35	1:35	2:40	7	65
Rick	24	-	2:00	2:00	2:50	4	50
Randy	19	I	2:20	2:20	3:20	5	60
Ron	25	IIII	2:45	2:55	4:10	5	75
Emily	24	I	3:10	3:10	4:20	3	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	25	III	3:30	3:30	4:40	4	70
Richard	24	II	3:45	3:45	4:55	5	60
Ron	22	I	4:30	4:30	5:45	3	75
Richard	22	IIII	5-	5-	6:15	3	75
Ron	4	II	5:45	6-	7:05	1	65
Richard	2	II	6:30	6:30	7:30	1	60

INFO. COUNTER	SCHEDULE		LUNCH
Joey	8-5	H	11:15
Madi	11-8		1:40
Nicole	10-3	H	-
Rhonda	9-5	H	✓
PHOTO LAB			
Mandy	8-4		
Melissa	1-8		

GUIDE	SCHEDULE		LUNCH
Rick	9:30-5	H	1:25
Vic	9-4:30	H	2:50
Randy	9-4:30	H	3:30
Ron	11:30-8		
~~Daniel~~	~~10-5~~ called in		
Emily	9-4:30	H	2:05
Brandon	8-2	H	-
Jan	9-2	H	-
Richard	11-7:30		3:10
Karen	8-1	H	-

FANTASTIC CAVERNS

672

Date March 18 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather 48° of Sunny am. cloudy 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2662820	1269618		6839
End	2662893	1269618		6852

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	10		905	905	1005	3	60
Vic	17	1	945	945	1050	3	65
Daniel	23		10 -	10 -	11 -	5	60
Randy Jan Rich	46	ADV 45 Hd	1015	1015	12 -	0	105
Rich Vic	24	1	1030	1030	1130	3	60
Richard	32	IIII	11 -	11 -	1210	3	70
Daniel	27	III	1175	1115	1220	2	65
Blaine	25	IIII	1135	1135	1230	6	55
Rich Jan	51	IIII	1205	1205	1250	6	45
Richard Randy	50	I	1230	1230	135	5	65
Blaine	23	II	1245	1245	140	5	55
Vic Jan	41	IIII	105	105	220	5	75
Daniel	27		120	120	240	7	80
Rich	23	IIII	140	140	245	3	65
Randy	25	IIII	155	155	3 -	4	65
Richard	24	I	210	210	320	4	70
Vic	17		230	230	330	3	60
Blaine	14	I	245	245	335	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	18	III	3 -	315	4 -	4	50
Randy	24	IIII	320	330	430	3	60
Vic	23	IIII	345	345	450	6	70
Blaine	24	IIII I	4 -	4 -	5 -	9	60
Richard	18	I	430	430	540	4	70
Blaine	23	DOG IIII	505	505	605	4	60
Richard	25	IIII	535	535	640	5	65
Blaine	15	IIII	6 -	625	720	5	55

INFO. COUNTER	SCHEDULE		LUNCH
Sue	8-5	H	11:15
Mindi	1-8		2:30
Rhonda	9-5		
Nicole	10-3	H	—
PHOTO LAB			
Marci	8-4	H	—
Alex	1-8		—

GUIDE	SCHEDULE		LUNCH
Rich	8-5	H	1130
Vic	9-4:30	H	12:15
Randy	9-4:30	H	12 -
Daniel	9:30 - 5:30	H	2:25
Richard	11 - 7:30		335
Blaine	11:30 - 8		150
Karen	8-12	(set)	H —
Jan	9-2	(ADV)	H —

FANTASTIC CAVERNS

718

Date March 19 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 32° am. Clear 49° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2662853	1269418		6857
End	2663308	1269922		6871

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	13	IIII	8:50	8:50	9:45	5	55
Richard	4		9:15	9:15	10:10	1	55
Ron	8	1	9:40	9:40	10:35	2	55
Katy	18	1	10:-	10:-	11:-	2	60
Rick	25	1	10:20	10:20	11:20	7	60
Vic	19	11	10:35	10:35	11:40	3	65
Daniel	24	IIII	10:55	10:55	11:55	4	60
Richard	22	IIII	11:10	11:10	12:20	4	70
Ron	20		11:25	11:25	12:35	6	70
Katy	24	III	11:45	11:45	12:45	2	60
Blaine	25	1	12:-	12:-	1:-	5	60
Brandon Vic	49	IIII	12:30	12:25	1:20	3	55
Rick Daniel	50	III	12:45	12:45	1:45	10	60
Blaine	24	III	1:10	1:10	2:05	5	55
Brandon Vic	48	II IIII	1:30	1:30	2:30	10	60
Rick Daniel	48	IIII	1:50	1:50	2:50	6	60
Ron	22	1	2:15	2:15	3:20	2	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy Richard	52	IIII	2:40	2:40	3:45	9	65
Blaine Rick	48	IIII	2:55	3:55	4:55	11	60
Brandon Ron	46	IIII	2:15	3:25	4:25	3	60
Katy Richard	50	III	3:45	3:50	4:55	7	65
Vic	19		4:05	4:-	5:05	2	55
Brandon	25		4:30	4:30	5:25	6	55
Richard	13	IIII	4:55	5:-	6:05	3	65
Brandon	12	III	5:40	5:40	6:35	1	55
Blaine	9		6:10	6:10	7:00	3	50
Brandon	2		6:45	6:45	7:35	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1:15
Nicole	11-8	3:10
PHOTO LAB		
Marci	8-4	✓
Alex	12-8	✓

GUIDE	SCHEDULE	LUNCH	
Daniel	8-3:30	12:05	H
Ron	9-4:30	12:45	H
Katy	9-5:30	12:45	
Richard	9-6:30	12:30	
Vic	10-6	2:35	
Brandon	11-7:30	2:35	
Blaine	11:30-8	4:05	
Rick	9:30-5	12:25	H

FANTASTIC CAVERNS

570

Date March 20, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 35° am. 31° cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2663308	1269922		6871
End	2663552	1270249		6872

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2	-	8:30	835	940	1	65
Katy	17	1	905	905	10	2	55
Ron	19	1	940	940	1050	5	70
Blaine	15	IIII	1010	1010	1105	1	55
Katy	24	Dog III	1030	1030	1135	4	65
Ron	28	Dog	1105	1105	1200	5	55
Jan Brandon	53	III	1130	1130	1230	7	60
Blaine	23		1150	1150	1250	6	60
Katy	22	IIII	1220	1220	120	6	60
Brandon Jan	52	1	1240	1240	140	12	60
Ron	23	1	100	100	205	2	65
Katy/Blaine	42	III	125	125	225	11	60
Brandon Jan	44	III IIII	145	145	250	14	65
Ron	25	II	205	215	330	2	80
Blaine	23	IIII	235	235	335	6	60
Katy	22	II	255	255	355	3	60
Jan	21	IIII	315	315	410	2	55
Ron	15	IIII	335	335	450	5	75

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	23	II	4-	400	500	6	60
Katy	21	1	420	420	515	5	55
Blaine	8	III	440	440	530	2	50
Jan	9		500	500	555	2	55
Brandon	7	II	630	630	725	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	1240
Nicole	11-8	315
Sachie	9-5 (GS)	✓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Ron	8-5:30	1210
Katy	9-5:30	1140
Blaine	10-6:30	1255
Brandon	11-7:30	305
Jan	11:30-8	415

FANTASTIC CAVERNS

383

Date March 21 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather cold 30° sunny am. Sunny 57° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2663552	1270249		6872
End	2663935	1270249		6879

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	1		9-	9-	955	1	55
Blaine	5	1	945	950	1040	0	50
Rick Daniel Randy	38	ADV Swim	10-	10 05	1130	1	90
Jan	13		1010	1020	1115	3	55
Blaine	25	1	1055	1055	1150	6	55
Jan	26	DOG TAX	1125	1125	1220	3	55
Daniel	23	1	1145	1145	1240	1	55
Rick Randy	39	ADV SWIM	12-	12-	130	0	90
Blaine	24	1	1215	1215	110	4	55
Daniel	21	1	1245	1245	145	2	60
Randy	24	11	115	115	212	1	60
Blaine	25		130	130	225	3	55
Rick	18	1	145	145	245	6	60
Daniel	20	1	220	220	310	4	50
Randy	8	11	240	240	235	2	55
Blaine	26		310	310	405	6	55
Rick	22	1	350	350	445	2	55
Daniel	9	11	435	435	535	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	5	1	5-	5-	6-	2	60
Daniel	5	1	540	540	630	1	
Rich	7		610	610	710	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	9-5	12-
Madi	11-8	230
PHOTO LAB		
Mandy	8-6	✓
Alex	12-8	✓

GUIDE	SCHEDULE		LUNCH
Jan	8-12	H	—
Blaine	9-5:30	H	2:30
Daniel	10 - 8		320
Rick	9:30 - 7:30		250
Randy	9-2	H	—
Ron	9 - 4:30	—	Sick
Nicole	12-5	HR	—
Karen	2:30 - 7:30	H	—

FANTASTIC CAVERNS

348

Date March 22 - 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 48° am. Clear 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2683935	1270249	/	6879
End	2664220	1270312	/	6885

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		8:30	830	940	1	70
Richard	13		920	920	1030	2	70
Emily	11	11	945	945	1040	1	55
Blaine	8		10	10	1055	1	55
Rick Daniel Karen	58	ADV lamar	1015	1015	1150	7	95
Richard	25	111	1030	1035	1135	1	60
Emily	21		11	11	1155	2	55
Blaine	21	111	1115	1115	1210	2	55
Vic	18	11	1140	1140	1240	~~2~~	60
Randy	13	11	1205	1205	105	2	60
Blaine	12		1225	1225	125	3	60
Rick	20	1	1250	1250	150	7	60
Daniel	19	~~111~~	115	115	215	3	60
Emily	18	11	135	135	235	5	60
Randy	11	1111	215	215	315	3	60
Richard	5		245	250	340	0	50
Vic	21	11	315	315	420	3	65
Randy	22	11	345	345	445	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	6	111	405	405	500	0	55
Vic	14	1	450	450	555	4	65
Randy	5		520	520	525	2	65
Richard	5	1	540	540	635	2	55
Vic			645				
Randy			715				

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1120
Pam	11-8	245
PHOTO LAB		
Mandy	8-4	1205
Marci	12-8	245

GUIDE	SCHEDULE	LUNCH
Emily	8-3:30	1205
Richard	9-6:30	1 —
Vic	11-7:30	2:20
Randy	11:30-8	3:20
Blaine	9-2	—
Rick	9:30-2:30	—
Daniel	10-3	—
Karen	8-1	—

FANTASTIC CAVERNS

375

Date March 23, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather 58° Sunny am. 75° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2664292	1270312		6885
End	2664595	1270312		6894

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	5	1	8:40	8:50	9:40	1	50
Richard	29	Ash Grove	9:30	9:30	10:55	3	65
Rick	13		9:45	9:45	10:40	3	55
Vic Blaine Karen	56	Lamar	10:00	10:00	11:35	1	95
Richard	23	Hill	10:45	10:45	11:40	9	55
Ron	25	11	11:10	11:10	12:05	5	55
Rick	3		11:35	11:35	12:30	0	55
Daniel	24	11	11:55	11:55	12:50	7	55
Vic	20	1	12:15	12:15	1:20	4	65
Blaine	19	111	12:35	12:35	1:30	5	55
Ron	25	11	12:50	12:55	1:50	3	55
Daniel	24	11	1:15	1:15	2:10	3	55
Richard	18	–	1:30	1:30	2:05	2	55
Vic	11	11	1:50	1:50	2:50	1	60
Ron	15	111	2:55	2:55	3:50	3	55
Richard	26	111	3:20	3:20	4:20	6	60
Daniel	18	–	3:50	3:50	4:50	1	60
Ron	10	1	4:15	4:15	5:10	Ø	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	3	–	4:45	4:45	5:45	1	60
Daniel	3	–	5:20	5:20	6:20	1	60
Ron	5	1	5:50	5:50	6:50	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Pam	8-5	11:40
Joey	11-8	2:30
PHOTO LAB		
Alex	8:42 H	1:00
Mandy	1-8	1:30
Jackie	9-5	1:00

GUIDE	SCHEDULE		LUNCH
Karen	8-1	H	–
Blaine	9-2	H	–
Rick	9:30-2:30	H	–
Vic	10-3	H	–
Ron	11-7:30		2:00
Daniel	11:30-6		2:50
Richard	9-6:30	H	1:00

FANTASTIC CAVERNS

456

Date March 24, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Windy 43° am. 38° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2664595	1270312		6894
End	2665053	1270312		6896

	GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
	Matt	14	111	9:15	9:15	10:15	3	60
	Richard	8	–	9:50	9:50	10:50	4	60
	Vic Richard Karen	44	war saw	10:–	10:–	11:45	7	75
	Brandon Matt	48	ocola	10:15	10:15	11:15	4	60
-4	Scot Richard	40	7	10:50	10:50	11:55	8	65
+4	Brandon	27	111	11:30	11:30	12:25	2	55
	Daniel	24	1	11:50	11:50	12:45	2	55
-3	Randy	24	1	12:15	12:15	1:15	5	60
+3	Ron	11	–	12:35	12:35	1:35	2	60
	Brandon	23	11	1:00	1:00	2:–	6	60
	Richard	24	11	1:20	1:20	2:15	1	55
-3	Daniel	26	11	1:40	1:40	2:35	3	55
+3	Ron	23	–	2:00	2:00	2:55	3	55
	Richard	22	111	2:25	2:25	3:15	3	50
	Daniel	22	11	2:50	2:50	3:45	2	55
	Ron	22	11 Dog	3:10	3:10	4:10	1	60
	Richard	24	11	3:30	3:30	4:35	3	65
	Daniel	21	11	4:20	4:20	5:20	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	19	111	4:50	4:50	5:55	3	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	12:20
Joey	11-8	3:00
PHOTO LAB		
Marci	8-4	✓
Melissa	1-8	✓
Jackie	9-5	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-2 H	12:30
Vic	9-2 H	–
Randy	9-2 H	–
Emily	9-4:30 — Sick	—
Richard	9-6:30 H	12:10
Rick	9:30-2:30 — Sick	—
Daniel	11-7:30	3:50
Ron	11:30-8	4:15
Karen	9-2 H	–

FANTASTIC CAVERNS

470

Date March 25 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 35° am. Clear 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2665053	1270312		6896
End	2665525	1270312		6905

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	5		8 30	8 30	9 30	1	60
Emily	9	11	9 30	9 30	10 25	1	55
Brandon Rick	29	Sensh. Ed.	10 -	10 -	11 20	0	80
Randy	24	11	10 15	10 15	11 15	5	60
Emily	22		10 45	10 45	11 45	2	60
Richard	24	111	11 -	11 -	12 -	4	60
Vic	22	1141	11 20	11 25	12 25	5	60
Brandon	20	1111	11 40	11 40	12 35	5	55
Daniel	25	111	12 -	12 -	12 50	7	50
Richard	23	111	12 15	12 20	1 25	4	65
Randy	23	111	12 35	12 35	1 35	3	60
Brandon	23		12 55	12 55	1 55	2	60
Emily	13	1	1 15	1 15	2 10	2	55
Vic	14	11	1 35	1 35	2 35	4	60
Daniel/Randy	35	1111	1 55	1 55	3 00	4	65
Emily	26	1111	2 20	2 20	3 15	1	55
Vic	18	111	2 40	2 45	3 40	2	55
Randy	25	111	3 05	3 05	4 05	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel Matt	45	1111	3 35	3 35	4 35	10	60
Vic	17	1111	4 15	4 15	5 15	5	60
Daniel	13	1111	5 00	5 00	6 00	2	60
Vick	9	1111	5 30	5 30	6 30	3	60
Daniel	2		6 05	6 05	6 00	1	55
Vic	2		6 45	6 45	7 45	0	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	12 -
Nicole	11-8	3 00
PHOTO LAB		
Mami	8-4	✓
Melissa	12-8	✓

GUIDE	SCHEDULE	LUNCH
Randy	8-3:30	11 20
Emily	8-3:30	11 50
Brandon	9-2	-
Richard	9-2	-
Rick	9:30-2:30	-
Vic	11-7:30	3 45
Daniel	11:30-8	3 -

FANTASTIC CAVERNS

563

Date 3-26-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Clear 38° am. Sunny 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2665525	1270312		6905
End	2666091	1270312		6910

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	12	–	8:30	8:30	9:35	2	65
Brandon	14	1	9:10	9:10	10:05	3	55
Richard	15	–	9:45	9:45	10:40	3	55
Emily	11	–	10:15	10:20	11:15	3	55
-2 Brandon	20		10:45	10:50	11:55	5	60
+2 Richard	23	IIII	11:10	11:10	12:15	2	65
Daniel	17	III	11:30	11:30	12:25	1	55
Ron	24	II	11:50	11:50	12:50	5	60
Brandon	23	–	12:10	12:10	1:05	6	55
Emily/Richard	50	–	12:30	12:30	1:45	6	75
Daniel	24	1	12:50	12:50	1:45	3	55
Ron	24	IIII	1:05	1:05	2:05	3	60
Brandon/Emily	48	IIIIIIII	1:30	1:45	2:50	9	65
Daniel	24	IIII	2:00	2:00	3:00	5	60
Richard/Ron	40	IIIII	2:20	2:20	3:25	8	65
Brandon	25	IIII	2:50	3:00	3:55	6	55
Daniel/Matt	45	IIII	3:10	3:15	4:15	9	60
Richard	24	1	3:35	3:35	4:45	3	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	18	II	4:00	4:00	4:55	1	55
Brandon	24	IIII	4:30	4:30	5:40	3	70
Richard	14	II	4:45	4:55	5:55	4	60
Daniel	19	1	5:15	5:15	6:15	3	60
Ron	14	II	5:45	5:45	6:45	3	60
Richard	5		6:05	6:05	7:05	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-5	12:25
Sue	11-8	2:45
PHOTO LAB		
Marci	8-4	✓
Mandy	12-8	✓
Nicole	10-3	✓
Rhonda	9-5	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-3:30	11:50
Brandon	9-5:30	3:55
Richard	9-6:30	1:50
Daniel	11-7:30	4:30
Ron	11:30-8	3:35

FANTASTIC CAVERNS

251

Date March 27th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather cloudy 46° am. cloudy 42° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2666091	1270312	/	6910
End	2666343	1270312	/	6913

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2		8:30	8:30	9:25	1	55
Richard	3		9:50	9:50	10:45	1	55
Blaine	23	1	10:30	10:30	11:20	5	50
Brandon	14		11:05	11:05	12:10	3	65
Richard	25	II	11:30	11:30	12:36	4	66
Ron	10	II	12:00	12:00	12:55	3	55
Blaine	25	IIII	12:35	12:35	1:25	4	50
Brandon	14	1	12:50	12:50	1:45	2	55
Ron	17	–	1:15	1:15	2:20	6	65
Richard	19	II	1:35	1:35	2:45	5	70
Blaine	23	II	2:05	2:05	3:00	5	55
Brandon	21	II	2:30	2:30	3:36	4	65
Ron	15	1	2:50	2:50	3:45	3	55
Richard	16	1	3:15	3:15	4:10	2	55
Ron	14	1	4:00	4:00	4:55	1	55
Brandon	5	–	4:30	4:30	5:35	0	65
Richard	5	III	5:15	5:15	6:15	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8 – 5:00	11:30
Joey	11 – 8:00	1:40
PHOTO LAB		
Melissa	8 – 4:00	
Mandy	1 – 8:00	

GUIDE	SCHEDULE		LUNCH
Blaine	8 – 3:30	H	11:30
Rick	9 – 6:30	–	SICK
Richard	9 – 6:30	H	1:00
Brandon	11 – 7:30		3:45
Ron	11:30 – 8:00		5:10

FANTASTIC CAVERNS

298

Date March 28-2016

Day Sun. (Mon) Tues. Wed. Thurs. Fri. Sat.

Weather Clear 40° am. Sunny 60 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2663 43	1270312		6913
End	2666642	1270312		6927

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	6	1	9:00	9:00	10:00	1	60
Rick	4	1	9:30	9:30	10:30	1	60
Blaine	21	11	10:00	10:10	11:05	3	55
Rick	7	1	10:45	10:45	11:40	1	55
Vic	23	11	11:15	11:15	12:20	3	65
Randy	4	–	11:40	11:40	12:45	2	65
Blaine	10	111	12–	12:05	12:55	2	50
Rick	10	–	12:20	12:25	1:20	3	60
Vic	21	11	12:45	12:45	1:40	2	55
Randy	20	1	1:00	1:00	2:00	4	60
Blaine	25	111	1:20	1:20	2:15	3	55
Vic	23	111	1:45	1:50	2:45	1	55
Randy	21	1	2:15	2:20	3:15	1	55
Blaine	22		2:40	2:45	3:40	2	55
Vic	15	1	3:15	3:20	4:20	3	60
Randy	20	–	3:55	4:00	5:05	3	65
Joey	25	11	4:30	4:30	5:25	2	55
Vic	4		4:50	4:50	5:30	1	40

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	15	1	5:25	5:25	6:25	3	60
Vic	2		6:45	6:45	6:40	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-5	11:25
Sue	11-8	2:40
PHOTO LAB		
Melissa	8-4	✓
Alex	1-8	✓

GUIDE	SCHEDULE		LUNCH
Blaine	8-3:30		11:10
Rick	9-5:30	H	1:25
Vic	11-7:30		4:20
Randy	11:30-8		3:20
Karen	2-7		—
Nicole H	12-4	+PR	—
Casey	12-4	+PR	—

FANTASTIC CAVERNS

253

Date March 29, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 48° am. Sunny 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2666642	1270312		6927
End	2666895	1270312		6932

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2	-	835	835	945	1	70
Ron	2	-	905	905	955	1	50
Emily	10	1	940	945	1045	2	55
Daniel Randy Karen	67	Diamond 1	10-	10-	1145	5	105
Vic	5	1	1015	1015	1130	2	75
Ron	25	-	1045	1045	1155	2	70
Emily	19	1	1115	1115	1215	1	60
Vic	7		1145	1145	1240	0	55
Daniel Randy	16	Home sch 1	1205	1205	145	4	100
Rick	23	11	1220	1220	115	1	50
Ron	9	1	1240	1240	135	1	55
Vic	13	111	130	130	220	2	50
Blaine	4	1111	205	205	255	2	50
Emily	16	-	230	230	325	3	55
Casey	12	Dog	3-	3-	445	5	75
Daniel	5	-	330	330	430	1	60
Blaine	4		4-	4-	455	4	55
Casey	8	1	435	435	550	2	75

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	4		505	505	600	1	55
Blaine		1	605	605	700	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	1220
Pam	11-8	235
Jackie	9-5 (GS)	130
PHOTO LAB		
Marci	8-4	1215
Mandy	230-8	400
Melissa	12-4	—

GUIDE	SCHEDULE	LUNCH
Emily	8-3:30	1230
Randy	9-2	—
Ron	9-2	—
Daniel	9-~~5:30~~ 730	150
Vic	9:30-2:30	—
Karen	10-3	—
Blaine	~~11-2:30~~ 8	
Rick	11:30-~~8~~ 130	—
Casey	9-6:30 (Tr)	✓
Nicole H	8-1 (Tr)	✓

FANTASTIC CAVERNS

301

Date March 30, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 57° Cloudy am. 59° rainy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2666855	1270310		6832
End	2667200	1270312		6937

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		8:35	8:35	9:25	0	50
Randy	1		9:15	9:15	10:15	0	60
Emily	9		9:50	9:50	10:40	3	50
Ron Daniel Jan	45	Wildwood 15	10:00	10:05	11:30	6	85
Randy	10	11	10:35	10:35	11:20	2	65
Casey	23	Pre.	11:10	11:15	12:10	4	55
Randy	19		11:36	11:36	12:35	4	60
Daniel Ron Jan	42	Wildwood	12:00	12:00	1:35	11	85
Emily	24	1111	12:15	12:20	1:15	4	56
Casey	8		12:45	12:45	1:40	2	55
Randy	21	1111	1:15	1:15	2:15	4	60
Emily	24	111	1:35	1:40	2:25	2	55
Ron	6		1:50	2:00	2:50	3	50
Casey	9	111	2:20	2:25	3:20	0	55
Emily	5		2:40	2:40	3:40	1	60
Randy	13	11	3:00	3:00	4:05	2	65
Casey	6	1	3:30	3:30	4:30	1	60
Ron	12		4:10	4:10	5:05	3	55

* Hail delay

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	15		4:05	4:35	5:40	2	65
Casey	2		5:15	5:15	6:15	1	60
Ron	8	1	5:45	5:45	6:40	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Pam	8-5	12:05
Nicole B.	11-8	1:50
Jackie	9-5	12:35
PHOTO LAB		
Alex	8-4	1:15
Mandy	1-8	3:00

GUIDE	SCHEDULE		LUNCH
Emily	8-3:30		11:05
Daniel	9-2:00		—
~~Richard~~	~~9-6:30~~	Sick	—
Jan	9-2:00		—
Randy	9-5:30		12:40
Ron	9:30-2:30 8		3:00
Casey	11-7:30		1:45
~~Rick~~	~~11:30-8:00~~	Sick	—
Nicole H	8-1	TA	—

FANTASTIC CAVERNS

354

Date March 31st, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather pt. sunny 58° am. pt sunny 53° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2667200	1270312		6937
End	2667554	1270312		6937

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	6	–	8:30	8:30	9:25	1	55
Daniel	2	–	9:10	9:10	10:05	1	55
Brandon	6	–	9:40	9:40	10:40	0	60
Daniel Emily Rick	36	Quo/pr	10:05	10:05	11:35	8	90
Karen	12	–	10:20	10:20	11:15	0	55
Richard	10	–	10:50	10:55	11:50	3	55
Karen	11	–	11:15	11:20	12:15	1	55
Blaine/ Brandon	40	W Port	11:30	11:30	12:25	2	55
Casey	15	"	11:45	11:45	12:40	2	55
Randy Daniel	42	W. Port	12 –	12 –	1:10	2	70
Emily	18	–	12:20	12:20	1:20	0	60
Richard	8	–	12:40	12:45	1:45	2	60
Blaine	21	[illegible]	1:25	1:30	2:30	3	60
Randy	11	"	1:45	1:45	2:40	3	55
Casey	8	"	2:05	2:05	3:00	2	55
Richard	12	–	2:30	2:30	3:25	2	55
Blaine	22	–	2:50	2:55	3:50	2	55
Randy	21	||||	3:15	3:20	4:20	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	12	1	3:45	3:45	4:40	1	55
Richard	7	–	4:20	4:20	5:20	0	60
Randy	19	11	5:00	5:00	6:05	3	65
Casey	12	11	6:15	6:15	7:15	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 5:00	11:35
Sue	11 - 8:10	2:30
PHOTO LAB		
Mandy	8 - 4:00	✓
Marci	1 - 8	✓

GUIDE	SCHEDULE		LUNCH
Karen	8 - 1:00	H	–
Brandon	8 - 2:00	H	–
Rick	8 - 3:30	H	11:50
Richard	9 - 6:30		1:45
Daniel	9 - 2:00	H	–
Emily	9:30 - 2:30		–
Blaine	11 - 4:00		–
Casey	11 - 7:00		3:05
Randy	11:30 - 8:00		4:25
Nicole H	8 - 1	H	–

FANTASTIC CAVERNS

285

Date 4-1-2016 (April)

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather 41° Sunny am. Sunny 53° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2667554	1270312	—	6937
End		1270312	—	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	4		8:30	8:30	9:30	0	60
Vic	2		9:25	9:25	10:20	1	55
Casey	2		9:45	9:45	10:40	1	55
Randy/Jan Karen	55		10:00	10:00	11:30	4	90
Vic	24		10:45	10:45	11:45	8	60
Ron	20	IIII	11:05	11:05	11:55	6	50
Daniel	20	IIIIIIII	11:30	11:30	11:20	3	50
Casey	24	II	11:50	11:30	1:00	3	70
Jan	14		12:20	12:20	1:15	1	55
Vic	17	IIIII	12:45	12:45	1:45	4	60
Randy	11	I	1:10	1:10	2:05	1	55
Casey	11	III	1:35	1:35	2:30	1	55
Ron	25	II	2:15	2:15	3:15	3	60
Casey	10		2:40	2:40	3:35	1	55
Randy	9		3:20	3:20	4:20	0	60
Daniel	4		3:45	3:45	4:50	1	65
Ron	2		4:10	4:10	5:05	1	55
Daniel	15	III	4:50	4:55	5:55	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	7	II	5:35	5:35	6:25	0	50
Daniel	9	I	6:10	6:10	7:10	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-4:30	12:05
Sue	11:30-8	2:30
PHOTO LAB		
Marci	8-4	✓
Alex	1-8	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-3:30	11:20
Vic	9-2	–
Jan	9-2	–
Karen	9-2:12 H	–
Randy	9-4:30	11:45
Ron	11-7:30 - ~~Close~~	3:20
Daniel	11:30-8	3:20

FANTASTIC CAVERNS

317

Date April 2 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 30° am. Sunny 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2667839	1270312		6941
End	2668156	1270312		6949

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	6	II	9-	9-	10-	3	60
Ron	16	III	935	935	1030	3	55
Brandon	15	II	1010	1010	1115	1	65
Jan	14	I	1030	1030	1130	6	60
Ron	6		1050	1050	1150	2	60
Daniel	14	IIII	1115	1115	1210	4	55
Brandon	24	II	1135	1135	1240	2	65
Emily	24	I	12-	12-	1255	5	55
Jan	23	III	1220	1220	120	6	60
Ron	16		1245	1245	140	3	55
Daniel	23	IIII	115	115	210	5	55
Brandon	7	IIIII	130	130	235	4	65
Emily	15		2-	2-	305	1	65
Jan	11		220	220	320	2	60
Ron	8	I	240	240	335	2	55
Daniel	23	I	3-	3-	4-	5	60
Ron	23	DOG IIII	340	340	435	6	55
Emily	6	II	405	405	5-	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	11	III	430	430	530	3	60
Emily	8	I	510	510	610	4	60
Daniel	6	III	540	540	640	3	60
Daniel	8		645	650	750	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 4:30	1245
Madi	11:30 - 8	345
PHOTO LAB		
Marci	8-4	
Alex	12:30 - 8	

GUIDE	SCHEDULE	LUNCH
Jan	8-3:30	1135
Ron	9 - 4:30	1155
Brandon	10 - 3	—
Daniel	11 - 7:30	220
Emily	11:30 - 8	305

FANTASTIC CAVERNS

337

Date 4-3-2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 42° Sunny (am.) Sunny 70° pm

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2668156	1270312		6949
End	2668494	1270312		6966

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	7	–	8:45	8:45	9:45	2	60
Joey	19	II	9:30	9:35	10:30	5	55
Ron	21	–	10:05	10:05	11:05	3	60
Katy	21	–	10:25	10:25	11:25	0	60
Daniel	24	II	11:05	11:05	12:05	3	60
Casey	25	–	11:30	11:30	12:30	3	60
Richard	23	1	11:50	11:50	12:50	7	60
Katy	23	II	12:15	12:15	1:15	5	60
Ron	19	II	12:30	12:30	1:35	3	65
Casey	23	Don II	12:45	12:45	1:45	4	60
Daniel	14	2:55 1	1:10	1:10	2:10	3	60
Richard	18	1	1:30	1:35	2:35	4	60
Katy	17	II	1:50	1:50	2:50	2	60
Ron	12	–	2:10	2:10	3:05	5	55
Daniel	8	II	2:30	2:35	3:25	2	50
Casey	18	III	2:55	2:55	3:55	6	100
Richard	6	–	3:20	3:20	4:20	1	60
Daniel	14	1	4:-	4:-	5:-	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	14	1	5:-	5:-	6:10	2	70
Casey	5	PB	6:05	6:30	7:20	1	50
Richard	2		7:-	7:-	7:55	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4	12:15
Madi	12:30 - 8	2:45
PHOTO LAB		
Melissa	8 - 4	✓
Alex	12 - 8	✓
Jackie	8 - 5	✓
J.11	11 - 8	✓

GUIDE	SCHEDULE	LUNCH
Ron	8 - 3:30	11:20
Daniel	9 - 4:30	12:35
Katy	10 - 3	–
Casey	11 - 7:30	2:00
Richard	11:30 - 8	4:30

FANTASTIC CAVERNS

319

Date 4-4-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 58° am. Sunny 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2668494	1270312		6966
End	2668813	1270312		6968

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Daniel	7	-	9:15	9:15	10:10	3	55
Jan	6	-	9:45	9:45	10:45	1	60
Ron/Vic	63	NVM	10:00	10:10	11:05	0	55
Casey	4	-	10:15	10:25	11:20	3	55
Rick Daniel	52	NVM	10:40	10:40	11:35	5	55
Jan	14	-	10:55	11:00	11:55	4	55
Ron/Vic	51	NVM	11:15	11:15	12:15	1	60
Blaine	10	1	11:30	11:30	12:25	3	55
Rick	22	III	11:50	11:50	12:50	7	60
Jan	23	1	12:10	12:10	1:10	5	60
Vic	14	1	12:30	12:30	1:30	2	60
Ron	5	-	1:00	1:00	1:50	0	50
Casey	5	-	1:30	1:30	2:20	1	50
Daniel	8	-	1:45	1:45	2:40	0	55
Rick	6	-	2:00	2:00	2:55	2	55
Casey	4		2:25	2:25	3:35	1	70
Blaine	8		3:05	3:05	4:00	0	55
Casey	7	1	3:35	3:45	4:40	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2		4:55	4:55	5:55	1	60
Rick	3		6:10	6:20	7:10	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4:30	11:40
Nicole B.	9:30 - 6	12:35
PHOTO LAB		
Mandy	8 - 4	
Melissa	12:30 - 8	
Jackie	11 - 8	
Rhonda	8 - 5	

GUIDE	SCHEDULE	LUNCH
Daniel	8 - 3:30	11:45
Vic	9 - 2	-
Ron	9 - 2	-
Casey	9 - 4:30	11:30
Jan	9 - 2	-
Rick	10 - 7:30	3:00
Blaine	11:30 - 8	4:00
Nicole H.	3 - 8	-

FANTASTIC CAVERNS

123

Date Tuesday 4-5-16

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather 49° Sunny am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2668813	1270312	—	06968
End	2668936	1270312	—	6968

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	2		900	900	950	1	50
Rick	11		950	950	1050	2	60
Richard	6	1	1020	1020	1120	1	60
Rick	15		1100	1100	1200	4	60
Blaine	2		1120	1120	1215	1	55
Casey	7	dog	1150	1150	1250	3	60
Richard	6		1235	1235	130	2	55
Blaine	12	1111	105	105	200	3	55
Rick	12	11	130	130	230	3	60
Casey	7		150	150	245	2	55
Richard	6	11	220	220	320	3	60
Rick	13		300	300	405	1	65
Casey	15	1	320	320	420	4	60
Blaine	2		4-	4-	5-	0	60
Casey	6	1	445	450	550	1	60
Blaine	2		530	530	630	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-3:30	1205
Sue	2-8	415
PHOTO LAB		
Mandy	8-4	OUT
Marci	1230-8	✓

GUIDE	SCHEDULE		LUNCH
Richard	8-3:30	AM	1125
Rick	9-4:30	PM	1220
Blaine	11-7:30		235
Casey	11:30-8		105

FANTASTIC CAVERNS

209

Date April 6-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 60° sprinkling am. 60° clear pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2468936	1270312		6968
End	2669146	1270312		6968

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	3		9:-	9:-	9:45	0	45
Richard	0		9:45	9:45	10:40	2	55
Randy, Blaine Karen	57	Shook	10:-	10:-	11:40	1	100
Rick	10	"	10:45	10:50	11:50	3	60
Richard	6	"	11:15	11:15	12:10	1	60
Randy Blaine Karen	58	Shook	12:30	12:00	1:30	1	90
Emily	5	Don	12:20	12:20	1:20	1	60
Richard	9		12:45	12:45	1:45	1	60
Rick	8	"	1:25	1:25	2:25	3	60
Emily	9	"	2:10	2:10	3:10	1	60
Blaine	2		2:45	2:45	3:40	0	55
Emily	10		3:15	3:15	4:15	2	60
Katy	8	1	4:30	4:30	5:30	2	60
Emily	8		5:20	5:20	6:15	2	55
Katy	9		6:10	6:10	7:20	4	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	12:05
Nicole	11:30-8	2:05
PHOTO LAB		
Melissa	8-4	12:45
Mandy	12:30-8	✓

GUIDE	SCHEDULE		LUNCH
Rick	8-3:30		11:55
Blaine	9-4:30	A	1:40
Randy	9-2	A	—
Karen	9-2	A	—
Richard	9-2		—
Vic	11-7:30 —		Sick —
Emily	11:30-8		2:25
Katy F	4-8		—

FANTASTIC CAVERNS

305

Date April 7, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 55° am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2669146	1270312		6968
End	2669451	1270312		6972

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	2		830	830	930	0	60
Richard	7	1	915	920	1015	4	55
Daniel	38	Repub Tic	930	930	1030	1	60
Brandon	7		945	945	1045	2	60
Vic Rick Karen	46	Monsh	10-	10-	1135	1	95
Richard	7		1015	1020	1125	2	65
Daniel	6		1130	1130	1230	1	60
Randy	5	11	1145	1145	1245	1	60
Vic Rick Karen	36	Shrek	12-	12-	130	6	
Emily	13		1215	1220	115	6	55
Brandon	10	Rep	1230	1230	140	2	60
Randy	13	1111	1250	1255	155	1	60
Daniel	14	11	130	130	225	2	55
Emily	4		150	15	305	1	70
Vic	10		230	235	330	3	55
Daniel	15	1111	305	305	405	5	60
Randy	14	1	340	340	440	2	60
Emily	15	11	435	435	535	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	6		505	505	605	0	60
Emily	7	1	610	625	710	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Marti	8-4:30	1245
Sue	9-5	120
PHOTO LAB		
Marci	8-4	✓
Melissa	12:30 - 8	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-2	11-
Karen	9-2	—
Richard	9-2	—
Rick	9-2	—
Vic	9-4:30	140
Daniel	9-4:30	1245
Randy	11-7:30	230
Emily	11:30 - 8	310

FANTASTIC CAVERNS

215

Date Apr 18, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 43° am. Clear 58° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2669457	1270312		6972
End	2669667	1270312		6977

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	2	-	9-	9-	9:55	1	55
Casey	4	-	9:45	9:45	10:50	2	65
Randy / San / Karen	64	-	10-	10:10	11:50	7	105
Vic	23	-	10:15	10:20	11:20	5	60
Casey	8	-	10:50	10:50	12-	3	70
Ron	16	1	11:30	11:30	12:25	4	55
Vic	8	-	12-	12-	12:55	1	55
Randy	12	1	12:20	12:20	1:20	2	60
Daniel	6	11	12:45	12:45	1:45	3	60
Karen	5	11	1:20	1:20	2:20	0	60
Casey	10	-	1:45	1:45	2:45	5	60
Vic	2	-	2:00	2:00	2:50	0	50
Randy	15	1	2:40	2:45	3:45	1	60
Karen	16	1HT	3:30	3:30	4:45	6	75
Daniel	13	-	4:00	4:00	5:00	2	60
Ron	3	-	4:40	4:40	5:40	1	60
Daniel	8	-	6:15	6:15	7:10	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-4:30	1:30
Joey	11:30-8	3:00
PHOTO LAB		
Marci	8-4	✓
Alex	1-8	✓

GUIDE	SCHEDULE		LUNCH
Vic	8-3:30	H	1:05
Casey	9-2	H	—
San	9-2	H	—
Karen	9-6	H	2:25
Randy	9-4:30	H	1:30
Ron	11-1:30	5:30-7:30	—
Daniel	12:30-8		2:40

FANTASTIC CAVERNS

6.

347

Date April 9, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 42° am. Sunny 61° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2669667	1270312		6977
End	2670014	1270312		6982

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	6	–	8:30	8:30	9:25	Ø	55
Ron	9	1	9:20	9:20	10:10	1	50
Vic	20	1	9:45	9:45	10:45	6	60
Brandon	19	II	10:10	10:10	11:10	7	60
Ron	14	1	10:30	10:30	11:30	2	60
Daniel	11	1	11:00	11:00	12:05	2	65
Vic	13	–	11:30	11:30	12:25	3	55
Emily	8	–	11:45	11:45	12:40	2	55
Brandon	15	III	12:00	12:10	1:20	2	70
Daniel	11	–	12:30	12:30	1:35	5	65
Ron	19	IIII	1:00	1:00	2:00	2	60
Emily	26	–	1:15	1:15	2:15	7	60
Vic	25	1	1:45	1:45	2:40	2	55
Brandon	20	1	2:00	2:00	3:05	5	65
Daniel	14	1	2:20	2:20	3:20	1	60
Ron	11		2:45	2:45	3:45	3	60
Emily	22	1	3:20	3:20	3:25	7	65
Daniel	9	–	3:45	3:45	4:45	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	26	III	4:30	4:30	5:30	4	60
Emily	26	II	5:-	5:-	6:05	6	65
Daniel	15	–	5:40	5:40	6:30	2	50
Daniel	8	II	6:35	6:35	7:30	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-4:30	12:00
Madi	11:30-8	3:05
PHOTO LAB		
Marci	8-4	✓
Alex	12:30-8	✓

GUIDE	SCHEDULE		LUNCH
Vic	8-3:30	H	12:30
Ron	9-4:30	H	11:45
Brandon	10-3	H	–
Daniel	11-7:30		1:50
Emily	11:30-8		✓

FANTASTIC CAVERNS

212

Date April 10, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Rain 50° am. Sunny 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2670014	1270312		6982
End	2670226	1270312		6984

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2	–	8:45	8:45	9:35	1	50
Ron	4	–	9:40	9:40	10:35	0	55
Blaine	8	–	10:15	10:20	11:20	2	60
Richard	11	–	10:45	10:45	11:40	4	55
Nicole H	10	11	11:10	11:20	12:20	1	60
Casey	14	–	11:45	11:45	12:45	4	60
Ron	22	IIIII	12:05	12:05	1:00	8	55
Blaine	20	–	12:20	12:20	1:15	2	55
Richard	2	11	12:45	12:45	1:40	2	55
Rick	13		1:10	1:10	2:10	2	60
Ron	7		1:30	1:30	2:25	0	55
Blaine	23	IIII	1:50	1:50	2:50	4	60
Casey	14	1	2:10	2:10	3:10	1	60
Ron	7		2:35	2:35	3:30	1	55
Rick	11		3:00	3:00	4:05	3	65
Richard	12		3:30	3:30	4:30	4	60
Casey	9		4:00	4:00	5:05	3	65
Rick	10	11	4:35	4:35	5:30	2	56

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3	1	5:10	5:10	6:05	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	–
Nicole	11:30-8	
PHOTO LAB		
Mandy	8-4	
Alex	12:30-8	

GUIDE	SCHEDULE	LUNCH
Nicole H	8-1 H	–
Ron	8-3:30	11:10
Richard	9-4:30	–
Blaine	10-3	–
Casey	11-7:30	3:10
Rich	11:30-8	2:20

FANTASTIC CAVERNS

238

Date April 11, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Rain 50° am. Sunny 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2670226	1270312	—	6984
End	2670579	1270312	—	6984

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2		9:00	9:00	9:55	0	55
Brandon	2		9:45	9:45	10:45	1	60
Blaine / Ron Randy	58	shook	10:00	10:00	11:35	1	95
Casey	6		10:15	10:15	11:15	2	60
Brandon	10		10:50	10:50	11:50	0	60
Rick	7		11:15	11:15	12:10	0	55
Ron / Blaine Randy	55	shook	11:45	11:45	1:15	3	90
Richard	8		12-	12-	12:55	0	55
Casey	7		12:45	12:45	1:58	2	65
Brandon	6		1:10	1:10	2:15	3	65
Richard	6		1:35	1:35	2:35	3	60
Blaine	6	11	2-	2-	1:50	1	50
Randy	15		2:30	2:35	3:35	2	60
Nicole H	6		3:05	3:05	4:05	1	60
Rick	~~25~~	IIIII	3:35	3:35	4:35	2	60
Richard	4		4:10	4:10	5:05	1	55
Nicole H.	7	III	4:30	4:30	5:25	1	55
Richard	11	1	5:15	5:15	6:15	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	5		6-	6-	6:55	0	55
Rick	2	11	6:30	6:30	7:30	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole B	8-4:30	1130
Sue	11:30-8	3:05
PHOTO LAB		
Melissa	8-4	✓
Mandy	12:30-8	✓

GUIDE	SCHEDULE	LUNCH
Blaine	8-3:30	120
Ron	9-2	—
~~Jan~~	~~9-2~~ sick	—
Randy	9-4:30	135
Casey	9:30-2:30	—
Brandon	9:30-2:30	—
Rick	11-7:30	3:00
Richard	11:30-8	3:30
Nicole H	3-8	—

FANTASTIC CAVERNS

141

Date April 12, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 40° am. Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2670519	1270312		6984
End	2670660	1270312		6984

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		845	845	945	1	60
Casey	6		930	930	1030	0	60
Rick Emily Karen	5	group	10	10	1135	0	95
Richard	9	Day	1015	1015	1115	2	60
Casey	9	"	1045	1045	1145	1	60
Blaine	10		1130	1135	1230	3	55
Karen	4		12	1200	1255	2	55
Vic	4		1225	1225	125	1	60
Casey	10		1250	1250	150	2	60
Emily	2	"	115	115	210	1	55
Vic	4		140	140	230	1	50
Emily	6	1	220	225	220	2	55
Rick	4		245	245	345	2	60
Nicole H	9		305	305	4	0	55
Blaine	2		330	330	425	1	55
Vic	2		400	4	455	0	55
Nicole H	2		500	500	600	1	60
Blaine	2		530	530	630	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	3		645	645	735	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1130	1245
Scot		230
PHOTO LAB		
Melissa	8-1	1045
Mandy	1230-8	230

GUIDE	SCHEDULE		LUNCH
Emily	8-330	H	1245
Richard	9-2	H	—
Casey	9-2	H	—
Karen	9-2	H	—
Rick	9-430		1245
Blaine	11-730		220
Vic	1130-8		235
Nicole H	3-8		—

FANTASTIC CAVERNS

140

Date April 13, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 48° am. pt cloudy 61 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2670660	1270312		6984
End	2670800	1270312		6984

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole H.	8	1	9:30	9:30	10:25	2	55
Blaine Emily	42	group	10:-	10:20	11:30	0	70
Casey	4		10:35	10:35	11:30	2	55
Rich	2		11:-	11:-	12:-	2	60
Richard	8	1	11:30	11:30	12:30	4	60
Nicole H.	2		12:10	12:10	1:-	1	50
Blaine	4		12:30	12:30	1:30	1	60
Emily	7		12:45	12:45	1:45	2	60
Richard	7		1:15	1:15	2:20	3	65
Casey	14		1:40	1:40	2:40	2	60
Richard	11		2:15	2:20	3:20	4	60
Casey	2		3:00	3:00	4:-	0	60
Richard	21	IIII	3:50	3:50	4:50	7	60
Katy	3	1	4:45	4:45	5:30	0	45
Katy	3		6:15	6:15	7:10	1	55
Richard	2		6:45	6:45	7:40	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Sue	11:30-8	2:40
PHOTO LAB		
Mandy	8-4	✓
Melissa	12:30-8	✓

GUIDE	SCHEDULE	LUNCH
Nicole H.	8-1	—
Rich	8-1	—
Emily	9-2	—
Blaine	9-1:30	11:30
Casey	10-7:30	12:45
Richard	10:30-8	5:05
Katy	4-8	—

FANTASTIC CAVERNS

143

Date April 14th

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Overcast 52° am. P. Cloudy 65° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2678800	1270312	/	6984
End	2670943	1270312	/	6984

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	2	–	8:30	8:30	9:25	1	55
Vic	4	–	9:10	9:10	10:10	1	60
Brandon	2	–	9:45	9:45	10:40	0	55
Karen Rick Blaine	55	–	10:00	10:05	11:40	3	95
Vic	2	–	10:20	10:20	11:15	1	55
Brandon	6	11	10:50	10:50	11:50	1	60
Randy	11	111	11:10	11:15	12:15	3	60
Vic	10	11	11:40	11:40	12:40	2	60
Karen	10	1	12:10	12:10	1:10	2	60
Rick	8	–	12:40	12:40	1:40	4	60
Casey	9	1	1:20	1:20	2:20	4	60
Blaine	4	–	2:15	2:15	3:15	0	60
Vic	1	–	2:45	2:45	3:40	0	55
Randy	4	1	3:30	3:35	4:35	0	60
Casey	5	–	4:30	4:30	5:35	3	65
Randy	11	11	5:00	5:00	6:00	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	9-5	12:45
PHOTO LAB		
Melissa	8-4:00	
Marci	12:30-8:00	

GUIDE	SCHEDULE		LUNCH
Brandon	8-2	H	11:55
Karen	9-2	H	–
Rick	9-2	H	–
Blaine	9-3:30	H	11:50
Vic	9-4:30	H	12:50
Randy	11-7:30		2:45
Casey	11:30-8:00		2:45

FANTASTIC CAVERNS

471

Date April 15, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 56° am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2670943	1270312	—	6984
End	2671414	1270312	—	6990

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	2	–	8:35	8:35	9:35	1	60
Randy Karen	55	IIII	9:00	9:20	10:35	9	75
Jan	10	–	9:35	9:35	10:30	3	55
Casey	12	II	9:50	9:50	10:50	3	60
Vic/Ron	50	–	10:05	10:20	11:35	8	65
Daniel	16	–	10:35	10:40	11:40	7	60
Karen/Randy	43	–	11:00	11:00	12:00	0	60
Jan	9	–	11:15	11:15	11:20	3	65
Vic/Ron	54	–	11:35	11:35	12:35	5	60
Karen/Randy	57	–	12:00	12:00	1:05	4	65
Casey	25	IIIII IIII	12:15	12:20	1:15	2	55
Daniel	24	III	12:35	12:35	1:35	6	60
Jan	21	I	12:50	12:50	1:50	4	60
Ron	13	I	1:15	1:15	2:10	1	55
Vic	9	–	1:40	1:50	2:55	1	65
Randy	10	–	2:15	2:15	3:15	4	60
Daniel	3	I	2:30	2:35	3:35	1	60
Ron	20	IIII	3:00	3:00	4:05	9	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	17	–	3:30	3:30	4:35	6	65
Ron	19	IIIIII	4:10	4:20	5:15	6	55
Daniel	6	II	5:00	5:00	5:55	3	55
Ron	2	–	5:30	5:30	6:35	1	65

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Joey	11:30-8	3:00
PHOTO LAB		
Marci	8-4	1:00
Alex	1230-8	✓

GUIDE	SCHEDULE		LUNCH
Vic	8-3:30	H	12:45
Casey	9-2	H	—
Jan	9-2	H	—
Karen	9-2	H	—
Randy	9-4:30	H	1:15
Ron	10-7:30		2:20
Daniel	10:30-8		4:20

FANTASTIC CAVERNS

Date 4-16-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 59° cloudy am. Sunny 65° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2671414	1270312		6990
End	2671714	1270312		6995

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole H.	2		900	900	950	1	50
Randy	8	1	1000	1000	1100	1	60
Nicole H.	8		1030	1030	1130	3	60
Randy	13	1	1105	1105	1205	3	60
Casey	25	III	1145	1145	1245	4	60
RON	23	IIII	1205	1205	105	8	60
Nicole	20	III	1225	1225	125	2	60
Randy	11		1245	1245	145	4	60
Casey	25	II	110	115	215	6	60
RON	21	~~III~~	130	130	235	3	65
Nicole	14	III	150	150	250	6	60
Randy	11	III	210	210	310	2	60
Casey	10	II	230	230	325	3	55
Nicole	24	II	3	3	405	2	65
RON	25	IIII	315	315	420	2	65
Randy	15	II	340	340	440	1	60
Casey	2		410	410	510	1	60
RON	18	II	440	440	550	2	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	23	1	515	515	615	5	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8 - 1	—
Sue	1130 - 8	245
PHOTO LAB		
Marci	8 - 4	✓
Mandy	1 - 8	✓

GUIDE	SCHEDULE	LUNCH
Nicole H.	8 - 430	1135
Randy	9 - 530	1210
Casey	1130 - 8	330
Ron	12 - 8	240

FANTASTIC CAVERNS

283

Date April 17, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 60° am. Clear 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2671714	1270312		6995
End	2671997	1270312		7001

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	14	1	9:20	9:20	10:20	3	60
Katy	12	–	10:–	10:–	11:05	4	65
Ron	15	–	10:30	10:30	11:40	5	70
Katy	21	11	11:15	11:15	12:20	3	65
Rick	23	11	11:45	11:40	12:50	5	70
Ron	20	IIII	12:10	12:10	1:15	4	65
Casey	10	1	12:30	12:30	1:30	0	60
Katy	18	IIII	1:–	1:–	2:05	4	65
Rick	20	III	1:15	1:15	2:10	5	55
Casey	18	11	1:45	1:45	2:45	7	60
Ron	20	IIII	2:05	2:05	3:00	1	55
Rick	15	11	2:25	2:25	3:25	1	60
Casey	23	11	3:00	3:00	4:00	4	60
Ron	20	IIII	3:25	3:25	4:25	6	60
Rick	12	IIII	4:05	4:05	5:05	2	60
Casey	12	–	4:45	4:45	5:45	3	60
Rick	8	–	5:40	5:40	6:35	0	55
Casey	2	–	6:05	6:05	7:05	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Joey	11:30 - 8	2:30
PHOTO LAB		
Melissa	8-3:30	✓
Mandy	1-8	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	1:20
Katy	9-2 H	—
Rick	11:30-8	3:30
Richard	12-8	Sick
Casey	12-8	4:10

2, 8, 1

FANTASTIC CAVERNS

315

Date April 18, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 64° am. overcast 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2671997	1270312		7001
End	2672314	1270312		7005

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	2	–	9–	9–	9:55	1	55
Ron Vic	45	Group	9:30	9:30	10:35	4	65
Casey	10	11	9:45	9:45	10:45	3	60
Rick Richard	45	Group	10:00	10:10	11:10	6	60
Jan	10	1	10:30	10:35	11:40	3	65
Ron Vic	52	Group	10:45	10:45	11:50	6	65
Casey	12	11	11:15	11:20	12:10	4	50
Rick Blaine	54	Group	11:30	11:30	12:30	1	60
Jan	8	–	11:45	11:45	12:45	1	60
Vic	3	–	12:05	12:05	1:15	0	70
Blaine	20	11	1–	1:00	2:00	4	60
Rick	6	–	1:30	1:30	2:30	1	60
Jan	7	11	2:00	2:00	3:05	3	65
Blaine	7	1	2:45	2:45	3:45	1	60
Jan	13	–	3:15	3:15	4:15	0	60
Rick	4	11	3:45	3:45	4:45	2	60
Blaine	4	–	4:15	4:15	5:15	1	60
Rick	2	–	5:00	5:00	6:00	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2	–	5:30	5:30	6:25	1	55
Rick	2	–	6:15	6:15	7:10	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Joey	11:30 - 8	3:15
PHOTO LAB		
Melissa	8-3:30	✓
Alex	1-8	✓

GUIDE	SCHEDULE		LUNCH
Jan	8-4:30	H	12:30
Casey	9-1	H	—
Ron	9-1	H	—
Richard	9-2	H	—
Vic	9:30-1:30	H	—
Rick	10-8		2:30
Blaine	11-8		2:05

FANTASTIC CAVERNS

358

Date April 19, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather 66° Sunny am. Sunny 67° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2672321	1270312	—	7005
End	2672672	1270312	—	7008

263

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	13		8:45	8:46	9:40	6	55
Rick/Richard	48	Will	9:00	9:15	10:15	2	60
Casey/Daniel	48	Will	9:35	9:40	10:45	3	65
Nicole H	8		9:45	9:55	11:05	2	70
Karen Joey/Em	64	Grad	10:10	10:20	12-	10	100
Richard	8		10:35	10:35	11:30	3	60
Casey/Daniel	52	Rick	10:55	10:55	11:55	2	60
Nicole H	11		11:10	11:15	12:15	2	60
Blaine/Rick	51	Rick	11:45	11:50	12:55	3	65
Karen	11	"	12:05	12:05	1:05	1	60
Casey	3		12:20	12:20	1:20	2	60
Nicole H	4		12:40	12:40	1:05	2	85
Emily	6		1:15	1:15	2:15	2	60
Daniel	2		1:30	1:30	2:30	0	60
Richard	4		1:50	1:50	1:55	2	65
Blaine	2		2:20	2:20	3:15	1	55
Vic	8	/	3-	3-	4-	1	60
Richard	2		3:25	3:25	4:20	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	7		4-	4-	5:05	1	65
Vic	6	1	4:30	4:30	5:30	1	60
Blaine	1		6:45	6:45	7:40	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	11:30-8	3-
PHOTO LAB		
Marci	8-3:30	✓
Mandy	1-8	✓

GUIDE	SCHEDULE	LUNCH
Joey	8-1	—
Richard	8-4:30	11:45
Rick	9-1	—
Karen	9-2	—
Nicole H	9-2	—
Casey	9:30-1:30	—
Daniel	9:30-2:30	—
Emily	9:30-2:30	—
Blaine	11:30-8	3:20
Vic	2:30-8	—

FANTASTIC CAVERNS

364

Date 4-20-16

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 55° am. Cloudy 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2672672	1270312		7008
End	2673038	1270312		7008

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Blaine	2	-	8:45	8:45	9:45	0	60
Vic	2	-	9:10	9:10	10:05	0	55
Rick/Sue	60	Bethel Amish	9:25	9:25	10:25	X	60
Blaine	18	-	9:50	9:50	10:50	1	60
AD Emily/Jan/Karen	46	West Side	10:15	10:20	12:00	2	100
Rick/Richard	77	Nixa	10:35	10:35	11:35	12	60
Vic	19	"	10:50	10:50	11:45	3	55
Randy/Blaine	55	Nixa	11:05	11:05	12:00	3	55
Sue	14	-	11:35	11:40	12:35	2	55
Richard	6		12:10	12:15	1:15	2H	60
Karen	4		12:30	12:30	1:30	2	60
Jan	5	11	1:20	1:20	2:20	2	60
Randy	4		1:35	1:35	2:30	X	55
Blaine	6		2:00	2:00	3:00	0	60
Ron	9	1	2:35	2:35	3:35	1	60
Blaine	12	1	3:15	3:15	4:15	2	60
Ron	7	11	3:50	3:50	5:00	5	70
Katy	2		4:25	4:25	5:35	1	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	9		5:30	5:30	6:35	2	65
Katy	1		6:10	6:10	7:10	1	60
Ron	5		6:40	6:40	6:35	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	—
Nicole	11:30 - 8	2:30
Madi	GS	✓
Pam	GS	✓
PHOTO LAB		
Alex	8 - 3:30	✓
Melissa	1 - 8	—

GUIDE	SCHEDULE	LUNCH
Blaine	8 - 4:30	12:30
Rick	8:30 - 12:30	—
Vic	9 - 2	—
Emily	9 - 2 A	—
Karen	9:30 - 2:30 A	—
Jan	9:30 - 2:30 A	—
Richard	10 - 2	—
Sue	8:30 - 12:30	—
Randy	10:30 - 2:30	—
~~Daniel~~	~~11:30 - 8~~ called in car problems	
Ron	2:30 - 8	5:00
Katy	4:30 - 8	—

FANTASTIC CAVERNS

258

Date April 21st, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 64° am. Sunny 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2673038	1270312		7008
End	2673297	1270312		7008

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	2	–	8:45	8:50	9:50	1	60
Richard	26	–	9:30	9:35	10:30	2	55
Brandon	2	–	9:55	9:55	10:50	1	55
Rick / Blaine	26	Hudson	10:05	10:05	11:40	1	95
Casey	7	–	10:25	10:25	11:20	3	55
Vic	4	1	10:45	10:45	11:45	1	60
Randy	9	1	11:30	11:30	12:30	1	60
Rick / Emily / Vic	37	Hudson	12:00	12:00	1:30	3	90
Brandon	11	–	12:15	12:20	1:25	2	65
Blaine	8	11	12:45	12:45	1:40	3	55
Randy	14	Int. 1	1:35	1:35	2:20	2	55
Casey / Richard	45	College	1:40	1:40	2:40	4	60
Rick	8		1:50	1:50	2:50	2	60
Randy	18	1	2:35	2:40	3:40	3	60
Nicole	6		3:-	3:-	3:50	0	50
Rick	2		3:30	3:35	4:30	1	60
Nicole	15	1	4:10	4:10	5:-	4	50
Casey	11		5:30	5:30	6:40	1	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	7		6:40	6:40	6:35	3	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 1	–
Madi	11:30 - 8	
Scot		
PHOTO LAB		
Mandy	8 - 3:30	
Melissa	1 - 8:00	

GUIDE	SCHEDULE		LUNCH
Brandon	8 - 1	H	–
Rick	9 - ~~2~~ 4:30	H	–
Richard	9 - 2	H	–
Casey	9 - ~~4:30~~ 8		12:15
Blaine	9:30 - 2:30	H	–
Vic	9:30 - 2:30	H	–
Daniel	10 - 2	No Show	
Randy	9 - 2	OP	–
Emily	11:30 - 8	H	
Nicole B	2:30 - 8		

FANTASTIC CAVERNS

374

Date April 22, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 50° am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2673297	1270312	—	7008
End	2673676	1270312	—	7012

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	6	III	845	850	940	0	50
Vic	17		915	915	1015	6	60
Ron/Randy	32	Monett	945	945	1115	9	90
Karen	5		1000	1000	1100	1	60
Nicole H	20	1	1030	1030	1130	5	60
Jan/Casey	53	1 Hub	1100	1100	1155	5	55
Karen	14		1115	1115	1215	4	60
Ron/Randy	58	Hub	1130	1130	1230	1	60
Vic	9		1155	1155	1255	4	60
Casey	12	II	1245	1245	150	4	65
Randy	28	4 Holy	1—	1—	205	10	65
Vic	25	III	115	115	220	3	65
Karen	2		130	130	235	0	65
Nicole H	19	1 MSU	150	150	245	6	55
Jan	17	IIII	235	235	335	4	60
Casey	6		3—	3—	405	2	65
Karen	10		330	330	430	0	60
Jan	9	1	4—	4—	455	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	15		440	440	545	3	65
Jan	14	II	545	545	640	2	55
Casey	6		630	630	730	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	11:30-8	130
PHOTO LAB		
Marci	8-330	✓
Alex	~~8-1~~ 1-8	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-4:30	1230
Vic	9-2	—
Randy	9-2	—
Ron	9:30-2:30	—
Daniel	~~9:30-2:30~~ no show	—
Jan	10:30-2:30 ~~8:00~~	—
Nicole H	10:30-2:30	—
Casey	10:30-8	205
~~Emily~~	~~11:30-8~~ sick	—

FANTASTIC CAVERNS

405

Date April 23, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 58° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2673676	1270312	—	7012
End	2674081	1270312	—	7015

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole H	11	1	830	830	925	3	55
Brandon	11		915	915	1020	4	65
Nicole H	16		950	950	1045	6	55
Brandon	18	dog III	1025	1030	1040	10	70
Nicole H	25	III	1100	1100	1155	2	55
Casey	24	dog IIII	1135	1135	1235	4	60
Brandon	22	1 free	1150	1155	1—	4	65
RON	16		1210	1210	115	2	65
Nicole H	26	Soccer II	1230	1230	130	6	60
Casey	25	IIII	1245	1245	140	2	55
Brandon	25	1	105	125	205	8	60
RON	25	II	120	120	220	4	60
Nicole	21	1	140	140	235	5	55
Casey	15	1	215	215	315	4	60
RON	23	1	250	250	350	7	60
Nicole	19	1	310	310	410	5	60
Brandon	21		340	345	455	1	70
Casey	12		415	415	510	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	23	II	445	445	555	6	70
Casey	14	1	520	520	620	3	60
Ron	7	1	6—	605	710	1	65
Casey	4	1	7—	7—	755	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	11:30-8	2:15
PHOTO LAB		
Marci	8-4	✓
Alex	1-8	✓

GUIDE	SCHEDULE	LUNCH
Nicole H	8-430	12—
Brandon	9-530	210
Casey	1130-8	145
Ron	12-8	4—

FANTASTIC CAVERNS

344

Date April 24, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 63° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2674081	1270312		7015
End	2674425	1270312		7018

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	6	–	9:00	9:00	9:50	2	50
Katy	7	–	9:30	9:35	10:45	3	70
Ron	16	IIII	10:15	10:15	11:20	4	65
Rick	21	11 group	10:30	10:30	11:30	4	60
Katy	20	III	11:00	11:00	12:00	3	60
Ron	24	I	11:20	11:25	12:25	0	55
Rick	18	III	11:45	11:45	12:50	1	55
Richard	14	IIII	12:05	12:05	1:10	4	65
Katy	17	IIII II	12:25	12:25	1:25	5	60
RICK/RON	47	IIII	1:00	1:–	2:05	13	65
Richard	24	IIII I	1:25	1:25	2:35	3	70
Katy	22	III	1:45	1:45	2:46	5	60
Ron	18	III	2:00	2:15	3:15	2	60
Rick	23	II	2:25	2:30	3:30	1	60
Richard	12	–	2:50	2:50	3:50	0	60
Ron	21	II	3:20	3:25	4:30	9	65
Rick	12	–	3:45	3:45	4:55	3	70
Richard	4	–	4:30	4:30	5:35	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	9	–	5:00	5:00	5:50	1	50
Richard	6	III	5:30	5:40	6:40	0	60
Rick	4	–	6:00	6:00	6:55	1	55
Richard	6	–	6:30	6:45	7:50	2	65

INFO. COUNTER	SCHEDULE	LUNCH
Mari	8-1	–
Joey	10:30 - 8	3:00
PHOTO LAB		
Melissa	8-3:30	✓
Mindy	1-8	✓

GUIDE	SCHEDULE		LUNCH
Ron	8-4:30	H	12:25
Katy	9-2	H	–
Rick	10:30 - 8		2:00
Richard	12-8		4:00

FANTASTIC CAVERNS

152

Date April 25 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 60° am. Clear 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2674425	1270312		7018
End	4674878	1270312		7023

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	8	-	830	835	930	1	55
Richard	2	1	920	920	1025	1	65
Jan	13	111	10:00	10:00	11:05	3	65
Rick	17	-	10:40	10:40	1145	3	65
Richard	7	1	11:10	11:10	1215	3	65
Jan	8	-	1150	1150	1245	2	55
Rick	8	-	1215	1215	1:15	2	60
Richard	5	-	1245	1245	2:00	2	75
Jan	23	-	125	1:30	2:35	4	65
Rick	13	-	2:00	2:00	3:00	4	60
Richard	11	-	2:30	2:30	3:35	0	65
Jan	6	-	3:00	3:00	4:00	1	60
Rick	18	1	3:30	3:30	4:30	8	60
Casey	7	1	4:05	4:05	5:05	1	60
Rick	5	-	4:30	4:35	5:25	1	50
Casey	2	-	5:30	5:30	6:30	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Joey	11:30-8	3:00
PHOTO LAB		
Mandy	8-3:30	
Melissa	1-8	

GUIDE	SCHEDULE	LUNCH
Jan	8-4:30	12:55
Richard	9-2 H	—
Rick	10:30-8	1:30
~~Blaine~~	~~10:30-8~~	
Casey	4-8	—

FANTASTIC CAVERNS

202

Date April 24-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Clear 67° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2674578	1270312	/	7023
End	2674781	1270312	/	7032

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	2		9:30	9:30	10:25	1	55
Rick, Karen, Emily	48	Rep 1 Adv	10 –	10 –	11:30	3	90
Nicole H	12	11	10:15	10:15	11:10	1	55
Richard	2		11 –	11 –	11:55	1	55
Nicole H	9		11:30	11:30	12:30	0	60
Randy	4		11:45	11:45	12:45	0	60
Karen, Rick, Emily	54	Rep	12 –	12 –	1 –	5	60
Richard	8	1	12:15	12:15	1:15	3	60
Nicole H		11	12:55	12:55	1:50	2	55
Emily	11	dog	1:30	1:30	2:35	1	65
Randy	19		2:10	2:10	3:05	5	55
Vic	5	1	2:40	2:40	3:30	2	50
Richard	6		3:10	3:10	4:10	1	60
Randy	4	dog 11	3:50	3:55	4:45	0	50
Vic	6	1	4:15	4:15	5:10	1	55
Randy	4	1	5:15	5:15	6:15	1	60
Vic	3	1	6:35	6:35	7:30	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Nicole	11:30-8	3:30
PHOTO LAB		
Marci	8-3:30	1:15
Mandy	1-8	2:45

GUIDE	SCHEDULE		LUNCH
Richard	8-4:30		1:20
Rick	9-2	1	—
Karen	9-2	1	—
Nicole H	9-2		—
Emily	9:30-2:30	1	—
Randy	11:30-8		3:20
Vic	2:30-8		—

FANTASTIC CAVERNS

253

Date 4-27-16

Day Sun. Mon. Tues. (Wed) Thurs. Fri. Sat.

Weather Rain 57° am. Clear 74° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2674781	1270312		7032
End	2675034	1270312		7039

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan / Karen Rick	55	ADV	10:00	9:55	11:25	1	90
Vic	2	"	10:40	10:40	11:35	1	55
Richard	14	1	11:15	11:20	12:20	3	60
Ron	14	-	11:45	11:50	12:50	1	60
Jan / Karen	31	ADV	12:00	12:00	1:30	1	90
Nicole H	22	-	12:15	12:15	1:10	3	55
Casey	5	1 dog	12:40	12:40	1:40	1	60
Vic	6		1:00	1:00	1:55	0	55
Jan	10	pre	1:20	1:20	2:25	2	60
Rick	4		1:50	1:50	2:50	0	60
Nicole H	4		2:15	2:15	3:15	2	60
Casey	7		3:00	3:05	4:00	1	55
Rick / Ron	5		3:20	3:20	4:20	1	60
Nicole H	9		3:40	3:10	4:40	1	60
Casey	7		4:20	4:20	5:00	0	60
Randy	4	dog	5:10	5:10	6:05	1	55
Randy	3		5:10	5:15		0	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	—
Nicole B	11:30 - 8	2:30
PHOTO LAB		
Mandy	8 - 3:30	1:30
Marci	1 - 8	

GUIDE	SCHEDULE	LUNCH
Rick AD	8 - 4:30	12:25
Vic	9 - 2	—
~~Emily AD~~	~~9 - 2~~	SICK
Karen AD	9:30 - 2:30	—
Jan AD	9:30 - 2:30	—
Richard	10 - 1:30	—
Ron	10 - 4:30	1:00
Nicole H.	11:30 - 8	1:50
Casey	11:30 - 8	1:50
Randy	4:30 - 8	—

FANTASTIC CAVERNS

279

Date April 28, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 55° am. Clear 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2675034	1270312		7039
End	2675316	1270312		7041

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon			9:00	9:00	10:05	1	65
→ Nicole/ Richard	52		9:30	9:25	10:30	3	65
Casey	11		9:45	9:50	10:50	4	60
Rick/Randy Joey	51	Bron	10:30	10:30	12:10	4	100
Vick	10		10:05	10:05	11:05	4	60
Nicole H	20	Bron Parents	10:45	10:45	11:45	0	60
Richard	12	"	11:00	11:00	12:-	1	60
Brandon	4		11:30	11:30	12:35	2	65
Casey	2		11:50	11:50	12:45	0	55
Rick Randy Joey	65	Wilder	12:-	12:15	1:14	1	90
Nicole	4	"	12:40	12:40	1:10	0	60
Richard	8		1:05	1:05	2:05	1	60
Vic	5	Dog	1:30	1:40	2:30	2	50
Randy	5		2:10	2:10	3:10	1	60
Nicole	4		2:40	2:40	3:35	1	55
Casey	6		3:10	3:15	4:15	2	60
Nicole	2		3:50	3:50	4:40	1	50
Casey	9	"	4:20	4:25	5:30	3	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
Nicole	6		5:-	5:-	5:55	2

INFO. COUNTER	SCHEDULE	LUNCH
Nicole B	8-1	—
Madi	11:30-8	
PHOTO LAB		
Mandy	8-330	
Melissa	1-8	

GUIDE	SCHEDULE		LUNCH
Brandon	8-1	H	—
Rick	9-2	H	
Richard	9-2	H	
Nicole H	9-2	H	—
Vic	9:30-2:30	H	
Randy	9-2	H	
Casey	9-1 [illegible] 2:30-8		
~~Emily~~	~~11:30-8~~		~~Sick~~
Nicole B	2:30-8		
Joey	3-2:30	H	

FANTASTIC CAVERNS

506

Date 4-29-16

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Rain 54° am. part Sunny 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2675316	1270312		7041
End	2675826	1270312		7043

331

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	2	-	8:30	8:30	9:30	1	60
Randy	2	-	9:15	9:15	10:15	2	60
Brandon	9	11	9:45	9:45	10:45	3	60
Nicole/Casey	49	Cassville	10:15	10:15	11:15	0	60
Karen/Jan Randy	59	Rock Adv	10:30	10:30	12:05	8	95
Matt	10	-	10:45	10:50	11:50	1	60
Brandon/Vic	49	Cassville	11:10	11:10	12:15	3	65
Nicole/Casey	49	Cassville	11:25	11:25	12:25	0	60
Emily	23	111	11:45	11:50	12:55	6	65
Jan/Randy	46+	Jugpet	12	12:05	1:10	5	65
Brandon	25	1	12:15	12:15	1:20	7	65
Vic Nicole	40	Bolton	12:30	12:30	1:30	2	60
Casey	6	1	12:45	12:45	1:50	3	65
Emily Karen	39	Bolton	1:00	1:-	2:10	7	70
Randy	8	1	1:15	1:20	2:20	4	60
Nicole	12		1:45	1:45	2:45	1	60
Jan	21	111	2:15	2:15	3:20	5	65
Karen	21	+	2:50	2:50	3:55	7	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		3:15	3:15	4:15	1	60
Vic	20	11	3:45	3:50	5:00	8	70
Emily	10	11	4:30	4:30	5:25	3	55
Vic	4		5:50	5:50	6:50	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	-
Sue	11:30-8	3:05
PHOTO LAB		
Marci	8-3:30	✓
Alex	1-8	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-4:30	12:15
Randy	9-2	-
Casey	9-2	-
~~Ron~~	~~9:30-2:30~~	~~Sick~~
Brandon	9:30-2:30	-
Nicole H	10-3	-
Jan	10-3	-
Vic	11:00-8	3:00
Emily	11:30-8	2:30

FANTASTIC CAVERNS

435

Date April 30, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Overcast 61° am. Sunny 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2675826	1270312	—	7043
End	2676264	1270312	—	7051

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole H	16	I	9 15	9 15	10 20	7	65
Brandon	17	dog	10 10	10 10	11 20	4	70
Karen	25	II	10 30	10 30	11 30	4	60
Nicole H	23	Pre III	10 55	10 55	11 55	2	60
Ron	22	I	11 45	11 45	12 40	2	55
Casey	22	III	12 –	12 –	12 05	6	65
Brandon	22	GS IIII	12 15	12 15	1 20	2	65
Karen	22	IIII	12 30	12 30	1 30	6	60
Nicole	25	I	12 45	12 45	1 45	2	60
Ron	24	II IIIIII	1 –	1 05	1 55	10	50
Casey	19	III	1 15	1 15	2 15	2	60
Nicole Karen	48	C-Tock 1 (32)	1 45	1 50	2 50	8 H	60
RON	24	III	2 15	2 15	3 15	3	60
Brandon	25	IIIII	2 35	2 35	3 55	4	30
Nicole	20	I	3 10	3 10	4 05	7 H	55
Casey	23	III	3 45	3 45	4 50	2	65
Brandon	21	IIII	4 15	4 15	4 20	6 H	65
Ron	11		4 40	4 40	5 35	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	9	I	5 15	5 15	6 15	2	60
RON	14	III IIIII	6 15	6 15	7 20	1	65
Casey	5		7 –	7 –	8 10	1	70

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	11:30-8	3 10
PHOTO LAB		
Marci	8-4	✓
Alex	1-8	✓

GUIDE	SCHEDULE	LUNCH
Nicole H	8-4:30	12 05
Brandon	9-5:30	1 30
Ron	11:30-8	3 30
Casey	11:30-8	2 30
Karen	10-3	—

FANTASTIC CAVERNS

228

Date May 1, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 57° am. Cloudy 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2676264	1270312		7051
End	2676492	1270312		7053

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2	–	9:00	9:00	10:00	1	60
Katy	16	–	9:30	9:30	10:50	2	80
Ron	14	–	10:15	10:25	11:30	4	65
Katy	10	–	10:45	11:00	11:55	1	55
Joey	24	IIII	11:30	11:35	12:30	6	55
Richard	19	I DOB	12:10	12:10	1:05	5	55
Ron	6		12:30	12:30	1:40	3	70
Katy	9	PU	12:55	12:55	2:05	3	70
Richard	24	IIII	1:20	1:25	2:30	6	65
Ron	17	~~IIII~~	2:-	2:05	3:-	4	55
Rick	12	II	2:30	2:30	3:30	2	60
Katy	22	8	2:55	2:55	3:50	3	55
Richard	18	II	3:25	3:25	4:30	3	65
Ron	9	I	3:50	3:50	4:55	3	65
Katy	6		4:30	4:30	5:35	3	65
Rick	15		5:30	5:30	6:35	1	65
Richard	2		6:-	6:-	7:-	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1 4	–
Madi	12:30-9	✓
PHOTO LAB		
Alex	8-3 4	✓
Melissa	1-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	✓
Katy	9-5:30	✓
Richard	12-9	✓
Rick	12:30-9	✓

FANTASTIC CAVERNS

326

Date May 2, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 52° am. Cloudy 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2676492	1270312		7053
End	2676825	1270312		7059

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	8	–	9:15	9:15	10:15	1	60
Karen	11	–	9:45	9:45	10:45	4	60
Rich Ron	45	Norwood	10–	10–	11–	13	60
Richard Jan	57	Seymour	10:20	10:25	11:20	1	55
Joey	12	–	10:35	10:35	11:30	1	55
Karen	30	Fairland	11–	11:05	12:05	4	60
Ron	16	11	11:15	11:20	12:20	4	60
Rich Jan	43	Fairland	11:30	11:35	12:40	3	65
Joey	9	1	12–	12:05	12:55	4	50
Casey	5	–	12:20	12:20	1:15	2	55
Richard	6	1	1:10	1:15	2:15	2	60
Casey	10	–	1:45	1:50	2:50	2	60
Karen	6	–	2:20	2:20	3:20	0	60
Richard	18	–	2:50	2:55	3:50	3	55
Nicole	12	111	3:15	3:15	4:10	3	55
Karen	13	–	3:45	3:45	4:50	4	65
Casey	2	–	4:20	4:20	5:30	1	70
Nicole	11	11	4:45	4:50	5:45	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	6	111	5:30	5:35	6:25	2	50
Casey	2		6:05	6:05	6:50	1	45

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Joey	1-6:30	2:00
PHOTO LAB		
Alex	8-3	✓
Mandy	1-9	✓

GUIDE	SCHEDULE		LUNCH
Richard	8-4:30	H	11:30
Ron	9-2	H	—
Jan	9-2	H	—
Karen	9-5:30	H	12:10
Rich	9:30-2:30	H	—
Joey	10-1	H	—
Casey	12-9		3:30
Nicole B	12:30-9		6:00

FANTASTIC CAVERNS

298

Date May 3, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Fog 46° am. sunny 65° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2676825	1270312		7059
End	2677124	1270312		7059

225

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3	1	915	915	1010	1	55
Randy Rich	53	N.V.	930	940	1040	0	60
Richard	7	—	10—	10—	11—	1	60
Casey Joey	53	N.V.	1015	1015	1115	0	60
Vic	11	11	1030	1040	1140	1	60
Richard	3		1110	1110	1210	0	60
Matt Rich	44	Hope	1125	1125	1225	5	60
Joey Randy	44	Hope	1140	1145	12 4—	1	60
Vic	9		1155	1205	105	2	60
Richard	7		1240	1245	145	0	60
Ron	5	1	100	1—	155	1	55
Randy	4	1	130	130	230	1	60
Casey Ron	6		150	150	250	1	60
Nicole	35	Sun	220	220	335	6	75
Joey	4	11	245	245	340	2	55
Rich	4		310	310	400	0	60
Joey	4		430	435	530	1	55
Nicole	2		520	520	6—	0	40

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2	11	615	615	715	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Mach	8-1	—
Sue	12:30-9	45
PHOTO LAB		
Melissa	8-3	✓
Marci	1-9	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	1145
Vic	9-2	—
Richard	9-2	—
Rich	9-530	155
Joey	9-530	1245
Randy	9:30-2:30	—
Ron	12-9	3:45
Nicole H	12:30-9	3:45

FANTASTIC CAVERNS

410

Date May 4, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather 59° sunny am. Sunny 67° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2677124	1270312	—	7059
End	2677539	1270312	—	7066

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	1		935	935	1030	0	55
Nicole/ Vic	46	Rep	955	955	1100	6	65
Jan/ Casey	46	Rep	1010	1010	1110	0	60
Randy	6	"	1030	1035	1135	0	60
Ron	36	111 stroller	1050	1050	1150	5	60
Rick	4		1105	1105	1205	2	60
Vic/Nicole	43	Summer	1120	1125	1220	5	55
Casey	18	Pre	1140	1145	1245	3	60
Jan/ Randy	57	Mayo	1200	1200	115	14	75
Ron	17	dog	1215	1215	125	5	70
Nicole/ Emily	57	Mayo	1230	1230	140	10	70
Rick	2		1250	1250	150	0	60
Casey	4		110	115	210	2	55
Jan	8		140	140	230	0	50
Ron	7	111	2-	2-	310	1	70
Emily	9		245	250	350	2	60
Vic	10	"	315	315	415	2	60
Randy	5	"	335	335	440	0	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy	9		410	410	510	2	60
Vic	2		430	430	520	1	50
Emily	3		5-	5-	555	0	55
Katy	6		6-	6-	650	0	50
Emily	8		630	630	740	3	70
Katy	6		710	710	805	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Sue	1230-9	350
PHOTO LAB		
Mandy	8-3	✓
Alex	1-9	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-430	1205
Nicole H	9-2	—
Casey	9-2	—
Vic	9-530	1230
Randy	9-530	130
10-3	Ron	—
10-3	Jan	—
1230-9	Emily	405
4-9	Katy	—

FANTASTIC CAVERNS

415

Date May 5 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. Sunny 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2677539	1270312		7066
End	2677954	1270312		7069

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	16		9-	9-	10:05	13	65
Randy Ricky	31	[illegible]	9:20	9:20	10:30	8	70
Casey Richard	32	[illegible]	9:55	9:55	10:50	3	55
Brandon	4		10:15	10:15	11:20	2	65
Joey Vic	59	will sp	10:30	10:30	11:35	1	65
Rick Randy	40	will sp	11-	11-	12-	2 6	60
Casey	10	11	11:15	11:15	12:15	1	60
Brandon	11	1	11:45	11:45	12:55	4	70
Vic Richard	48	[illegible]	12-	12:10	1:15	7	65
Randy	6	[illegible]	12:30	12:30	3	3	60
Casey	5	—	1-	1-	2:00	0	60
Nicole	9	1	1:30	1:35	2:25	2	50
Rick	4	—	1:50	1:55	2:50	0	55
Ron	23	11	2:30	2:30	3:30	5	50
Richard	9	1	2:45	2:45	3:45	4	60
NICOLE RICK	49	group	3:00	3:05	4:05	0	
Joey	2	1	3:30	3:30	4:25	0	55
Richard	11	1	4:15	4:20	5:20	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	15	1	4:50	4:50	6:05	1	75¢ Jeep Rail
Nicole H	1	—	5:30	5:30	6:30	0	60
Ron	6	1111	6:00	6:10	7:10	1	60
Nicole	4	—	6:40	6:40	7:40	1	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Joey	1-9	1:45
PHOTO LAB		
Mandy	8-3	✓
Marci	1-9	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30 H	12:05
Brandon	8-1	—
Vic	9-2	—
Randy	9-2	—
Casey	9-2	—
Richard	9-5:30 H	1:25
Joey	10-1	—
Nicole H	12-9	4:25
Ron	12:30-9	✓

FANTASTIC CAVERNS

563

Date May 6, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 60° am. Clear 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2677454	1270312	/	7069
End	2678388	1270446	/	7069

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	4	—	840	840	940	1	60
Joey Vic	58	group	9—	915	1215	6	60
Karen	37	group	930	940	1040	2	60
Emily	9	—	940	955	1110	2	75
Nicole xz	68	group	10—	1010	1110	14	60
Joey	6	—	1025	1030	1120	2	50
Karen	4	11	1045	1045	1145	1	60
Matt	33	group	11—	11	12—	11	60
Vic Nicole B	67	group	1115	1115	1220	2	65
Emily	24	1	1130	1130	1230	3	60
Joey Nicole H	55	Group	1145	1145	1245	14	60
Karen	15	1111	1200	1200	105	3	65
Casey Matt	47	Group	1220	1220	120	0	60
Randy	15	1	1230	1230	140	5	70
Joey	6	Pre 111	100	100	205	1	65
Nicole H / Karen	43	Bus	115	115	225	14	70
Emily	17	1	135	135	240	1	65
Vic	12	11	215	215	315	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	15	1111	245	245	345	1	60
Emily	22		330	330	430	3	60
Vic	7	1	410	410	505	1	55
Casey	3		445	445	530	2	45
Randy	3	111	515	515	625	1	70
Casey	7		555	555	7—	2	65
Randy	5		645	645	740	1	55
			715				

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Nicole B	1-9	145
PHOTO LAB		
Mari	8-3	✓
Alex	1-9	✓

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	1240
Joey	9-2	—
Vic	9-5:30	100
Karen	9:30-2:30	—
Nicole H	9:30-2:30	—
Nicole B	10-1	—
Casey	12-9	245
Randy	12:30-9	350

FANTASTIC CAVERNS

286

Date May 7- 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 60° am. Clear 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2678388	1270446	/	7069
End	2678671	1270446	/	7080

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	4		8:50	8:50	9:40	1	50
Nicole H	3		9:15	9:15	10:10	0	55
Casey	6	1	9:45	9:45	10:50	2	65
Emily	21	~~III~~	10:30	10:30	11:40	1	70
Nicole H	17	III	11:-	11:-	12	1	60
Brandon	20	1	11:30	11:30	12:35	1	65
Casey	16	1	12:-	12:-	1:05	3	65
Randy	24	IIIII	12:20	12:20	1:20	6	60
Vic	12	II	12:40	12:40	1:40	3	60
Emily	13	II	1:-	1:-	1:55	2	55
Casey	8		1:20	1:20	2:25	2	65
Brandon	24	III	1:45	1:45	2:55	5	70
Randy	16		2:10	2:10	3:10	3.	60
Vic	24	1	2:30	2:30	3:35	4.	65
Nicole H	17	III	2:55	2:55	3:55	2	60
Emily	19	dog III	3:30	3:30	4:25	2	55
Nicole H	12	II	4:10	4:10	5:10	4	60
Randy	14		4:55	4:55	5:55	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	4		5:35	5:35	6:35	0	60
Randy	5	II	6:10	6:10	7:10	2	60
Vic	2		7:20	7:20	8:15	0	[illegible]
Randy	2		7:40	7:40	7:35	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Nicole B	12:30-9	3:45
PHOTO LAB		
Marci	8-4	
Melissa	1-9	

GUIDE	SCHEDULE	LUNCH
Emily	8-4:30	11:45
Nicole H	9-5:30	12:05
Casey	9:30-2:30	—
Brandon	10-3	—
Randy	12-9	3:30
Vic	12:30-9	3:55

FANTASTIC CAVERNS

324

Date May 8, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 68° am. Sunny 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2678671	1270446		7080
End	2678995	1270446		7085

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy	7	—	930	930	1030	1	60
Ron	13	—	10—	10—	1110	5	70
Katy	25	IIII	1035	1040	1140	5	60
Ron	17	II	1105	1115	12—	1	45
Katy	23	III	1150	1150	1255	6	65
Richard	24	II	1215	1215	115	3	60
Rick	24	I	1235	1240	140	5	60
Ron	9	—	1255	1255	155	3	60
Katy	12	I	115	115	225	3	70
Richard	23	II	120	135	240	5	65
Rick	18	I	200	200	300	3	60
Ron	21	IIII	230	225	320	5	55
Richard	21	III	250	250	330	3	60
Katy	26	group	315	315	420	6	65
Ron	24	dog —	330	330	440	6	60
Rick	15	—	345	345	450	5	65
Katy	20	III	420	425	515	1	50
Richard	4	—	500	500	605	2	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Joey	12:30 - 9	330
PHOTO LAB		
Melissa	8-3	
Mandy	1-9	

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	12:05
Katy	9-5:30	235
Richard	12-9	405
Rick	12:30-9	300

FANTASTIC CAVERNS

327

Date 5-9-16

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Overcast 65° am. Overcast 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2678995	1270446		7085
End	2679322	1270446		7088

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	8		9:45	9:45	10:45	1	60
Joey/Ron	57	Maple	10:00	10:00	11:-	3	60
Karen	5		10:15	10:16	11:20	3	65
Rick/Richard	53	Maple	10:30	10:30	11:30	3	60
Casey	5		10:45	10:45	11:40	0	55
Joey/Ron	53	both	11:00	11:05	12:00	6	55
Karen	19	1111	11:15	11:25	12:35	2	65
Rick	25	Horace	11:30	11:35	12:40	1	65
Casey	7		11:45	11:50	12:50	0	60
Joey/Richard	53	Horace	12:05	12:10	1:05	4	55
Ron	7		12:25	12:25	1:25	1	60
Sue	5		1:10	1:10	2:05	0	55
Karen	12	11	2:00	2:10	3:20	2	70
Richard	4		3:30	3:30	4:30	2	60
Karen	5		4:15	4:15	5:30	0	75
Richard	4		5:05	5:05	6:05	2	60
Richard	5	1	6:15	6:20	7:15	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-6	1:30
Madi	GS	✓
PHOTO LAB		
Mandy	8-3	✓
Alex	1-9	✓

GUIDE	SCHEDULE		LUNCH
Casey	8-4:30		12:55
Joey	8-1	H	—
Ron	9-2	H	—
Karen	9-5:30		2:40
Rick	9:30-2:30	H	—
Richard	10-9		4:30
Sue	12:30-9		4-

FANTASTIC CAVERNS

306

Date 5-10-16

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Clear 63° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679322	12704416		7088
End	2679630	12704416		7088

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	7	–	8:30	8:35	9:35	1	60
Richard	2	–	9:30	9:30	10:30	1	60
Casey	16	1	9:50	9:50	10:50	3	60
Rick / Vic	55	Maple	10:00	10:25	11:25	2	60
Randy	4	–	10:15	10:40	11:40	1	60
Richard / Emily	55	Maple	10:30	11:00	12:00	3	60
Casey / Math	56	Fair	11:15	11:25	12:20	4	55
Rick	26	Fair Parade	11:40	11:40	12:40	4	60
Vic	17	–	11:55	11:55	12:55	1	60
Ron	10	1	12:15	12:15	1:20	3	65
Richard	3	–	12:30	12:30	1:35	1	65
Nicole	2	–	12:45	12:45	1:45	1	60
Vic	4	–	1:20	1:20	2:15	2	55
Ron	10	11	1:45	1:45	2:45	2	60
Casey	17	11	2:10	2:10	3:15	3	65
Emily	8	1	3:10	3:10	4:10	3	60
Math	5	–	4:[illegible]	4	5	2	60
Nicole	9		5:30	5:30	6:40	0	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	6	–	6:–	6:–	7:00	0	60
Nicole	2	11	6:35	6:40	7:20	1	40

Casey: 4
Time = 240 (65)

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	–
Madi	12:30-9	4
PHOTO LAB		
Marci	8-3	✓
Alex	1-9	✓

GUIDE	SCHEDULE		LUNCH
Casey	8-4:30	H	12:30
Richard	9-2	H	–
Rick	9-5:30	H	12:45
Vic	9-2	H	–
Randy	9:30-2:30	H	–
Emily	9-5:30	H	12:10
Nicole H	12:30-9		3:15
Ron	12-9		3:25

FANTASTIC CAVERNS

331

Date May 11, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1270446		7088
End	2679630	1270777		7090

172

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nick	5	1	830	835	930	1	55
Randy	2	–	915	915	1015	1	60
Casey	14	–	950	955	1045	2	50
Joey	26	Richland	1010	1010	1105	1	55
Randy Jan	43	Pierce	1030	1035	1135	4	60
Nick	8	–	1045	1045	1140	3	55
Casey Vic	44	Pierce	11–	1100	1150	X	50
Joey	23		1125	1125	1220	7	55
Randy	11	1 Boy	1145	1145	1245	X	60
Vic Jan	37	Reed	12–	12	1–	0	60
Casey	13	1	1215	1215	120	2	65
Nick	13		1245	1245	145	2–	60
Joey	22	Luth.	1–	1–	205	4	65
Emily	4		120	120	220	1	60
Vic	10		140	140	235	2	55
Joey	2	1	210	210	3–	1	50
Emily	5		240	240	340	2 L	60
Vic	9	1	310	310	410	2 L	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	10	1	345	350	450	3	60
Emily	9		440	440	535	2	55
Vic	4		530	530	630	0	60
Emily	6	1	6–	6–	655	3	55
Vic	6		635	635	730	1	55
Emily	4	1	730	730	830	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-1	—
Sue	12:30 – 9	340
PHOTO LAB		
Melissa	8-3	✓
Mandy	1-9	✓

GUIDE	SCHEDULE		LUNCH
Nick	8-4:30	1	1150
Nicole H	9-2	Sick	
Casey	9-2	1	—
Randy	9-530	1	1250
Jan	10-3	1	—
Vic	12-9		410
Emily	12:30 – 9		345
Katy	4-9	Sick	
Joey	10-3		—

FANTASTIC CAVERNS

401

Date May 12, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Rain 61° am. Clear 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1270777		7090
End	2679630	1271178		7090

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	4	1	8:30	8:30	9:25	0	55
Brandon	10	–	9:15	9:15	10:25	1	70
Richard	11	–	9:40	9:40	10:40	4	60
X Randy/Vic	55	Maple	10:00	10:00	11:00	5	60
Rick	8	–	10:15	10:15	11:15	2	60
X Karen	30	Maple	10:30	10:30	11:30	2	60
Brandon	25	–	10:45	10:45	11:45	4	60
Jan/Nicole	42	Wheaton	11:00	11:05	12:10	0	65
Randy	10	1	11:20	11:20	12:20	1	60
Richard	24	–	11:45	11:45	12:50	2	65
Karen/Rick	43	St. Patrick	12:00	12:00	1:15	10	75
Brandon	13	11	12:15	12:15	1:15	4	60
Casey	5	1	12:45	12:45	1:40	3	55
Jan	4	–	1:00	1:00	2:00	0	60
Ron	12	1	1:15	1:15	2:10	5	55
Karen	2	1	1:30	1:30	2:35	1	65
Rick	28	Emm	1:45	1:45	2:45	1	60
Richard	19	11	2:00	2:05	3:10	5	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	15		2:30	2:30	3:40	3	70
Ron	4		2:55	2:55	3:50	1	55
Rick	2		3:35	3:35	4:30	1	55
Richard	5	11	4:10	4:10	5:10	1	60
Ron	7		4:55	4:55	6:00	1	65
Casey	5		5:30	5:30	6:30	1	60
Ron	16	1	6:30	6:30	7:35	0	65

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	—
Nicole B	12:30-9	
PHOTO LAB		
Melissa	8-3	
Alex	1:30-9	

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	11:20
Brandon	8-1	—
Vic	8-12 H	—
Randy	9-2	—
Richard	9-5:30	1:00
Karen	9:30-2:30	—
Nicole B	10-12:30	—
Casey	12-9	4:00
Ron	12:30-9	4-
Jan	9-2	—

FANTASTIC CAVERNS

450

198

Date May 13 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 58° am. Cloudy 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679430	1271178		7090
End	2679630	1271641		7090

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Emily	2		830	830	925	0	55
Joey	8		930	930	1030	2	60
Molly B Karen	58	maple "	10 -	10 -	1055	1	55
Nicole H	7	" -	1015	1015	1115	1	60
Joey Muff	60	maple	1030	1030	1130	5	60
Vic	15	PB	1045	1045	1150	5	65
Nic B	30	Billy	11 -	11 -	1155	1	55
Emily	19		1115	1115	1220	6	45
Nicole Karen	50	Billy	1130	1135	1235	2	35
Joey	5		1145	1150	1245	0	55
Vic	4		1210	1210	105	0	55
Casey	11		1230	1230	130	3	60
Joey	8	"	1 -	100	2 -	4	60
Nicole H.	10	"	120	120	220	2	60
Randy	14	1	145	150	250	3	60
Vic	6		210	210	310	1	60
Casey	18	1	240	240	340	2	60
Randy	11		315	315	415	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen Casey	44	Des AM	350	350	455	8	65
Vic	24	1	415	415	520	2	65
Randy	16		450	450	555	4	65
Casey	16	1	545	545	645	X	60
Randy	8		635	635	740	3	65
Casey	9		715	715	805	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 3:30	12
Nicole B	12 - 9	1245
PHOTO LAB		
Maria	8 - 3	✓
Mandy	1 - 9	✓

GUIDE	SCHEDULE	LUNCH
Emily	8 - 12:30	—
Vic	1030 - 5:30	315
Joey	9 - 2	—
Karen	9:30 - 5	12 45
Nicole H	9:30 - 2:30	—
Nicole B	10 - 12	—
Casey	11 - 9	510
Randy	12:30 - 9	415

FANTASTIC CAVERNS

380

Date May 14 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather: Sunny 50° am. Clear 54° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	24796630	1271641	/	7090
End	24796630	1272024	/	7099

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	9		840	840	945	2	65
Nicole H	3		915	915	1010	0	55
Richard	4	1	935	935	1030	1	55
Randy	7	11	1010	1010	1115	2	65
Brandon	13	1	1030	1030	1135	3	65
Richard	4	11	1050	1050	1150	1	60
Randy	17	1111	1115	1115	1220	3	65
Brandon	24	11	1140	1140	1250	1	70
Richard	21	1	1205	1205	100	1	55
Ron	24	1111	1220	1220	120	4	60
Vic	16	11	1235	1235	130	5	55
Brandon	18	11	1250	1255	200	5	65
Randy	24	11	120	120	220	7	60
Ron	19	1 dog	145	146	240	6	55
Brandon	19	1	210	210	315	2	60
Vic	24	1 dog	235	235	340	3	65
Richard	25	111	300	300	400	5	60
Randy	23	11	320	320	425	2	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	25		345	345	435	4	60
Richard	15	1	415	415	525	3	70
Vic	3		425	435	430	1	55
Ron	12	11	500	500	605	1	65
Vic	11	1111	545	545	640	1	55
Ron	13	1	610	610	720	2	70
Vic	2	11	715	715	815	1	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Nicole B	12:30 - 9	330
PHOTO LAB		
Marci	8-3	✓
Mandy	1-9	✓

GUIDE	SCHEDULE	LUNCH
Randy	8-4:30	1225
Nicole H	9:00 - 2	—
Richard	9:30 - 5:30	125
Brandon	10 - 3	—
Ron	12 - 9	300
Vic	12:30 - 9	355

FANTASTIC CAVERNS

327

Date May 15, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 54° am. Sunny 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1272024		7099
End	2679630	1272351		7105

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole (Ron)	6 44	Bus	9:15	9:15	10:10	14	55
Brandon	20	1	9:55	9:55	11:05	4	70
Ron	18	II	10:30	10:30	11:25	4	55
Brandon	25	III	11:05	11:10	12:20	4	70
Ron	18	1	11:35	11:35	12:45	3	70
Casey	13	1	12:10	12:10	1:10	1	60
Rick	21	II	12:35	12:35	1:30	4	55
Brandon	20	1	1:00	1:00	1:55	3	55
Casey	11	II bag	1:30	1:30	2:35	3	65
Ron	14	1	1:50	1:55	2:55	4	60
Rick	12	1	2:15	2:15	3:05	2	50
Brandon	22	IIII	2:40	2:40	3:40	3	60
Casey	5	–	3:00	3:00	4:00	1	60
Ron	9	1	3:20	3:25	4:30	1	65
Brandon	14	–	4:00	4:00	5:05	4	65
Rick	14	–	4:25	4:25	5:25	3	60
Casey	9	III	4:50	5:00	6:05	2	65
Rick	6	1	5:35	5:35	6:30	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	14	1	6:15	6:15	7:15	3	60
Rick	9	II	7:00	7:05	8:00	1	55
Casey	2	–	7:30	7:30	8:20	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Joey	1230-9	3:30
PHOTO LAB		
Marci	8-3	✓
Melissa	1-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-430 H	12:50
Brandon	9-530 H	12:30
Casey	12-9	4:00
Rick	1230-9	3:15

FANTASTIC CAVERNS

370

Date May 16, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Rain 52° am. Rain 54° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1272351		7105
End	2679630	1272721		7113

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3	Dog	8:40	8:40	9:40	1	60
Joey Brandon	57	8:05	9:-	9:30	10:20	5	50
Rick	11	—	9:40	9:40	10:40	4	60
Jan Richard	49	Disney	10:-	10:-	11:10	5	70
Casey	12	—	10:20	10:25	11:15	X	50
Joey Brandon	49	Disney	10:30	10:40	11:30	8	50
Rick	26	1	11:-	11:-	11:55	2	55
Casey	24	—	11:30	11:30	12:30	0	60
Jan	15	9	12:-	12	12:55	2	55
Richard	5	—	12:20	12:20	1:15	1	55
Karen	7	111	12:40	12:40	1:50	3	70
Ron	18	—	1:15	1:15	2:15	1	60
Brandon	11	—	1:35	1:35	2:35	0	60
Rick	21	—	2:00	2:00	2:50	3	50
Karen	6	Dog 1	2:20	2:20	3:20	1	60
Ron	21	1	3:00	3:00	3:55	2	55
Rick	16	11	3:30	3:30	4:30	1	60
Karen	13	11	4:00	4:00	5:00	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
Karen	2		6:00	6:00	7:00	1

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-1	—
Joey	12-5:30	12:15
Scot	5:30-9	—
PHOTO LAB		
Mandy		✓

GUIDE	SCHEDULE		LUNCH
Casey	8-1	H	—
Jan	8-1	H	—
Brandon	8-3:30	H	12:15
Joey	9-12	H	—
* Rick	9-5:30		12:15
Richard	10-3	H	—
* Karen	12-9		3:30 4:00
Ron	12:30-9		

FANTASTIC CAVERNS

340

Date May 17, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Rain 52° am. Rain 54° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1272721		7113
End	2679630	1273064		7116

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick/Randy	59	included	9:40	9:45	10:40	0	55
Vic	20	11	10:10	10:10	11:00	2	50
Richard/Brandon	66	can	10:25	10:25	11:25	10	60
Ron	33	can	10:45	10:45	11:45	2	60
Rick	21	1	11:10	11:10	12:00	2	50
Randy	8	11	11:30	11:30	12:30	1	60
Emily	15	copen	12:00	12:00	12:50	0	50
Rick	24	1	12:15	12:15	1:20	4	65
Vic	15	11	12:45	12:45	1:45	3	60
Casey	8	11	1:25	1:25	2:25	2	60
Brandon	16	11	1:45	1:45	2:55	0	70
Ron	12	—	2:15	2:15	3:10	2	55
Vic	6	—	2:45	2:45	3:45	1	60
Randy	16	1	3:25	3:25	4:25	2	60
Ron	8	—	4:00	4:05	5:15	2	70
Casey	6	—	4:30	4:30	5:30	3	60
Ron	5	1	5:10	5:20	6:20	1	60
Casey	3	—	6:00	6:00	7:00	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	—
Madi	8-1	—
Joey	10:30-7	2:15
Scot	7-9	
PHOTO LAB		
Melissa	8-3	
Marci	1:30-9	

GUIDE	SCHEDULE		LUNCH
Randy	8-4:30	H	12:30
Rick	9-2	H	—
Jan	9-2	H	—
Vic	9-5:30	H	1:50
Richard	10-3	H	—
Brandon	10-3	H	—
Emily	10-3	H	—
Ron	10-9		3:15
Casey	12:30-9		3:45
Jared	1-9		5:30
Sue	10-3	H	—

FANTASTIC CAVERNS

399

Date 5-18-16

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather P Sun 50° am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679630	1273064		7116
End	2679630	1273464		7125

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2	11	9:35	9:35	10:25	1	50
Jared	4		9:55	9:50	10:50	1	60
Rick	20	Andrew	10:10	10:10	11:00	0	50
Jan	20	11	10:30	10:25	11:20	2	60
Ron, Nicole	48	Cand	10:40	10:40	11:40	6	60
Jared, Brandon	15		10:55	10:55	11:55	5	60
Randy	49	Same	11:00	11:10	12:10	6	60
Jan	8	1111	11:25	11:25	12:25	0	60
Rick, Matt	40	Pers	11:40	11:40	12:40	1	60
Ron, Nicole, Jared	7	—	11:55	11:55	1:10	0	75
Brandon	39	Pers	12:10	12:15	1:10	0	55
Randy	23	1	12:30	12:25	1:40	2	65
Jan	5	—	12:50	12:50	1:50	1	60
Rick	3	—	1:15	1:15	2:10	0	55
Richard	5	—	1:30	1:25	2:30	2	55
Ron	7	1	1:55	1:55	2:50	1	55
Jared	8	—	2:20	2:20	3:25	1	65
	6	11	2:45	2:45	3:45	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	15	—	3:15	3:15	4:15	3	60
Richard	5	—	3:45	3:50	4:55	2	65
Jared	7	—	4:15	4:15	5:05	1	50
Katy	6	—	4:55	4:55	5:50	1	55
Richard	24	1	5:30	5:30	6:40	4	70
Katy	2	—	6:10	6:10	7:20	1	70
Richard	3	—	7:00	7:05	8:00	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1:00 GS	—
Joey	12:30-9:00	3:50
PHOTO LAB		
Melissa	8-3	✓
Manei	12:30-9	✓

GUIDE	SCHEDULE		LUNCH
~~Vic~~	~~8-4:30~~	~~H~~	~~SICK~~
Randy	9-5:30	H	2:00
Jared	9:30-5:30	H	12:20
Richard	12:30-9		5:00
Katy	4-9		—
Nicole	10-3	H	—
Ron	10-3	H	1:30
Rick	10-3	H	—
Brandon	10-3	H	—
Jan	10-3	H	—

FANTASTIC CAVERNS

303

Date May 19-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. Cloudy 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679430	1273464		7125
End	2679433	1273464		7128

118

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	5		9-	9-	10-	1	60
Nicole	3		930	930	1030	0	60
Randy	15	11	1015	1015	1115	4	60
Richard Vic	59	Cam 11	1030	1030	1130	8	60
Casey	4	1	1045	1045	1145	0	60
Jan Nicole	59	Cam	11-	11-	1205	3	65
Brandon	16		1115	1120	1220	4	60
Vic	14	1	1145	1145	1245	4	60
Casey	4		1205	1205	105	1	60
Ron	3		1230	1230	130	1	60
Rich	10		1250	1250	145	3	55
Richard	4	1	110	110	215	2	65
Jan	11	1	130	130	230	3	60
Casey	17	1	150	150	250	2	60
Ron	14	1	220	220	320	2	60
Randy	17	111	315	315	415	2	60
Nicole	6		345	345	445	0	60
Rick	12		410	410	510	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	20	11	450	5-	6-	3	60
Nicole	3		6-	610	700	2	50
Rich	4	11	645	645	745	2	60
Rich	2	1	745	745	835	1	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Madi	12:30 - 9	
PHOTO LAB		
Melissa	8-4	1
Mandy	1-9	1

GUIDE	SCHEDULE		LUNCH
Randy	8 - 4:30	H	1120
Nicole H	9-5:30		1210
Vic	10-3 2	H	—
Richard	10-3 2:30	H	—
Brandon	10-3 2	H	—
Jan	10-3 2:30	H	—
Ron	12:30 - 9		
Rich	12:30 - 9		
Casey	10-3 4	H	—

FANTASTIC CAVERNS

381

102

Date May 20 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather misty 50° am. cloudy 62° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2679933	1273464	/	7128
End	2680315	1273444	/	7133

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	7		9-	9-	10:10	1	70
Karen	8		9:20	9:20	10:25	2	65
Casey	11		9:45	9:45	10:45	2	60
Brandy Ron	5	stroll	10-	10-	11-	11	60
Nicole Matt	19	1	10:15	10:15	11:15	4	60
Karen	5	stroll	10:30	10:30	11:45	4	75
Casey	24	11	10:50	10:50	11:55	4	65
Ron	10		11:10	11:10	12:05	2	55
Vic	8	11	11:30	11:30	12:30	3	60
Randy	13		11:50	11:50	12:50	1	60
Brandon	15		12:15	12:15	1:20	4	65
Karen	24		12:50	12:50	1:55	5	65
Nicole H	14		1:10	1:10	2:05	1	55
Casey	19	1	1:30	1:30	2:00	3	55
Ron	17		2:00	2:00	3:05	5	65
Vic	16	11	2:30	2:30	3:30	1	60
Randy	18	1	2:50	2:50	3:55	1	65
Nicole H	11		3:15	3:15	4:15	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	4	1111	3:45	3:45	3:50	1	65
Casey	11	11	4:05	4:05	5:05	3	60
Vic	12		4:35	4:35	5:30	3	55
Randy	12		5:10	5:10	6:10	3	60
Vic	4	111	6:00	6:00	7:00	1	60
Randy	6		6:30	6:30	6:35	1	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
Nicole B	12:30-9	
PHOTO LAB		
Maria	8-3	
Mandy	1-9	

GUIDE	SCHEDULE	LUNCH
Nicole H	8-4:30	11:20
Casey	9-5:30	12:10
Ron	9-5:30	12:10
Karen	9-2	—
Brandon	9-2	—
Vic	11-9	3:45
Randy	11:30-9	4:30

FANTASTIC CAVERNS

425

Date May 21 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. 68° cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2680315	1273464		7133
End	2680743	1273464		7140

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5		830	830	930	2	60
Jared	24		915	915	1015	5	60
Vic Brandon	46	Upstairs Tours	930	930	1045	13	75
Casey	16		945	945	1020	4	65
Jared	18	11	1020	1020	1110	4	50
Vic	24	1	1040	1055	1150	2	55
Brandon	21	11111	1115	1115	1225	2	70
Jared	8	1	1145	1145	1240	3	55
Casey	22	11	1210	1210	105	5	55
Randy	25	11	1225	1225	135	2	70
Brandon	19	1	1245	1245	155	3	70
Nicole H	19	1111	115	115	210	4	55
Jared	23	111	135	135	225	7	50
Vic	17	11	155	155	255	1	60
Casey	7	1	220	220	320	2	60
Randy	18	11	250	250	350	2	60
Nicole H	24	11	315	315	415	5	60
Jared	18	1111	330	330	420	2	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	19	1	4-	4-	500	3	60
Jared	18		430	430	530	5	60
Randy	8	1	5-	500	600	2	60
Nicole H	4		535	535	630	1	55
Randy	13	11	610	610	615	4	65
Nicole H	10	11	650	650	750	2	60
Randy	2		720	720	815	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1250
Nicole B	12:30-9	330
PHOTO LAB		
Marci	8-3	✓
Mandy	1-9	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	1120
Jared	9-5:30	1240
Brandon	9-2	—
Vic	9-5:30	1155
Randy	12-9	4-
Nicole	12:30-9	420

FANTASTIC CAVERNS

420

Date 5-22-2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 58° am. Clear 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2680743	1273464		7140
End	2681176	1273464		7152

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3	–	8:45	8:45	9:45	0	60
Katy	4	II	9:15	9:15	10:10	1	55
Richard	25	II	10:00	10:00	11:00	8	60
Casey	18	–	10:20	10:25	11:15	1	50
Katy	19	IIII	10:45	10:45	11:45	6	60
Richard	23	II 800	11:15	11:20	12:20	3	60
Casey	23	II	11:35	11:40	12:40	3	60
Katy	23	II	12:00	12:00	1:00	2	60
Rick	21	II	12:15	12:15	1:10	3	55
Ron	21	–	12:30	12:30	1:30	3	60
Richard	22	II	12:45	12:45	1:45	5	60
Katy	16	III	1:10	1:10	2:10	3	60
Rick	24	IIII	1:45	1:45	2:35	X	50
Casey	24	I	2:05	2:05	3:00	6	55
Ron	25	I	2:25	2:25	3:30	2	65
RICHARD/ KATY	35	IIIII	2:45	2:45	3:55	4	70
Rick	25	IIII	3:10	3:10	4:05	5	55
Casey	3	–	3:40	3:40	4:30	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Richard	20	IIII 18	4:00	4:10	5:15	4	65
Ron	8		4:55	4:55	5:00	0	65
Richard	13	II	5:15	5:20	6:35	5	75
Rick	13	I	6:00	6:00	7:00	2	60
Ron	10		6:30	6:30	7:40	2	70
Rick	16	I	7:15	7:15	8:05	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4:30	11:30
Nicole	12:30 - 9	3:30
PHOTO LAB		
Marci	8-3	✓
Mandy	1-9	✓
Rhonda	8-5	✓
Jill	12-9	✓

GUIDE	SCHEDULE	LUNCH
Casey	8 - 4:30	12:50
Katy	9 - 5:30	2:45
Richard	10 - 6:30	2:00
Rick	12 - 9	4:15
Ron	12:30 - 9	3:40

FANTASTIC CAVERNS

285

Date May 23, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 67° am. Rain 65° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2681176	1273464		7152
End	2681463	1273464		7152

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	11	1	8:35	8:35	9:35	2	60
Rick	8	1	9:20	9:20	10:10	2	60
Brandon	17	dog	10:05	10:05	11:10	3	65
Richard	23	–	10:40	10:40	11:50	6	70
Rick	25	11	11:15	11:15	12:15	4	60
Richard	24	11	11:45	11:55	12:50	3	70
Karen	10	–	12:20	12:20	1:25	2	65
Ron	7	–	12:45	12:45	1:40	2	55
Brandon	22	111 5x2	1:05	1:05	2:10	3	65
Rick	10	111	1:35	1:35	2:30	2	55
Karen	15	–	2:00	2:00	3:10	3	70
Ron	13	–	2:30	2:30	3:30	2	60
Brandon	25	11	2:45	2:45	3:50	7	65
Rick	19	–	3:00	3:00	4:10	4	70
Karen	8	–	3:25	3:25	4:30	1	65
Ron	10	–	4:15	4:15	5:10	3	55
Karen	14	–	5:00	5:15	6:10	4	65
Ron	11	–	5:30	5:30	6:25	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	10	–	6:00	6:25	7:25	4	60
Ron	2	–	7:00	7:00	7:50	1	50
Karen	3	–	7:45	7:45	8:35	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-1	–
Joey	12:30-9	4:30
PHOTO LAB		
Mandy	8-3	✓
Melissa	1-9	✓

GUIDE	SCHEDULE		LUNCH
Brandon	8-330	H	11:30
Rick	9-530	H	12:25
Richard	10-630	H	1:10
Karen	12-9		4:30
Ron	1230-9		3:45

FANTASTIC CAVERNS

310

Date 5-24-16

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Clear 64° am. Rain 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2681463	1273464		7152
End	2681834	1273464		7170

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2	–	8:30	8:30	9:20	1	55
Richard	2	–	8:45	8:45	9:35	0	50
Karen	6	–	9:15	9:15	10:10	1	55
Rick	22	1	9:35	9:40	10:35	5	55
Vic	9	1	10:15	10:15	11:15	1	60
Randy	12	11	10:35	10:35	11:35	0	60
Karen	14	1	10:55	10:55	11:55	2	60
Rick	10	–	11:15	11:15	12:05	2	50
Jared	14	–	11:30	11:40	12:30	3	50
Ron	22	111	12:10	12:10	1:05	2	55
Vic	13	1	12:45	12:45	1:45	3	60
Nicole Randy	6!	MXR	1–	1:05	2:05	0	60
Jared	9	11	1:20	1:20	2:15	2	55
Karen	10		1:45	1:45	2:50	2	65
Rick	24	11	2:10	2:10	3:10	1	60
Ron	4		2:30	2:30	3:25	1	55
Jared	16		2:50	2:50	3:45	3	55
Vic	14	11	3:20	3:20	4:30	2	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole #1	14	1111	3:45	3:45	4:45	1	60
Ron	1		4:20	4:20	5:10	1	50
Vic	2		4:50	4:50	5:45	0	55
Ron	24	111	5:20	5:20	6:20	1	60
Nicole	7	111	5:45	5:45	6:45	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-1	–
Sue	12:30 - 9	3:30
PHOTO LAB		
Melissa	8-3	✓
Marci	1-9	✓
Jackie	8-5	✓
Madi	12-9	✓

GUIDE	SCHEDULE	LUNCH
Rick	8 - 4:30	12:10
Richard	8 - 3:30	SICK
Karen	9 - 4	12
Randy	10 - 3	–
Vic	10 - 6:30	1:50
Nicole H	12 - 9	2:45
Ron	12 - 9	3:30
Jared	11 - 4	–

FANTASTIC CAVERNS

273

Date May 25, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather light rain 66° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2681834	1273464		7170
End	2682107	1273464		7170

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	2	—	830	830	925	1	55
Randy	11		940	940	1035	5	55
Vic	14	1	1010	1015	1115	3	60
Casey	25	1	1045	1045	1150	4	65
Randy	18	1	1110	1115	1210	6	55
Vic	16	III	1145	1150	1245	2	55
Casey	12		1220	1220	110	4	50
Ron	24	1	1250	1250	150	2	60
Randy	17	IIII	115	115	220	3	65
Vic	17	III	145	145	135	2	50
Ron	9	II	205	205	250	3	45
Casey	15		225	225	330	4	65
Vic	12	1	245	245	345	2	60
Ron	9	1	310	310	415	2	65
Randy	25	Bapt ch.	325	325	435	6H	70
Casey	13	II	400	4-	5-	1	60
Katy	8		430	430	535	1	65
Ron	5		510	510	610	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	4		540	540	650	2	70
Katy	13		640	640	750	0	70
Ron	2		715	715	815	0	60
Katy	2		745	8-	850	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Sue	1230-9	325
Scot		✓
PHOTO LAB		
Melissa	8-3	✓
Marci	1-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-430	1250
Randy	9-530	1220
Casey	10-630	120
Ron	1230-9	420
Katy	4-9	—

FANTASTIC CAVERNS

463

Date May 26, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 70° am. Cloudy 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2682107	1273464		7170
End	2682564	1273476		7176

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	2		8:40	8:40	9:35	0	55
Vic	9	11	9:40	9:45	10:45	1	60
Randy Jan	45	Ava	10:-	10:05	11:05	2	60
Nicole H Karen	15	Ava	10:45	10:25	11:20	0	55
Jared	25	1	10:45	10:45	11:45	4	60
Brandon	45	Ava	11:05	11:05	12:05	1	60
Casey	38	IIIIII	11:20	11:20	12:20	5	60
Vic Jan Nicole H	50	Ava	11:30	11:35	12:35	0	60
Karen	13		12:-	12:00	1:05	2	65
Ron Jared	32	IIII	12:30	12:35	1:35	5	60
Jan	17		12:55	12:55	2:00	3	60
Randy	15	dog	1:30	1:30	2:30	2	60
Casey	20		2:00	2:00	2:55	0	55
Nicole H	23		2:30	2:30	3:30	3	60
Ron	16		2:50	2:50	3:45	2	55
Jarred	11		3:10	3:10	4:-	4	50
Rick	2		3:30	3:30	4:30	1	60
Nicole H	19		4:10	4:10	5:05	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	16		4:30	4:30	4:25	4	55
Ron	8		5:07	5:00	6:05	3	65
Rick	12	11	5:30	5:30	6:40	6	70
Ron	8	III	6:05	6:10	7:10	2	60
Rick	5		7:30	7:30	8:30	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Nicole B	12:30-9	350
PHOTO LAB		
Melissa	8-3	✓
Marci	12:30-9	✓

GUIDE	SCHEDULE	LUNCH
Randy	8-4:30	12:00
Vic	~~9-2~~ 9-1	—
Jan	9-2	—
Nicole H	9-5:30	12:40
Jared	9-5:30	1:45
Karen	9:30-2:30	—
Casey	10-3	—
Brandon	10-3	—
Ron	12-9	3:55
Rick	12:30-9	4:30

FANTASTIC CAVERNS

530

Date 5-27-16

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 69° am. Cloudy 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2682564	1273167	/	7176
End	2682926	1273644	/	7179

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	2	—	8:40	8:45	9:10	1	55
Jared	4	—	9:15	9:15	10:10	2	55
Casey	1	—	9:30	9:30	10:25	1	55
Nicole/Karen	83	coming Vic	10:00	10:00	10:55	3	55
Jared	23	—	10:30	10:30	11:30	3	60
Casey	8	—	10:50	10:50	11:50	3	60
Brandon	13	1	11:15	11:15	12:15	5	60
Karen	24	III	11:45	11:45	12:45	4	60
Jared	23	II	12:00	12:00	12:50	2	50
Nicole	22	IIII	12:15	12:15	1:10	3	55
Brandon/Vic	44	IIIII	12:30	12:30	1:30	8	60
Casey	24	III	12:45	12:45	1:40	6	55
Randy	24	1	1:15	1:15	2:15	4	60
Karen	24	II	1:35	1:35	2:35	3	60
Nicole H	17	—	1:55	1:55	2:55	1	60
Jared	22	III	2:15	2:15	3:05	2	50
Brandon	17	IIIII	2:35	2:35	3:35	3	60
Vic	26	1	2:55	2:55	3:55	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	23	Stroller III	3:10	3:10	4:10	3	60
Casey	19	1	3:25	3:25	4:25	4	60
Karen	16	1	3:45	3:45	4:50	3	65
Jared	8		4:05	4:05	4:00	0	55
Casey	8	PB 1	4:35	4:35	5:25	2	50
Vic	23		5:00	5:00	6:05	2	65
Randy	12		5:45	5:45	6:50	3	65
Vic	15	IIIIIII	6:20	6:20	7:15	0	55
Randy	5		7:15	7:15	8:10	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4:30	12:50
Nicole B	12:30 - 9	3:30
PHOTO LAB		
Marci	8 - 3	
Mandy	12:30 - 9	

GUIDE	SCHEDULE		LUNCH
Nicole H	8 - 4:30	4	11:05
Casey	9 - 5:30		12:10
Karen	9 - 5:30		12:30
Jared	9 - 5:30		1:00
Brandon	11 - 4	4	—
Vic	12 - 9		4:00
Randy	12:30 - 9		4:15

FANTASTIC CAVERNS

887

Date 5-28-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 67° am. Clear 74° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2682926	1273644		7179
End	2683478	1273959		7186

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	3	1	8:35	8:35	9:35	1	60
Jared	22	1	9:15	9:15	10:10	6	55
Vic	11	III	9:35	9:35	10:40	3	65
Brandon	25	II	10:00	10:05	11:05	4	60
Karen	25	III	10:25	10:25	11:25	3	60
Jared	25	II	10:45	10:45	11:40	4	55
Casey/Vic	50	IIII	11:00	11:05	12:00	13	55
Jan	23	II	11:15	11:20	12:20	3	60
Brandon Karen	48	IIII	11:30	11:35	12:40	4	65
Jared	23	IIII	11:50	11:55	12:55	3	60
Randy/Nicole	49	IIIIIII	12:15	12:15	1:15	12	60
Casey	21	III	12:30	12:30	1:30	4	60
Vic Karen	47	IIII	12:50	12:50	1:55	5	65
Jan	23	II	1:15	1:15	2:15	4	60
Brandon/Nicole	49	III	1:30	1:30	2:25	6	55
Randy/Casey	50	IIII	1:50	1:50	2:50	10	60
Jared/Karen	47	IIII	2:15	2:15	3:15	4	60
Brandon/Jan	42	IIIIIII	2:30	2:30	3:30	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic/Randy	48	IIII	2:50	2:50	3:50	5	60
Casey/Nicole H	41	IIIIIII	3:10	3:10	4:10	9	60
Jared/Jan	49	IIII I	3:35	3:40	4:40	5	60
Vic	24	1	4:00	4:00	4:55	5	55
Karen	25	II	4:20	4:20	5:30	6	70
Randy Nicole	41	IIIIIII	4:40	4:40	5:40	7	60
Jan	11	II	5:00	5:00	6:00	2	60
Karen	8	1	5:30	5:30	6:30	3	60
Nicole H	21	1	5:50	5:50	6:45	1	55
Casey	12	1	6:20	6:20	7:20	3	60
Randy	13		6:40	6:40	7:35	4	55
Nicole H	8		7:15	7:15	8:25	2	50
Randy			7:40	7:40	8:40	1	

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8 - 4:30	12:55
Nicole	12:30 - 9	3:30
PHOTO LAB		
Marci	8-5	✓
Nancy	12:30 - 9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8 - 3:30 H	12:40
Vic	9 - 5:30	2:05
Karen	10 - 6:30	3:30
Jan	10 - 6:30	12:35
Casey	11 - 7:30	4:15
Randy	12 - 9	3:50
Nicole H.	12:30 - 9	2:30
Jared	9 - 5:30	1:30

FANTASTIC CAVERNS

882

Date May 29th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78 am. Sunny 84 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2683498	1273959		7186
End	2683800	1274540		7205

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	1	00	8:35	8:35	9:35	0	60
Casey	13	11	9:10	9:10	10:00	4	50
Ron	7	1	9:35	9:35	10:35	3	60
Jared	19	11	10:10	10:10	11:05	5	55
Brandon	24	11	10:20	10:25	11:25	2	60
Ron Casey	47	00	10:40	10:40	11:40	10	60
Rick	22	11	11:00	11:00	11:55	1	55
Jared	23	111	11:20	11:15	12:15	4	60
Brandon	24		11:35	11:30	12:30	3	60
Casey Ron	48	111	11:45	11:45	12:45	12	60
Rick	25	—	12:05	12:05	1:05	3	60
Jared	25	—	12:20	12:20	1:20	3	60
Katy	13	111	12:35	12:35	1:30	3	55
Casey Ron	49	1 7	12:50	12:50	1:50	11	60
Rick	22	1	1:10	1:10	2:05	7	55
Brandon/Jared	50	11	1:30	1:30	2:25	5	55
Nicole/Katy	50	111	1:50	1:50	2:45	40	55
Rick	22		2:15	2:10	3:10	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey/Ron	50	111	2:30	2:30	3:30	8	60
Brandon Jared	49	11	2:45	2:45	3:40	8	55
Katy	22	11	3:-	3:00	3:55	2	55
Rick	24	1111	3:15	3:15	4:05	3	50
Ron/Casey	49	111 PB 111	3:35	3:35	4:35	9	60
Jared	25	111	4:00	4:00	5:00	6	60
Katy/Rick	52	1	4:20	5:15	6:40	7	55
Ron	24	1	4:40	4:45	5:40	6	55
Casey	24	1 dog	5:15	5:15	6:20	3	65
Katy	14	1	5:35	5:35	6:30	1	55
Rick	19		6:05	6:05	7:05	6	60
Katy	17		6:35	6:40	7:30	1	50
Rick	14	1	7:15	7:15	8:05	1	
Katy		11	7:45	7:45	8:40	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot		✓
Nicole	12:30 - 9	✓
Joey	8 - 4:30	SICK
PHOTO LAB		
Mandy	8 - 5	✓
Melisa	12 - 9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8 - 3:30	12:30
Jared	9 - 5:30	no lunch
Casey	9 - 5:30	2:00
Rick	11 - 9	no lunch
Ron	9 - 5:30	1:55
Katy	12:30 - 9	no lunch

FANTASTIC CAVERNS

809

Date 5-30-16

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 68° am. Light Rain 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2683800	1274540		7205
End	2684258	1274844		7212

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	15	1	8:30	8:30	9:30	4	60
Brandon	11	–	9:05	9:20	10:20	3	60
Casey	11	–	9:45	9:45	10:45	2	60
Katy	22	1	10:05	10:05	11:05	3	55
Rick	21	–	10:20	10:20	11:15	3	55
Jan/Jared	47	III	10:45	10:45	11:50	7	65
Ron	22	–	11:00	11:00	12:00	4	60
Casey/Katy	50	III	11:20	11:20	12:20	7	60
Rick	24	IIII	11:40	11:40	12:40	5	60
Jan/Brandon	49	drg II	12:10	12:05	1:05	7	60
Karen/Ron	50	IIIIII	12:25	12:20	1:20	6	65
Jared/Casey	48	II	12:45	12:45	1:45	7	60
Katy/Karen	49	IIII	1:05	1:10	2:10	8	60
Rick/Karen	49	IIIII	1:30	1:30	2:25	4	55
Ron/Jan	49		1:50	1:50	2:45	7	55
Jared/Brandon	48	IIIIIII	2:10	2:10	3:10	10	60
Katy	25	1	3:30	2:30	3:30	6	60
Casey/Jan	36	II	2:50	2:55	4:20	9	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	24		3:10	3:10	4:15	5	65
Rick/Jared	45	IIIII	3:30	3:30	4:30	4	60
Karen	25	1	3:50	3:55	4:55	5	60
Katy	4	II	4:15	4:15	5:05	1	50
Casey	25		4:45	4:45	4:50	3	65
Jan	8		5:15	5:15	6:15	3	60
Ron	18	IIII	5:45	5:45	6:45	1	60
Karen	6		6:15	6:15	7:15	1	60
Ron	12	1	6:45	6:45	8:45	6	60
Karen	10		7:25	7:25	8:25	3	60
Ron	3	II	8:15	8:15	9:05	0	50

INFO. COUNTER	SCHEDULE	LUNCH
Joey	8-4:30	
Nicole	10:30-7	
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Brandon	8-3:30 H	11:05
Jared	8-4:30	12:00
Katy	9-5:30	12:25
Rick	9-5:30	12:45
Casey	9-6:30	1:45
Jan	10-6:30	1:15
Karen	12-9	2:25
Ron	11-9	4:20

FANTASTIC CAVERNS

319

Date May 31, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 68° am. Sunny 80° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2684256	1274894		7212
End	2684437	1275032		7254

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	11	11	930	930	1015	2	45
Vic	12		10	10	1050	2	50
Karen	15	1	1030	1030	1130	0	60
Randy	23	Dog 1	1050	1050	1150	4	60
Ron	18	111	1110	1110	12	1	50
Vic	24	Dog 11	1130	1130	1230	6	60
Karen	16	1111	1150	1150	1245	1	55
Nicole	11	1	1210	1210	1	2	50
Ron	8	1	1245	1250	145	2	55
Randy	25	1	110	110	210	3	60
Casey	26	~~111~~ 1	130	130	225	5	55
Vic	16	11	210	210	310	3	60
Nicole	15	1111	230	230	320	4	50
Ron	4		250	250	355	2	65
Casey	2		310	310	410	0	60
Randy	15	1	335	335	435	3	60
Vic	22	~~1111~~ 1	355	355	415	2	60
Nicole	13		415	415	510	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	17	1	440	440	545	4	65
Casey	6	111	515	515	620	2	65
Nicole	4		545	545	645	1	60
Casey	9	1	620	625	725	2	60
Nicole	6		715	715	810	1	55
Casey	2		755	755	855	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Marli	8-430	1225
Sue	1030-7	320
Scot	7-9	—
PHOTO LAB		
Melissa	8-3	✓
Marci	1-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-430	1210
Vic	9-530	1240
Randy	10-630	215
Nicole H	12-9	330
Casey	1230-9	410
Karen	9-1	—

FANTASTIC CAVERNS

367

Date June 1, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 76° am. Light Rain 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2684437	1275032	/	7214
End	2684804	1275032	/	7218

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	8	1	9:20	9:20	10:20	2	60
Rick / Karen Randy	40	DIS	10:00	10:00	10:35	1	95
Jared	14		10:15	10:15	11:10	3	55
Ron	22	11	10:50	10:55	11:55	4	60
Rick	24	1111	11:10	11:10	12:10	5	60
Jared	9	11	11:30	11:30	12:30	2	60
Karen	19	11	11:50	11:50	12:50	3	60
Vic	20	1111	12:10	12:15	1:05	4	50
Brandon	20	1	12:30	12:30	1:30	5	60
Jared	7		12:45	12:50	1:45	2	55
Randy	25	111	1:10	1:10	2:10	3	60
Ron	23	11	1:30	1:30	2:40	6	70
Rick	22	1111	1:50	1:50	2:45	4	55
Vic	19	1111	2:10	2:10	3:10	3	60
Jared	12	dog	2:30	2:30	3:20	2	50
Brandon	12	1	2:50	2:50	4:10	3	80
Ron	23	PB	3:30	3:30	4:30	7	60
Rick	18		3:50	3:50	4:50	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jarred	9	1111	4:10	4:10	5:10	2	60
Casey	12	111	4:45	4:45	5:40	2	55
Vic	2		5:10	5:10	5:55	1	45
Jared	2		5:30	5:30	6:25	0	55
Casey	4	dog	6:05	6:05	7:00	1	55
Vic	3	1	7:15	7:15	8:05	0	50

INFO. COUNTER	SCHEDULE	LUNCH
Nicole B	12:30 - 9	4:20
PHOTO LAB		
Marcia	8 - 3	
Melissa	12 - 9	

GUIDE	SCHEDULE		LUNCH
Ron	8 - 4:30		12:20
Karen	9 - 2:00	H	—
Jared	10 - 6:30		1:50
Brandon	12 - 4	H	—
Casey	4 - 9		—
Randy	9 - 2	H	—
Rick	9 - 5:30	H	1:10
VIC	12 - 9		4:20

FANTASTIC CAVERNS

387

Date June 2 - 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sprinkling 65° am. Sunny 74° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2684804	1275032	/	7218
End	2685191	1275032	/	7219

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	8	dog	8:50	850	930	2	60
Jared	4		915	915	1010	1	55
Rick Sue	52	LNP Tour	945	950	1050	31	60
Ron	18		1010	1010	1110	4	60
Jared	13		1035	1035	1130	1	55
Rick	19	1 pr	1100	1105	1210	3	65
RON	20	111	1140	1140	1247	2	60
Jared	24	111	12	12 -	1255	9	55
VIC	11	11	1230	1230	120	1	50
Randy	19	1111	1255	1255	155	5	60
Rick	23	PB 11	120	120	215	5	55
RON	12		145	145	250	5	65
VIC	14	111	205	205	3 -	0	55
Jared	20	111	230	230	325	1	55
Randy Rick	31	11	250	250	350	3	60
Ron	12	1	315	315	415	2	60
VIC	24	1	345	345	145	5	60
RICK	24	11	430	430	530	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	8	11	440	440	435	0	55
Randy	21	1	510	510	610	4	60
Jared	4		540	540	630	2	50
VIC	2		615	610	710	0	60
Randy	2	1	630	630	730	1	60
VIC	2	1	715	715	805	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 3:30	12 20
Nicole	12:30 - 9	3:00
PHOTO LAB		
Mari	8-2	
Randy	12 -9	

GUIDE	SCHEDULE	LUNCH
Ron	8 - 4:30	1245
Rick	9 - 5:30	1215
Jared	9 - 6:30	1
VIC	12 - 9	455
Randy	12 - 9	400

FANTASTIC CAVERNS

550

Date June 3, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri) Sat.

Weather Rain 67° am. cloudy 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2685192	1275032		7219
End	2685745	1275032		7223

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	8		8:30	8:30	9:25	2	55
Brandon	10		9:15	9:15	10:10	1	55
Nicole H	8	dog	9:45	9:45	10:45	2	60
Jan Rick/Randy	62	Pipe Ir	10:30	10:30	11:00	3	90
Joey	18	II	10:10	10:10	11:05	3	55
Brandon	24	IIIII	10:45	10:45	11:46	5	60
Jared	36	Repob	11:30	11:30	12:25	0	55
Nicole	17		11:15	11:15	12:10	0	55
Vic	25	III	11:50	11:50	12:40	7	50
Joey/Casey	50	IIIIII	12:15	12:15	1:10	8	55
Nicole H	25	II	12:35	12:35	1:30	5	55
Brandon	21	II	12:55	12:55	1:50	4	55
Randy	19	I	1:15	1:15	2:10	3	55
Jared	25	III	1:40	1:40	2:40	4	60
Casey	18	IIII	2 -	2 -	2:55	3	55
Joey	24	III	2:20	2:20	3:15	2	55
Brandon	19	PEG IIII	2:40	2:40	3:35	3	55
Randy	22	IIIIII	3 -	3 -	4:00	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	14	II	3:25	3:25	4:15	2	60
Jared	25	UPC	3:45	3:45	4:40	1	55
Joey	22	IIII	4 -	4:00	5 -	4	60
Casey	11	III	4:20	4:20	5:20	1	60
Vic	4		4:40	4:40	5:30	1	50
Jared	14	II	5:15	5:15	6:10	1	55
Casey	5		5:50	5:50	6:50	1	60
Jared	25	IIII	6:45	6:45	7:45	2	60
Casey	3	I	7:30	7:30	7:20	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-5	12:55
Joe	5-9	3:50
PHOTO LAB		
Mari		✓
Melissa		✓

GUIDE	SCHEDULE	LUNCH
Jan	8-12	—
Rick	8-1	—
Brandon	8-4	12:06
Nicole H	9-2	—
Randy	9-5:30	12:15
Joey	10-5	1:10
Vic	10-6:30	1:40
Casey	11-9	3:05
Jared	11-9	4:45

FANTASTIC CAVERNS

639

Date June 4 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 70° am. Clear 76° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2685745	1275032		7223
End	2686389	1275032		7229

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Matt/Vic	55	IMS	9	9:05	10:15	90	70
Randy	23	1	9:30	9:30	10:30	3	60
Ron	10		10	10	10:20	2	50
Joey	24	III	10:30	10:30	11:30	7	60
Vic	14	II	10:50	10:50	11:45	4	55
Jan	21	IIII	11:10	11:10	12:10	3	60
Randy/Ron	42	IIII	11:30	11:30	12:35	9	65
Joey	24	IIII	11:55	11:55	12:55	7	60
Jared	25	1	12:15	12:15	1:05	0	50
Casey/Jan	49	IIII	12:35	12:35	1:35	11	60
Vic	24	II	12:55	12:55	2:05	5	70
Ron/Randy	48	III	1:20	1:20	2:25	12	65
Joey/Jared	49	IIII	1:40	1:40	2:45	12	65
Casey	24	II	2:00	2:00	3:20	5	60
Jan	24	1	2:20	2:20	3:20	5	60
Vic	19	III	2:35	2:35	3:20	2	55
Jared	12	CVB	2:50	2:50	3:50	1	60
Ron/Randy	47	IIII	3:10	3:10	4:10	8	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	24	II	3:30	3:30	4:30	3	60
Jan	20	III	3:50	3:50	4:50	1	60
Casey	13	1	4:10	4:10	5:10	1	60
Randy	9		4:30	4:30	5:35	1	65
Jan	13	II	5:00	5:00	5:55	1	55
Ron	18	1 PB	5:30	5:30	6:30	5	60
Jared	7		6:10	6:10	7:10	2	60
Casey	2		6:40	6:40	7:40	2	60
Jared	2		7:10	7:10	8:35	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-10	12:30
Nicole	10-9	3:20
PHOTO LAB		
Mari	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-4:30	12:20
Randy	9-5:30	12:45
Ron	10-6:30	12:45
Joey	10-5	1:00
Jan	11-6	1:45
Jared	12-9	3:50
Casey	12-9	3:10

FANTASTIC CAVERNS

517

Date June 5th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2686389	1275032	/	7229
End	2686906	1275032	/	7239

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	4		910	910	1005	1	55
Katy	4		945	950	1045	2	55
Casey	22	IIII	1010	1010	110	1	60
Brandon	18	III	1030	1030	1125	6	55
KATY	23	IIII	1050	1050	1145	2	55
Jan	23	1	1110	1110	1105	3	55
Casey	23		1125	1125	1225	5	60
Brandon	22	II DOG	1140	1140	1240	4	60
Ron	23	1	1155	1155	1255	6	60
Rick	24	1	1210	1210	110	8	60
Jan	24	1	1225	1225	120	0	55
Katie	19		1240	1245	140	3	55
Casey	19	1	100	1—	145	3	45
Ron	23	DUG	115	115	220	3	65
Jan	23	DUG	135	135	235	6 L	60
Brandon	23	1	150	150	250	5	60
Katy	24	1	205	205	255	1	50
Rick	24	IIII	220	220	320	8	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	25		235	235	335	6 L	60
Casey	21	III	250	250	390	5	60
Brandon	6	II	305	305	4—	1	55
Katy	11	1	330	330	420	3	50
Jan	12		350	350	545	1	55
Casey	17		415	415	515	5	60
Katy	13		430	430	520	2	50
Jan	24	1 dog	5—	5—	555	5	55
Rick	8	1	515	515	610	2	55
Casey	6	1	530	530	620	1	50
Ron	2		615	615	730	0	75
Rick	6		645	645	735	2	50
Rick	5		8—	8—	850	1	

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-1	145
Susan	1-9	3:30
PHOTO LAB		
Melissa	8-4	✓
Amanda	12-9	

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	1255
Katy	9-5:30	12—
Casey	10-6:30	155
Jan	11-6:00	245
Ron	12-9:00	350
Rick	12-9:00	345

FANTASTIC CAVERNS

Adult child

Begin 1120171 17797
End 1120503 0017671
452

Date June 6th, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2686906	1275032		7239
End	2686952	1275032		7243

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	2		840	840	940	1	60
Jan	12		9	905	1005	2	60
Karen	24	PPS	9	920	1020	1	60
Jared	8		945	940	1030	5	50
Casey	25	111 Bellman	10	10	11	5	60
Jan	11		1020	1020	1120	3	60
Karen	23	1111	1045	1045	1145	4	60
Jared	7	1	11	11	1155	1	55
Casey	21	1	1120	1120	1210	5	50
Jan	16	1	1140	1140	1240	6	60
Karen	22	11	1210	1210	110	2	60
Ron	11		1230	1230	130	2	60
Rick	12	111	1245	1245	145	5	60
Jan	21		100	1	205	5	65
Jared	23		115	115	125	4	65
Ron	16		130	130	230	3	60
Casey	18		145	145	245	5	60
Karen	16		2	205	305	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	25		220	220	320	1	60
Jared	12		240	240	340	4	60
Ron Casey	32 12	Bus	300	300	400	13	60
Karen	13		325	326	405	3	60
Jared	8		345	315	440	2	55
Casey	17		415	115	510	0	55
Karen	7	1	435	135	530	1	55
Ron	7		500	500	620	1	80
Rick	7		600	601	650	1	60
Ron	6		710	710	810	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5	✓
Scot	5-9	✓
PHOTO LAB		
Melissa	8-4	✓
Mandy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Jared	8--430	✓
Jan	9-2 H	—
Karen	9-530	110
Casey	10-630	1230
Ron	12-9	416
Rich	12-9	330
Nicole B	5-9	—

FANTASTIC CAVERNS

345

Date June 7 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Clear 76° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2686952	1275032		7253
End	2687293	1275032		7260

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		835	840	925	1	45
Jan	9		935	935	1035	0	60
Ron	15		10 -	10 -	1105	3	65
Casey	20	11	1025	1025	1120	2	55
Jan	23	11	1045	1045	1145	4	60
Ron	17	1	1110	1110	1215	4	65
Casey	26	111	1130	1130	1225	6	55
Jan	14	dog 1	1150	1155	1250	3	55
Vic	18		1220	1220	110	3	50
Randy	17	1	1245	1245	146	4	60
Ron	14		110	110	220	3	70
Casey	22	IIIIIIII	130	130	225	4	55
Jan	23	dog	150	150	250	3	60
Vic	21	IIII	215	215	315	5	60
Randy	19	11	235	235	345	3	70
Ron	7		250	250	100	1	70
Casey	5		330	330	415	2	45
Vic	13	111	345	346	145	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	4		405	405	505	1	60
Casey	20	1	435	435	530	4	55
Randy	19	DOL	500	500	605	3	65
Vic	23	111	525	525	620	5	55
Randy	5		630	620	730	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 3:30	1250
Mic-C B	12:30 - 9	435
PHOTO LAB		
Amanda	8 - 3:30	1215
Mari	12 - 9	240
Pam	11 - 9	230
Katie	1 - 9 Tr	230

GUIDE	SCHEDULE	LUNCH
Ron	8 - 4:30	1225
Jan	9 - 5:30	1255
Casey	10 - 6:30	1230
Vic	12 - 9	435
Randy	12 - 9	400

FANTASTIC CAVERNS

457

Date June 8, 2015

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 71° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2687298	1275032		7250
End	2687756	1275032		7263

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		9:05	9:05	10:05	1	60
Joey	10	III	9:30	9:30	10:30	5	60
Randy Nick	50	AG	9:45	9:45	10:45	0	60
Jared	15		10:00	10:00	11:00	1	60
Ron	13		10:25	10:25	11:25	3	60
Joey	23	II	10:45	10:45	11:45	5	60
Casey	20	I	11:00	11:05	12:05	3	60
Vic	25		11:20	11:20	12:20	6	60
Rick Jared	47	IIII IIII IIII	11:45	11:45	12:40	8	55
Joey	19	II	12:00	12:00	1:00	5	60
Randy	15	III	12:15	12:20	1:20	2	60
Vic	23	III	12:40	12:40	1:36	4	55
Brandon	14		1:00	1:00	2:00	6	60
Ron	15	I	1:30	1:30	2:40	0	70
Jared	9	IIII	2:00	2:00	3:00	1	60
Vic	17	II	2:20	2:20	3:10	5	50
Brandon	21	II PB	2:40	2:40	3:35	7	55
Ron	24	I	3:00	3:00	4:00	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	23	dog IIII	3:30	3:30	4:30	5	60
Vic	11	II	3:50	3:50	3:15	3	55
Katie	22	IIII	4:10	4:10	5:05	6	55
Rick	8		4:30	4:30	5:30	1	60
Jared	21	III	5:05	5:05	6:00	4	55
Katie	7		5:25	5:25	6:20	1	55
Vic	7	II	5:55	5:55	6:40	0	45
Katie	6		7:10	7:10	8:05	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-1	↓
NicoleB	12:30-9	↓
PHOTO LAB		

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	12
Rick	9-5:30	12:50
Jared	9-6:30	12:50
Vic	11-9:00	3:15
Joey	8-1	—
Randy	9-2	—
Casey	10-3	—
Brandon	12-4	—
Katie	4-9	—

FANTASTIC CAVERNS

463

Date June 9th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2687756	1275032	/	7263
End	2688219	1275032	/	7267

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jan	4		830	830	925	2	55
Ron	6		915	915	1015	1	60
Jared	6		945	945	1035	1	50
Rick Joey Jan	60	Skylar	1005	1005	11	0	55
Casey	14		1020	1020	1115	5	55
Ron	21		1050	1050	1135	5	105
Vic	15		1105	1105	1205	2	60
Casey	26	1	1120	1125	1225	7	60
Joey	17	111	1140	1140	1240	3	60
Karen	22	111 FL	1205	1205	105	5	60
Rick	23		1220	1220	120	3	60
Jared	25	111	1235	1235	135	2	60
Vic	8		1250	1250	150	1 H	60
Randy	10	dog 11	110	110	210	4	60
Ron	22	111	130	130	230	2	60
Karen	11		145	145	245	2	60
Rich	21	1	2-	2-	255	4	55
Jared	23	1111	220	220	325	7	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	14	1	240	240	340	5 L	60
Ron	11	11	3-	3-	405	2	65
Karen	14	Cat 111	320	320	420	2 L	60
Rich	9	1	335	335	435	4 F	60
Jared	11	1	405	405	5-	4	55
Randy	12	1	445	445	550	2	65
Karen	20	dog	515	515	620	3	65
Jared	12	111	535	535	630	1	55
Randy	24	Path 15 11	630	630	730	1	60
Karen	2		7-	7-	8	0	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-1	✓
Sue	12-9	335
PHOTO LAB		
Marci	8-	✓
Mandy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-4 30	1205
Rick	9-6 30	1145
Jared	9-6 30	1145
Karen	12-9	430
Randy	12-9	345
Jan	8-1	—
Joey	8-1	—
Vic	9-2	—
Casey	9-2	—

FANTASTIC CAVERNS

1045

Date June 10th, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 72° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2688219	1275032	/	7267
End	2689266	1275032	/	7269

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	4		830	830	930	2	60
Nicole	11	1	845	845	945	2	60
Joey Brandon	51	Clever	900	900	1000	0	60
Randy	21	1	915	915	1015	3	60
Rick Ron	45	Clever	930	930	1030	0	60
Karen	24	11	945	945	1045	1	60
Joey Brandon	48	Clever	10	10	1100	0	60
Jared Vic	47	Clever	1015	1015	1115	0	60
Randy Rick	26	HH	1030	1030	1100	9	60
Randy	44	Clever	1045	1045	1145	0	60
Casey	25	11	11	11	1200	6	60
Brandon	42	Clever	1115	1115	1215	0	60
Joey Vic	27	1	1130	1130	1230	5	60
Nicole	45	HH Clever	1145	1145	1245	0	60
Ron Jared	50	HH	1200	1200	1255	6	55
Randy Karen	44 4	Clever 1	1215	1215	115	1	60
Brandon	27	1	1230	230	130	2	65
Vic/Nicole	80	Clever	1245	1245	145	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	25	1	100	100	200	4	60
Jared	36	Clever	115	115	255	1	60
Ron/Karen	53	1	130	135	235	8	60
Casey/Randy	50	HHH	145	145	250	6	65
Vic	25		200	210	320	4	50
Brandon	17	11	230	230	335	6	65
Jared	12		250	250	355	0	65
Casey	21	11	315	315	420	1	65
Randy	25	dog	340	340	445	4	60
Vic	17	dog 11	415	415	510	3	55
Jared	24		440	440	540	6	60
Casey	23	11	505	505	600	3	60
Vic	15	1	530	530	520	3	[illegible]
Jared	11		555	555	655	1	60
Casey	7		625	625	620	2	55
Jared	27		715	715	815	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 –	/
Nicole		405
PHOTO LAB		
Marci	8 – 4	✓
Katie	10 –	✓
Mandy	12 – 9	✓

GUIDE	SCHEDULE		LUNCH
Brandon	8 – 4 30		145
Randy	9 – 5 30		300
Vic	10 – 6 30		315
Jared	10 – 9		4 –
Casey	10 – 9		430
Joey	8 – 1	H	—
Karen	8 – 2 30	H	—
Rick	8 – 2 30	H	—
Ron	8 – 2 30	H	—
Nicole	8 – 2 30	H	—

FANTASTIC CAVERNS

691

Date June 11, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 72° am. Sunny 94° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2689260	1275032	/	7269
End	2689464	1275032	/	7273

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	4	II	830	830	925	1	55
Randy	24	I	920	920	1020	5	60
Vic	25	III	945	945	1045	3	60
Joey	24	III	1005	1005	1105	1	60
Randy	24	II	1030	1030	1130	3	60
Vic	25	III	1050	1050	1150	6	60
Casey	22	I	1105	1105	1205	3	60
Jared	15	I	1120	1120	1215	3	55
Joey	25	IIIII	1140	1140	1235	6	55
Randy	24		12—	12—	1—	4	60
Casey	24	III	1215	1215	110	7	55
Jared / Vic	49	dog IIII	1230	1230	130	7	60
Joey	19	II	1250	1250	145	6	55
Randy	23	II	115	110	210	2	60
Casey / Jared	45	dog IIIII	130	130	230	6	60
Vic	22	Late tam	145	145	145	4	60
Joey / Matt	57	IIII II	2—	2—	255	11	55
Randy	23		215	215	300	3	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	24	III	235	235	330	3	55
Vic	24	I	3—	3—	350	8 II	50
Casey	20	IIII	315	315	425	6	70
Joey	22	IIII	335	335	435	4	60
Randy	25		350	350	450	6	60
Jared	6		410	410	5—	1	50
Casey	17	IIII	430	430	530	3	60
Randy	18	II	5—	5—	6—	5	60
Joey	26		530	530	630	3	60
Jared	8		6—	6—	655	1	55
Casey	27		630	640	750	2	70 Jed Rec
Jared	4		710	710	8—	0	50
Casey	4		745	755	745	0	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-~~3:30~~ 5	1235
Madi	12:30-9	345
PHOTO LAB		
Mara	8-4	✓
Amanda	12-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-4:30 H	1155
Randy	9-~~5:30~~ 6 H	325
Joey	10-6:30 H	305
Jared	11-9	335
Casey	11-9	240

FANTASTIC CAVERNS

626

Date June 19, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 82° am. Heavy Rain 75° pm.

	#1 TICKET	#2 TICKET	GIFT CERT	SEASON PASS
Begin	2689964	1275032		7273
End	2690591	1275032		7274

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	8		8:35	8:35	9:30	1	55
Katy	24	1	9:10	9:10	10:10	4	60
Brandon	24	III	9:40	10:40	11:40	8	60
Casey	22		10:00	10:00	11:00	8	60
Joey	24	II 2006	10:15	10:15	11:15	2	60
KATY	25	1	10:30	10:30	11:30		60
Brandon	24	2006	10:50	10:50	11:50	6	60
Casey	24	III	11:10	11:10	12:10	3	60
Joey	21	III 2006	11:25	11:30	12:30	6	60
Ron	26	1 2006	11:40	11:45	12:40	6	55
Rick	23	1	12:30	12:00	1:05	6	65
Casey	22	II	12:55	12:15	1:15	2	60
Katy	21	II PL	12:30	12:30	1:25	4	55
Brandon	22	1	12:45	12:45	1:45	2	60
Ron	23	1	1:00	1:00	2:-	4	60
Joey Rick	48	IIIIIIIII	1:15	1:15	2:15	9	60
Katy	25	1	1:30	1:40	2:30		50
Brandon	21		1:45	1:50	2:50	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	19	II	2:05	2:05	2:55	0	50
Ron	20	IIIII	2:-	2:30	3:30		60
Joey	24	IIIII	2:45	2:-	3:45	8	60
Katy	22	II	3:-	3:00	4:00	3	60
Brandon	23	II	3:20	3:35	4:30	3	55
Ron	26		3:35	3:35	4:35	5	60
Joey	10	III	4:-	4:00	4:55	3	55
Katy	10		4:30	4:30	5:30		60
Casey	16	III	5:10	5:10	6:10	4	60
Rick	9		5:35	5:35	6:35	2	60
Ron	9		6:10	6:10	7:20	4	70
Rick	9		7:-	7:-	7:55	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-1	
Madi	12:30-9	
PHOTO LAB		
Amanda	8-4	
Melisa	12-9	

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	11:55
Katy	9-5:30	11:50
Joey	10-5	12:40
Casey	10-6:30	1:20
Ron	12-9:00	4:50
Rick	12 9:00	3:15

FANTASTIC CAVERNS

Hand Issue

Adult	Child
1120503	0017871
1120674	0017912

478

Date June 13, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Hot 89° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2690591	1275032		7279
End	2690803	1275086		7283

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	3		8:20	8:25	9:20	1	55
Jan/Jared	41	christmas	8:40	8:40	9:45	8	65
Casey	21	dog	9:05	9:10	10:10	8	60
Joey	13	pb	9:40	9:40	10:40	5	60
Jared	11		10:10	10:10	10:55	4	55
Jan	24	1	10:40	10:45	11:46	3	60
Casey	10		11:00	11:00	11:55	0	55
Ron	18	doe	11:20	11:20	12:20	3	60
Rick	24	dog	11:40	11:40	12:40	3	60
Joey	23		12:05	12:05	1:00	4	55
Jared	24	dog	12:20	12:20	1:20	8	60
Jan/Ron	40	11	12:40	12:45	1:45	11	60
Casey	22	111	1:10	1:10	1:55	4	55
Joey	22	111	1:30	1:30	2:30	4	60
Jared	25	11	1:50	1:50	2:45	6	55
Jan	21	111	2:10	2:10	3:05	3	55
Ron	7		2:30	2:30	3:30	3	60
Casey	24	11	2:50	2:50	3:15	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	25	1	3:10	3:10	4:10	3	60
Jared	22	111	3:30	3:30	4:20	2	50
Ron	23	111	3:50	3:50	4:50	3	60
Rick	12		4:20	4:20	5:20	2	60
Ron	10	11	5:25	5:30	6:30	2	60
Rick	7		6:15	6:15	7:15	2	60
Ron	3	11	6:55	6:55	7:55	1	

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-5	✓
Scot	5-9	✓
PHOTO LAB		
Mandy	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE		LUNCH
Jan	8-4:30	11	11:55
Jared	8-4:30	11	11:25
Joey	8-4:30	11	11:30
Casey	9-6	11	12:00
Ron	11-9		✓
Rick	11-9		3:15

FANTASTIC CAVERNS

340

Date June 14, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 82° am. Clear 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2690803	1275086		7283
End	2691145	1275086		7283

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6	Dog	910	910	1010	1	60
Jan	8		950	950	1050	2	60
Joey	26	Group	1010	1010	1110	0	60
Karen	15		1025	1025	1125	6	60
Rick	12		1100	1100	1200	2	60
Jan	15		1115	1115	1215	1	60
Joey	19		1145	1150	1255	7	65
Vic	16		1205	1205	105	4	60
Karen	19	III	1225	1225	125	7	60
Randy	19	I	1245	1245	140	6	55
Brandon	16		115	115	210	1	55
Jan	13	I	135	135	235	6	60
Vic	13	I	155	155	305	3	65
Randy	23	III	215	215	315	4	60
Joey	24	PB	230	230	330	7	60
Karen	25	I	250	250	355	3	65
Vic	20	III	310	310	410	4	60
Jan	6		325	325	425	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	6		400	400	500	1	60
Jan	16		435	435	535	2	60
Karen	3	II	500	5	600	1	60
Joey	5	III	520	520	620	3	60
Vic	1		6—	600	645	0	45
Randy	6		635	635	640	3	65
Vic	6		715	715	815	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8—	
Nicole	1230—9	
Scot	5-9	
PHOTO LAB		
Melissa	8-4	
Marci	~~12-9~~ sick	
Katie	4-9	
Mandy	—9	

GUIDE	SCHEDULE	LUNCH
Rick	8-12	—
Jan	9-530	1225
Joey	9-630	100
Karen	10-630	130
Brandon	12-4	—
Vic	12-9	425
Randy	12-9	325
[illegible]	[illegible]	
Michael	5-10	425
Carrie	5-10	425
Craig	5-10	425

FANTASTIC CAVERNS

491

Date June 15th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather 72° rain am. Sunny 95° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2691145	1275086	—	7283
End	2691638	1275086	—	7283

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	3	II	9 30	9 30	10 35	0	65
Randy	25		10 10	10 10	11 16	3	65
Jared	24	III	10 30	10 30	11 30	2	60
Ron	19	III	10 50	10 50	11 50	6	60
Randy	24	dog I	11 15	11 20	12 20	5	60
Jared	24	III	11 35	11 35	12 30	3	55
Ron	20	III PL	11 55	11 55	12 50	4	55
Vic	21	V	12 15	12 15	1 15	3	60
Brandon	24		12 30	12 30	1 25	5	55
Jared	19	III	12 50	12 50	1 50	4	60
Randy	23	TIL	1 10	1 10	2 10	4	60
Vic	13		1 25	1 25	2 20	1	55
Brandon	15	PB II	1 45	1 45	2 40	3	55
Ron	25	PB III	2 05	2 05	3 05	3	60
Rand	16	I	2 20	2 20	3 20	4	60
Jared	20	I	2 35	2 35	3 35	2	60
Brandon	13	TIL	2 50	2 50	3 50	2	60
Vic	6		3 15	3 15	4 10	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	6		3 35	3 35	4 40	2	65
Randy Jared	43	Mar 39	4 -	4 -	5 05	2	65
Vic	25	I	4 15	4 15	5 15	1	60
Katy	23	III	4 35	4 35	5 35	2	60
Ron	24	III	5 -	5 -	6 05	9	65
Jared	22	I	5 30	5 30	6 25	0	55
Katy	8		6 20	6 20	7 25	2	65
Vic	3		6 55	6 55	7 55	1	60
Katy	1		7 45	7 45	8 30	0	45

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-3 30	✓
Sue	12 30-9	2 55
PHOTO LAB		
Mandy	12-9	✓
Melissa	8-4	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-4 30	1 —
Randy	9-5 30	12 25
Jared	10-6 30	1 35
Vic	12-9	5 20
Brandon	12-4	—
Katy	4-9	—
Craig	8-4 30	✓
Carrie	8-4 30	✓
Michael	8-4 30	✓

FANTASTIC CAVERNS

840

Date June 16, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 81° am. Cloudy 89° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2691638	1275086		7283
End	2692479	1275086		7289

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		8 25	8 25	9 30	1	65
Joey/Casey	66	F Grove III	9 25	9 25	10 25	4	60
Jared	11		9 10	9 10	10 05	1	55
Ron	10	I	9 40	9 40	9 40	2	60
Jon/Matt	66	F Grove	9 55	9 55	11 05	3	70
Karen	8	I	10 10	10 10	11 15	6	65
Joey/Casey	66	F Grove	10 30	10 30	11 25	2	55
Jared/Ron	33 24	F Grove	10 45	10 45	11 45	5	60
Vic/Matt	48	Plain	11 00	11 10	12 05	2	55
Randy	24	II	11 25	11 25	12 25	2	60
Casey	24	III	11 45	11 45	12 40	5	55
Jan/Jared Randy	68	YMCA	12 00	12 55	1 30	0	90
Vic/Joey	45	II	12 15	12 15	1 15	9	60
Ron	23	III	12 45	12 45	1 50	5	65
Jared/Sue	51	IIIIIII	1 05	1 05	2 00	10	55
Vic/Casey	49	~~IIII~~ IIII	1 30	1 30	2 25	6	55
Randy	24		1 45	1 45	2 45	1	60
Joey	11	I	2 00	2 00	2 55	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic/Ron	23 23	I Bus	2 30	2 30	3 30	14	60
Jared	21	~~IIII~~ II	2 50	2 50	3 50	6	60
Casey	13	II	3 10	3 10	4 10	3	60
Joey	16	I	3 30	3 30	4 35	3	65
Randy	20	I	4 –	4 –	5 05	2	65
Jared	16	III	4 20	4 20	5 20	3	60
Casey	17	~~IIII~~	4 45	4 45	5 50	3	65
Vic	15		5 10	5 10	6 10	4	60
Jared	10		5 30	5 30	6 25	1	55
Randy	15	I	6 –	6 –	7 –	1	60
Vic	5		6 45	6 45	7 45	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-330	✓
Sue	1230-9	✓
PHOTO LAB		
Pam	8-1	–
Marci	8-330	✓
Mandy	1230-9	✓

GUIDE	SCHEDULE	LUNCH
Jan	8-2	–
Joey	8-430	1 25
Ron	8-430	11 55
Casey	9-630	12 55
Jared	9-630	2 10
Karen	10-630	– Home sick
Vic	11-9	3 45
Randy	11-9	3 10
Michael	8-430	✓
Carrie	8-430	✓
Craig	8-430	✓

FANTASTIC CAVERNS

571

Date June 17-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 75° am. Sunny 95° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2492479	1275086		7289
End	2693051	1275086		7291

GUIDE	# OF PEOPLE	UNDER 6 (100)	SCHED.	IN	OUT	PHOTO	
Karen	2		8 30	8 30	9 25	1	55
Brandon Jared	41	BC-36 11	9-	9-	10-	4	60
Karen	6		9 30	9 30	10 30	2	60
Casey (Mike) Vic	52	Food Lamp	10-	10-	11 30	2	90
Brandon	24	dog 111	10 15	10 15	11 10	5	55
Jared Karen	43	VIC 111	10 45	10 50	11 50	8	60
Randy	23	11	11 05	11 05	12 05	4	60
Brandon	24	1	11 20	11 20	12 20	2	60
Vic	19	PB 11111	11 35	11 35	12 35	2	60
Casey	14	1	11 50	11 50	12 50	0	60
Jared	13	11111	12 15	12 20	1 20	2	60
Randy	7		12 35	12 35	1 35	2	60
Karen (Mike)	18	SAC	12 50	12 50	1 50	1	60
Brandon Vic	50	1111	1 15	1 15	2 10	2	60
Casey Jared	49	111111	1 30	1 35	2 30	8	55
Randy	17	11	1 50	2-	3 00	4	60
Karen	27		2 20	2 20	3 20	8	60
Brandon	17	1111	2 40	2 40	3 40	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	25		3 10	3 10	4-	2	50
Karen	20	11	3 30	3 30	4 30	6	60
Jared	4		4-	4-	5-	2	60
Casey	22	11111	4 30	4 40	5 30	7	50
Randy	20		5-	5-	6-	1	60
Jared	13	11	5 30	5 30	6 25	2	55
Vic	9	1	6-	6 15	7-	3	45
Randy	4	111	6 30	6 30	7 30	0	60
Vic	5		7 30	7 35	8 15	1	45

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-3:30	12 45
Madi	12:30-9	3 25
PHOTO LAB		
Amanda	8-3:30	✓
Mari	12:30-9	✓

GUIDE	SCHEDULE		LUNCH
Karen	8-4:30	H	12 05 L
Brandon	8-4	H	12 25
Jared	9-6:30	H	2 45
Casey	9-5:30	H	1-
Vic	10-9		2 20
Randy	11-9		3 05
Michael	9-2	Disc. 50	—
Carrie	9-2		—
Craig	9-2		—

FANTASTIC CAVERNS

731

Date June 18-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Sunny 88° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2693051	1275086		7291
End	2693783	1275086		7294

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	25	1	845	845	945	3	60
Vic	18		915	915	1015	3	60
Randy	11	PB	940	940	1040	3	60
Brandon	18	7	10-	10-	1055	3	55
Casey	22	7	1020	1020	1115	3	55
Vic	20	1	1035	1035	1135	4	60
Randy	21	1 dog	1050	1055	1155	2	60
Brandon	21	1	1110	1110	1205	5	55
Randy Jared	49	7	1125	1125	1220	8	55
Vic	21	1	1145	1145	1240	2	55
Ron Randy	48	1	12-	12-	1-	13	60
Brandi	21	1	1215	1215	105	9	50
Casey	26	1	1230	1230	125	6	55
Vic Jared	50	1	1245	1250	140	10	50
Ron	19	1	105	105	200	3	55
Randy	21	1	120	120	220	4	60
Casey Jared	40	1	150	150	240	11	50
Brandon	23	1	205	205	255	4	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron Vic	49	1	230	225	325	9	60
Jared Randy	50	1	250	250	345	3	55
Brandon	23	1	310	310	410	5	60
Casey	6	1	340	340	440	—	60
Vic	11	1	420	420	520	2	60
Ron	23	1	440	445	545	4	60
Randy	17		510	510	610	4	60
Jared	11	1	530	535	625	1	55
Ron	12		6-	6-	7-	1	60
Jared	25		635	635	730	1	55
Ron	16	1	710	715	225	6	75
Jared	4	DAY	745	745	835		45

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-3:30	1245
Madi	12:30-9	255
PHOTO LAB		
Melissa	8-3:30	✓
Katie	12:30-9	✓

GUIDE	SCHEDULE		LUNCH
Brandon	8-4:30	H	115
Vic	9-5:30	H	155
Randy	9:30-6	H	228
Casey	10-6:30	H	3-
Jared	11-9		4-
Ron	12-9		340

FANTASTIC CAVERNS

630

Date June 19th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 81 am. Sunny 88° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2693783	1275086	/	07290
End	2693783	1275724	/	07298

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	11		8:40	8:40	9:30	2	50
Brandon	12		9:25	9:25	10:25	2	60
Casey	21	III	9:55	9:55	10:55	4	60
Ron	16		10:25	10:25	11:25	4	60
Brandon	22	I	10:50	10:50	11:45	2	55
Casey	18	IIII	11:10	11:10	12	5	50
Rick	22	III	11:25	11:25	12:20	6	55
Ron	27	I	11:40	11:40	12:40	5	60
Brandon	23	II	12	12	1:00	3	60
Joey	24		12:15	12:15	1:10	3	55
Casey	25	III	12:30	12:30	1:20	4	50
Rick	25	IIII	12:45	12:45	1:45	8	60
Ron	23	IIII	1:00	1:00	2:05	5	65
Joey	24	I	1:15	1:15	2:15	3	60
Casey	23	I	1:30	1:30	2:30	4	60
Rick Brandon	38	IIII	1:50	1:50	2:50	5	60
Ron	22	III	2:10	2:15	3:15	4	60
Joey	23	II	2:30	2:30	3:30	4	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick Brandon	48	IIIII	2:50	3:30	4:00	4	60
Casey Nicole	47	I dog	3:10	3:10	4:15	7	65
Ron	24		3:30	3:30	4:30	4	60
Joey	11	II	3:50	3:55	4:55	2	60
Brandon	18		4:25	4:25	5:20	3	55
Casey	21	III	4:45	4:50	5:45	7	60
Ron	13		5:10	5:10	6:10	0	60
Rick	11		5:30	5:30	6:35	1	65
Joey	14	I	6:00	6:00	7:00	4	60
Rick	24	I	6:35	6:40	7:35	5	55
Joey	6	dog	7:10	7:10	8:05	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 1:00	
Nicole	12:30 - 8	
PHOTO LAB		
Melissa	8 - 3:30	
Katie	12:30 - 9:00	

GUIDE	SCHEDULE	LUNCH
Ron	8 - 4:30	1:30
Brandon	9 - 6:30	1:10
Casey	9:30 - 6:00	2:40
Connie	10 - 6:30	12:55
Craig	10 - 6:30	12:55
Joey	12 - 9	5:05
Rick	11 - 9	4:20

FANTASTIC CAVERNS

377

Date June 20, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2693783	1275724		7298
End	2694161	1275724		7300

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	10		8:45	8:45	9:50	3	65
Rick	6	II	9:15	9:15	10:05	1	50
Karen	10		9:45	9:45	10:45	3	60
Joey	16		10:15	10:15	11:10	2	55
Ron	23	I	10:50	10:50	11:55	6	65
Rick	25	II	11:15	11:15	12:10	3	55
Karen	18	I	11:35	11:35	12:35	3	60
Joey	24	IIII I	11:55	11:55	12:55	5	60
Ron	20	PB poin	12:15	12:15	1:20	2	65
Rick	17	I poin	12:35	12:35	1:35	1	60
Joey	22	III	1:00	1:00	2:00	3	60
Karen	21	I	1:25	1:25	1:30	1	65
Rick	13		1:45	1:30	2:45	0	35
Ron	15	dry	2:10	2:10	3:20	3	70
Karen	21	III	2:30	2:30	3:30	1	60
Joey	18	II	2:50	2:50	3:45	4	55
Ron	17		3:20	3:30	4:30	3	60
Karen	13	I	3:50	3:50	4:50	5	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	11		4:20	4:20	5:20	0	60
Carrie	7		4:35	4:35	5:35	2	60
Joey	19	1	4:50	4:50	5:50	3	60
Craig	7	1	5:15	5:15	6:15	1	60
Rick	7	1	5:45	5:45	6:35	1	60
Carrie	7		6:05	6:05	7:05	2	60
Craig	4		6:35	6:35	7:35	2	60
Carrie	2		7:20	7:20	8:15	2	55
Craig	5		8:00	8:00	9:00	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-430	✓
Scot	430-9	
PHOTO LAB		
Mandy	8-330	✓
Melissa	1230-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-430	1:30
Rick	9-530	2:50
Karen	930-6	12:50
Joey	10-630	2:10
Carrie	12-9	✓
Craig	12-9	✓

FANTASTIC CAVERNS

498

Date June 21, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 76° am. Sunny 93° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2694161	1275724		7300
End	2694660	1275724		7301

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	6		830	830	920	2	50
Karen	9		910	910	1010	4	60
Casey	9		945	945	1035	3	50
Craig, Nic, Carrie	30	group	10-	955	1125	0	90
Randy	20	1	1015	1010	1110	5	60
Joey, Jared	39	1	1040	1045	1140	7	55
Karen	15		11-	1105	1205	4	60
Casey	6		1115	1115	1210	3	50
Craig, Vic, Carrie	30	group	1130	1130 1210	110	0	60
Jared, Randy	49		1145	1150	1-	6½	70
Joey	22	1	1225	1235	125	3	60
Nick	23	11	1250	1245	145	7	60
Karen	18		1-	1-	2-	3	60
Casey	23	1111	120	120	205	2	45
Joey	25	1	140	140	240	9	60
Jared	21	1	2-	2-	3-	6	60
Vic	17		220	220	320	2	60
Randy	10		240	240	340	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	18	Dog 1111	3-	3-	405	4	65
Jared	22	111	332	330	430	7	60
Randy	13	1111	350	350	450	2	60
Joey	16	1111	410	410	510	4	60
Karen	12	11	430	430	525	2	55
Vic	10		450	455	555	1	60
Randy	14		515	515	615	4	60
Jared	7		535	535	635	1	60
Vic	12		655	655	8-	2	65
Vic	3		8-	8-	855	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Wed.	8-330	1245
Sue	1230-9	3-
Misty	10-7 (GS)	✓
PHOTO LAB		
Pam	8-1	—
Marci	8-330	✓
Mandy	1730-9	✓

GUIDE	SCHEDULE		LUNCH
Casey	8-430	H	1220
Nick	8-230	H	—
Karen	9-530		1210
Randy	930-6		110
Joey	930-6		250
Jared	10-630		110
Vic	12-9		330
Nicole B	1230-9		SICK
Michael	12-5		—
Carrie	9-2	H	—
Craig	9-2	H	—

FANTASTIC CAVERNS

518

Date June 22, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 79° am. Sunny 94° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2694660	1275724		7301
End	2695178	1275724		7309

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		815	850	950	0	60
Rick	16	1	910	920	1020	3	60
Vic	21	1	10	1000	11	3	60
Jared Randy	19 12	group	1015	1020	1120	3	60
Ron	24	11	1035	1055	1140	3	65
Carrie	24	111	1050	1050	1155	3	65
Rick	23	11	1110	1110	1210	7	60
Vic	12	11	1125	1125	1215	1	60
Jared Randy	33	111	1145	1150	1250	7	60
Brandon	24	111	12	1205	105	3	60
Michael	17		1220	1225	120	2	55
Carrie	16	1	1235	1235	135	3	60
Rick	7		1255	1255	155	1	60
Jared	25	11,1	115	115	210	4 H	55
Joey	21	1111	130	130	235	7	65
Randy	22	1	145	145	250	7	65
Ron	23	1	2	2	305	4	65
Brandon	8	1	215	215	320	2	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	16	1	230	230	320	0	60
Rick	20	11	245	245	345	4	60
Joey	21	11	305	305	405	4	60
Randy	15	1	330	330	435	1	65
Vic	8	1	4	4	5	2	60
Katie	7		420	420	515	2	55
Randy	17		445	445	545	3	60
Joey	10	1	515	515	615	2	60
Katie	25	11	550	550	650	4	60
Joey	8		620	620	720	1	60
Katie	1		730	730	820	X	50

INFO. COUNTER	SCHEDULE	LUNCH
Mod.	8-330	1235
Sue	1230-9	305
Jackie	10-7 (GS)	210
PHOTO LAB		
Marci	8-330	✓
Melissa	1230-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-430 H	1155
Rick	9-530	12 15
Vic	930-6	135
Jared	10-3	—
Randy	10-630	3
Brandon	12-4	—
Joey	12-9	415
Katy	4-9	—
Michael	8-1	—
Carrie	9-2	—

FANTASTIC CAVERNS

536

Date June 23rd, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 88° am. Sunny 93° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2695178	1275724	/	7309
End	2695720	1275724	/	7309

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	12		855	855	955	4	60
Joey Jared	50	Village	915	915	1020	9	65
Ron Rick	32	1 Village	930	930	1040	11	70
Michael	10		1015	1015	1115	3	60
Jared	20	1	1035	1035	1035	4	60
Joey	6	1	1055	1055	1155	2	60
Ron	23	1	1120	1120	1230	6	70
Michael	21	1	1140	1140	1245	6	65
Jared	14	1	1155	1155	1255	3	60
Carrie	17	1	1215	1215	115	2	60
Nicole	22	III	1235	1235	130	3	55
Craig	22	III	1250	1250	150	4	60
Joey	24	II	105	105	210	6	65
Michael	20	III	120	120	225	3	65
Ron	25		140	140	240	3	60
Carrie	25	1	155	155	3-	7	65
Craig	24	IIII	210	210	315	3	65
Joey	24		230	230	330	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	21	II	245	245	345	1	60
Ron	18	III	3-	3-	4-	4 H	60
Nicole	17	III	320	320	420	2	60
Joey	23	1	345	345	445	1 H	60
Carrie	5	1	4-	4-	5-	4	60
Craig	18		420	420	520	5	60
Rick	17	III	440	440	530	5	50
Nicole	5	1	510	510	605	1	55
Carrie	13	1	6-	605	7-	2	55
Craig	2		635	635	745	1	75
Carrie	2		710	710	8-	0	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-3:30	1255
Madi	12:30-900	3-
PHOTO LAB		
Mandi	8-3:30	✓
Melissa	12:30-900	✓

GUIDE	SCHEDULE		LUNCH
Ron	8-4:30	H	11-
Joey	8-5:00	H	12-
Rick	8-5:30	H	1215
Nicole	10-6:30		150
Carrie	12-9:00		305
Craig	12-9:00		325
Michael	8-4:30	H	1255
Jared	8-1	H	—

FANTASTIC CAVERNS

658

Date June 24 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather rain 70° am. Clear 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2695720	1275720	/	7309
End	2696381	1275724	/	7317

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	18	11	910	910	1010	2	60
Randy	5	1 dog	930	930	1030	2	60
Vic	15	1	950	950	1050	6	60
Jared	23	11111	1015	1015	1110	3	55
Brandon	11	1	1030	1030	1130	4	60
Randy	21	11	1050	1050	1150	5	60
Vic	23	11	1110	1110	1210	4	60
Jared	20	11111	1130	1130	1230	3	60
Brandon	25	11	1145	1145	1240	1	55
Randy	21	11111	12-	12-	1-	4	60
Michael	18	1	1215	1215	120	1	65
Vic	23	11	1230	1230	135	2	65
Casey	23	11111	1245	1245	150	5	65
Jared	24	1	105	105	205	2	60
Brandon	25	111	120	120	215	2	55
Michael	24	1111	135	135	225	3	60
Vic	14		150	150	245	4	55
Randy	24	111	205	205	305	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Jared	46	FISK 39	220	220	325	9	65
Brandon	24	Fel Grp	235	235	335	1	60
Vic Michael	51	11111	250	250	400	11	70
Randy	23	DOG 111	305	310	415	3	65
Casey Jared	49	DOG 11111	330	335	430	9	55
Matt	22	1	350	350	450	4	60
Randy	25	1	415	415	520	4	65
Vic	24	1	440	440	540	4	60
Jared	7	1	525	525	620	0	55
Michael	12		600	600	710	1	70
Casey	10		635	635	735	0	60
Michael	8		715	715	815	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-3:30	1250
Nicole	12:30 - 9	255
PHOTO LAB		
Katie	8-3:30	✓
Marci	12:30 - 9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4	1240
Randy	9-5:30	110
Vic	9:30 - 6	405
Jared	10-6:30	140
Casey	12-9	440
Michael	12-9	415

FANTASTIC CAVERNS

783

Date June 25 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 76° am. Clear 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2496321	1275724		7317
End	2696874	1276015		7332

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	24	11	845	845	945	5	60
Michael	8	dog	915	915	1020	1	65
Brandon	19	PB 1	940	940	1040	5	60
Karen	16	1	10 -	10	11 -	5	60
Casey	22	11	1020	1020	1110	2	50
Michael	24	11	1035	1035	1145	5	70
Brandon	17	IIII	1050	1050	1155	4	65
Karen	23	IIIIIII	1115	1115	1210	5	55
Casey	25	11 11	1130	1130	1235	6	55
Jared	24	PB 11	1145	1145	1240	3	55
Brandon	25	1	12 -	12	1255	8	55
Vic Randy	51	11 IIII	1215	1215	115	10	60
Michael	9	1	1230	1230	130	1	60
Jared	23	11	1250	250	145	2	55
Casey	25	III	110	110	205	1	55
Randy Vic	46	dog 11 PIII	130	130	235	5	65
Michael	25	11	145	145	245	5	60
Jared	25	PB III	2 -	2 -	255	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	25		215	215	315	1	60
Brandon Randy	48	IIIIIII	230	230	330	9	60
Vic	22	II	245	245	350	4	65
Jared Michael	47	III	310	310	415	13	65
Casey	24	11	325	325	425	3	60
Brandon	23		340	340	345	3	65
Vic	22	IIII	400	400	500	4	60
Michael	21		430	430	530	5	60
Brandon	45	III	500	500	600	7	60
Casey Jared ~~Randy~~	22		520	520	615	2	55
Randy ~~Jared~~	24	IIII	535	535	570	4	65
Vic	8		558	555	650	3	55
Randy	15	1	640	615	740	3	
Randy	4		745	745	840	2	50
Vic	2		715	715	815	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-3:30	1250
Nicole	12:30 - 9	3 -
PHOTO LAB		
Amanda	8 - 3:30	✓
Katie	12:30 - 9	✓

GUIDE	SCHEDULE	LUNCH
Karen	8 - 1	—
Michael	9 - 5:30	1155
Brandon	9:30 - 6	1.25
Casey	10 - 4:30	1235
Vic	12 - 9	505
Randy	12 - 9	345
Jared	12:45 - 4:30	—

FANTASTIC CAVERNS

690

Date June 26, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 84° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2696874	1276015		7332
End	2697386	1276196		7341

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		830	830	920	1	50
Katy	17	II	915	915	1015	3	60
Rick	24	I	940	945	1045	8	60
Casey	15	III	1000	1000	11	5	60
Ron	12	III	1020	1025	1125	2	60
Katy	18	I	1045	1050	1145	6	60
Rick	24	II	1100	1100	12	7	60
Casey	25	IIII	1115	1115	1215	5	60
Ron	24	I	1130	1135	1235	3	60
Katy	24	I	1145	1150	1250	0	60
Joey	24	IIII	1205	1205	105	2	60
Craig	21	III	1220	1220	116	0	55
Rick	22	III	1235	1235	125	7	50
Ron	25	III	1250	1250	145	6	55
Casey	24	I	105	105	205	5	60
Joey	23	II	120	120	220	5	60
Craig	23	III	135	135	235	4	60
Katy	25	III	150	150	250	5	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick Ron	50	II 12	205	205	310	7	65
Casey	25	II	220	220	320	6	60
Joey	19	204 I	235	240	335	5	55
Craig	21	I	250	250	350	1	60
Katy	23	IIIII	305	305	400	5	55
Rick	24	I	320	320	410	1	50
Casey	19	II	335	340	435		
Ron	12	I	350	355	5	4	
Katy	25	IIII	420	420	520	7	60
Joey	15		445	445	555	6	
Craig	19	IIIII	510	510	615	5	60
Ron	25		530	530	635	3	
Joey	15	I	550	6	7	2	
Craig	15		630	630	740	1	70
Joey	5		730	730	830	0	60
Craig	2		8	8	9	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 100	120
Madi	1230 - 900	✓
PHOTO LAB		
Melissa	8 - 330	✓
Katie	1230 - 900	✓

GUIDE	SCHEDULE		LUNCH
Casey	8 - 430	H	1235
Katy	9 - 530	H	1
Rick	930 - 600	H	125
Ron	10 - 630	H	315
Joey	12 - 900		350
Craig	12 900		400

FANTASTIC CAVERNS

470

Date June 27, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 73° am. Cloudy 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2697386	1276196		7341
End	2697832	1276290		7345

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	10		840	840	945	4	65
Nick	13	11	940	940	1040	4	60
Ron	25	1111	1020	1020	1120	6	60
Joey	24	11	1035	1040	1135	2	55
Casey	24	1	11--	11--	1200	5	60
Nick	22		1130	1130	1230	5	60
Ron	23	Dog 111	1150	1150	1250	4	60
Joey	18	11	1215	1215	12--	2	50
Craig	21	1	1230	1230	125	5	55
Connie	20		1240	1245	150	3	60
Casey	20		100	100	200	3	60
Joey	22	Dog 1	1--	115	215	6	60
Rick	18		130	135	230	3	55
Craig	13	11	145	145	250	1	65
Ron	19	11	200	200	3--	5	60
Connie	22	11	220	225	320	2	55
Casey	12		235	235	355	3	60
Nick	18	1	250	250	355	5	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	24	1	320	325	425	1	60
Joey	14	Dog 1	340	310	440	2	60
Connie	14		4--	400	500	1	60
Rick	12		420	420	520	2	60
Casey	22	111	500	500	600	3	60
Joey	12		520	525	625	1	60
Craig	9		600	600	700	3	60
Connie	8		630	630	730	2	60
Craig	5		705	710	810	3	
Connie			815	815	915	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-330	✓
Scot	1230-9	
PHOTO LAB		
Katie	8-330	✓
Melissa	1230-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-430 H	✓
Nick	9-530	1230
Casey	1130-6	230
Joey	10-630	✓
Carrie	12-9	
Craig	12-9	

FANTASTIC CAVERNS

499

Date June 28, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 90° am. Sunny 89° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin		1276220		7345
End	2698156	1276395		7365

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	6		840	845	945	4	60
Casey	24	1	910	910	1010	1	60
Randy Erica	16	8 Club	945	945	1115	0	90
Carrie	19	11	1000	1010	11—	4	50
Jared	18		1030	1030	1125	2	55
Nick	23	1	1045	1050	1150	4	60
Joey	17		1105	1110	12 10	4	60
Casey	17		1125	1130	12 20	4	60
Randy	9	1	1145	1145	1245	3	60
Jared	11	111	12	12	1—	1	60
Ron	10		1215	1215	105	2	50
Joey	24	1	1230	1230	130	5	60
Vic	3		1245	1245	145	0	60
Randy Jared	33	8	1—	1—	8—	2	60
Nicole	23	16	115	115	215	3	60
Casey	25	11	130	130	2 20	3	50
Joey	15		145	145	245	6	60
Ron	13	111	2—	2—	3—	2	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	25	—	215	215	315	4	60
Nick Nicole	35	111	230	230	340	7	70
Casey	15		3—	3—	355	4	55
Jared	6		320	320	425	2	65
Vic	22	1111	345	345	450	4	65
Ron	9	1 dog	4—	4—	5—	2	60
Jared	14	PB	430	430	535	3	65
Vic	15	1	450	455	550	0	55
Jared	21	1 dog	535	540	640	1	60
Ron	7	dog	6—	6—	715	3	75
Nicole	22	1	630	630	720	0	50
Ron	2		730	730	820	0	50

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-330	✓
Sue	1230-9	3—
PHOTO LAB		
Marci	8-330	✓
Mandy	1230-9	✓

GUIDE	SCHEDULE		LUNCH
Casey	8-430		1232
Michael	8-1	H	—
Mandy	9-2	H	—
Carrie	9-2	H	—
Vic	930-6		1215
Joey	9:30-2:30	H	—
Jared	10-630		210
Cecilia	10-3	H	—
Nick	9-530	F	145
Ron	12-9		3—
Nicole	1230-9		350

FANTASTIC CAVERNS

557

Date June 29th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2698156	1276395		7364
End	2698473	1276637		7370

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	11	1	830	830	950	3	80
Rich	8		910	910	1010	1	60
Vic	9		935	935	1030	2	55
Ron	23	1	1010	1010	1110	5	60
Nicole Randy	24 14	family 1111	1030	1035	1135	8	60
Rich	27	1111	1050	1050	1110	3	60
Vic	19		1105	1105	1205	5	60
Ron	16	Dog 11	1120	1125	1220	2	55
Randy	22	1 Dog	1140	1140	1245	4	65
Nicole	21	1	1155	1155	1255	4	60
Brandon Casey	24 20	1 GRP	1215	1215	115	9	60
Vic	20	1	1230	1230	135	5	65
Rich	17		1250	1250	150	6	60
Ron	23		110	115	205	3	50
Randy	19	11	130	130	230	3	60
Brandon	25	111	145	145	245	2	60
Casey	22	111	2-	2-	3-	3	60
Rich	11	111	215	215	315	X	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	15	1	230	230	340	X	70
Vic	10	11	245	245	350	3	65
Brandon	16	1	300	300	4-	4	60
Randy	22	1111	315	315	415	3	60
Rick	14	111 dog	335	340	435	1	65
Vic	12	dog 111	4-	4-	5-	3	60
Casey	21		420	420	520	3	60
Randy	3		440	440	540	X	60
Nicole	20	1	510	510	610	5	60
Casey Randy	30	11	550	550	645	5	55
Nicole	4	1	630	630	730	1	60
Casey	12		7-	7-	755	0	5

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 330	✓
Sue	1230 - 900	3-
PHOTO LAB		
Marci	8 - 330	✓
Melissa	1230 - 900	✓

GUIDE	SCHEDULE	LUNCH
Ron	8 - 430	1230
Rick	9 - 530	✓
Vic	930 - 600	145
Randy	10 - 630	235
Casey	12 - 9	✓
Brandon	12 - 4	—
Nicole	10 - 7 4 - 9	—

FANTASTIC CAVERNS

519

Date June 30th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 71° am. Cloudy 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2698473	1276637		7370
End	2698770	1276863		7375

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		845	845	950	0	65
Rich	4	1	915	915	1010	2	55
Michael	14	11	940	940	1040	2	60
Ron	14		10	10	1055	5	55
Rick	16	1	1020	1020	1110	5	50
Michael	25	111	1050	1050	1150	7	60
Ron	20	111 dog	1110	1115	1210	6	55
Rich	23		1130	1130	1230	5	60
Jared	22	111	1145	1145	1245	7	60
Michael	25	11	1205	1205	105	4	60
Carrie	23	1	1220	1220	120	2	60
Craig	25	111	1235	1235	135	4	60
Jared	23	11	1250	1255	145	4	50
Ron	23	11	110	110	105	4	55
Rich	13		125	125	220	4	55
Michael	12	1	140	140	235	1	55
Jared	20	11111	155	155	250	3	55
Ron	13	11	215	215	315	4	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	19	111	235	235	330	1	55
Jared	24	1	255	255	350	4	55
Ron	19	11111	320	320	420	2H	60
Nicole	23	111	345	345	440	2	55
Carrie	8		4	400	500	1	60
Craig	22	1	420	420	520	2	60
Nicole	7		445	445	535	1	50
Carrie	16		515	515	620	2	65
Craig	10	11	6	6	655	0	55
Nicole	28	BBkm	615	615	705	3	55
Carrie	13	1	630	635	735		60
Craig	3	1	7	7	8	1	60
Carrie	2		740	750	850	0	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 330	1230
Madi	1230 - 900	305
PHOTO LAB		
Amanda	8 - 330	✓
Katie	1230 - 900	✓

GUIDE	SCHEDULE		LUNCH
Ron	8 - 430	H	1220
Rick	9 - 530	H	1230
~~Craig~~	~~930 - 6~~		SICK
Nicole B	10 - 630	H	✓
Craig	12 - 900		315
Carrie	12 - 900		315
Michael	930 230	H	—
Jared	11 - 4	H	—

FANTASTIC CAVERNS

684

Date July 1 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 70° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2698770	1276863	/	7375
End	2699261	1277060	/	7376

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	12	111	830	830	930	2	60
VIC	13	ACE 1	845	845	945	1	60
Ron Rich	38	CAKE	905	905	1010	0	65
Randy	25	dog	930	935	1035	7	60
VIC	21	PB 1	950	950	1050	4	60
Casey	10		1010	1010	11—	1	50
Rick	21	1	1030	1030	1130	4	60
Ron	4	dog	1050	1050	1150	2	60
Randy	22	111	1110	1110	1210	5	60
VIC	24	1	1125	1125	1230	3	65
Michael	18	111	1140	1140	1240	7	60
Jared	22	1	1155	1155	1255	4	60
Rich	23		1210	1210	107	5	50
Casey	25	1	1225	1225	120	3	50
RON	24	111111	1240	1240	135	3	55
Michael	24		1255	1255	2—	3	65
Jared	15	11	115	115	210	3	55
VIC	18	11	130	130	230	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	18	111	145	145	245	4	60
Ron	21	1111	2—	2—	310	1	70
Casey	24	1	215	215	315	4	60
Michael	25	dog	230	230	330	5	60
VIC	22	11	245	245	345	5	60
Jared	18	dog,	3—	3—	355	1	55
Randy	12	11	315	315	415	3	60
Ron	24	1111	330	330	435	2	65
Rick	20	1	345	345	450	3	65
Casey	4	1	410	410	505	0	55
VIC	22	dog 11	430	430	526	1	55
Randy	7		450	450	545	1	55
Jared	22	11111	510	510	605	3	5
Michael	22		530	530	635	4	65
Casey	13	111	600	600	700	4	60
Jared	21	dog 1	630	630	730	4	60
Casey	8	11	710	710	810	2	60
Jared	3		740	740	735	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 4:30	1240
Nicole	12:30 - 9	3—
PHOTO LAB		
Mari	8 - 4:30	✓
Melissa	12 - 9	✓

GUIDE	SCHEDULE	LUNCH
VIC	8 - 5:30	1240
Ron	8 - 4:30	12—
Randy	8:30 - 6	1215
Rick	9 - 5:30	110
Casey	10 - 6:30	125
Jared	11 - 9	4—
Michael	11 - 9	345

FANTASTIC CAVERNS

1029

Date July 2-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather rain 66° am. Cloudy 76° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2699261	1277060		7376
End	2699863	1277493		7387

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	3		830	830	935	1	65
Vic	13	11	9-	9-	955	X	55
Joey	16	111	930	930	1020	X	50
Randy	21	111	10-	10-	11	5	60
Craig	25	1111	1015	1015	1115	2	60
Vic	21	11	1030	1030	1130	7	60
Casey	22	1	1050	1050	145	4	55
Joey	24	111	1105	1105	12-	6	55
Randy Michael	47	WC 11111	1120	1120	1220	X	60
Vic Craig	48	111111	1135	1135	1245	4	70
Matt Casey	50	111	1156	12-	105	6	65
Vic Randy	47	11111	1225	1230	130	8	60
Joey	24	1	1240	1240	140	4	60
Craig Vic	49	11	1255	1255	155	6	60
Casey Matt	47	DOG 11111	115	115	210	1	55
Randy Mike	48	11111	135	135	235	8	60
Joey	25	111	150	150	245	5	55
Casey Matt	49	11111	215	215	315	8	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic Craig	50	111111	235	235	335	11	60
Mike Randy	50	DOG 111	250	250	355	8	65
Joey Matt	49	DOG 111	320	320	420	11	60
Craig	24	1 WC	335	345	440	3	55
Casey Randy	50	111111	355	355	455	6	60
Michael Vic	49	11	415	415	510	11	55
Joey	24	111	430	430	530	3	60
Randy	25	11	445	445	530	5	65
Jared	21	1111	500	500	555	1	55
Casey	24	11	515	515	605	1	50
Vic	17	11	530	530	635	4	55
Michael	25	11	550	550	700	5	70
Jared	22		615	615	610	4	[illegible]
Michael	16	1	705	705	810	4	65
Jared	3		746	746	840	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1225
Nicole	12:30 - 9	
PHOTO LAB		
Mary	8-3	✓
Katy	11-6	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-5:30	2-
Craig	8-4:30	125
Joey	9-5:30	250
Randy	9-6:30	405
Casey	10-6:30	320
Michael	11-9	520
Jared	3-9	—

FANTASTIC CAVERNS

1155

Date July 3, 2014

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Rain 75° am. Cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2699863	1277493		7387
End	2700394	1278129		7392

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Javed	11	1	830	830	930	1	60
Ron	17		920	920	1020	3	60
Joey	17	11	945	945	1040	3	55
Javed	23	1	1005	1005	1105	6	60
Carrie	20	11	1020	1025	1125	3	60
Ron	17	1	1040	1045	1050	3	65
Joey	21	11	11	11	12	2	60
D Joey Rick	48	11	1115	1115	1215	9	60
Carrie	24	1	1130	1135	1230	6	Y
D Ron Katy	49		1145	1145	1245	8	60
Joey	26	11	1200	1205	105	4	60
Ron Javed	49	1	115	1220	120	5	60
Carrie	25	111	1230	1235	135		60
Ron Katy	49	11	1245	1250	145	8	55
Marci Rick Javed	25	111	1	105	200	0	55
	50	111 PL	115	120	220		60
Carrie	24		130	130	230	4	60
Ron Craig	50	11111	145	2	300		60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	23	1	215	215	315	4	60
Katy Rick	44	1111	215	230	330	10	60
Javed	23		230	245	345	5	60
Ron Craig	52	11111	3	305	405	8	60
Joey Carrie	50	1111	315	315	420	5	65
Katie Rick	23	1	330	330	425	1	55
Javed	51	11111	345	345	445	9	60
Ron Craig	50	11	400	415	510	7	55
Joey Carrie	50	1111	415	430	530	5	60
Javed	51	1111	445	455	555	6	60
Katie	24	111	500	505	605	3	60
Ron Craig	42	111	525	525	625		60
Joey Carrie	48	111	545	545	650	9	6
Javed	25	11111	600	600	700	6	60
Katie	22	11111	620	620	720	3	6
Ron	23	1111	635	635	735		60
Javed	18	111 PL	710	710	805		55
Craig	4		730	736	830	1	55
Katy	2	11	810	810	900	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-4 30	
Madi	12 30 - 900	✓
PHOTO LAB		
Mandy	8-3	
Marci	11-6	
Katie	1-9	

GUIDE	SCHEDULE		LUNCH
Ron	8-5 30		
Javed	8-4 30		
Rick	9-6 30		
Joey	9-6 30	H	✓
Carrie	10-6 30		
Craig	11-9 00		✓
Katy	11-9 00		

FANTASTIC CAVERNS

687

Date July 4, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 78° am. Cloudy 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2700394	1278129		7392
End	2700861	1278349		7395

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	5		830	830	925	2	55
Michael	15		845	855	955	1	60
Ron	4		910	910	1025	0	75
Vic	11	1	935	935	1035	4	60
Joey	13		955	955	11-	5	65
Casey	11	1	1015	1015	1110	1	55
Jared	25	III	1030	1030	1130	7	60
Carrie	20	IIII IIIIIIII	1045	1045	1145	3	60
Brandon	13		11-	11-	12	1	60
Rick	23	11	1115	1115	1210	7	55
Craig Michael	47	IIII	1130	1130	1230	4	60
Ron Jared	45	IIII I	1150	1150	105	6	75
Joey	21	11	1205	1205	110	3	65
Casey	24	dbl	1220	1220	120	5	60
Vic Carrie	51	11 IIII	1245	1245	145	5	60
Rick	23	IIIII I	1-	1-	155	5	55
Brandon Craig	48	dbl dbl III	115	115	215	9	60
Jared	25	11	130	130	230	5	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	24	1	145	1115	245	5	60
Michael	21		2-	2-	305	4	65
Casey	18	IIII	230	235	325	2	60
Joey	19	IIII I	250	250	345	8	55
Craig Carrie	36	IIII	315	320	430	5	70
Ron	11	11	340	340	440	3H	60
Rick	26	dbl I	410	410	510	4	60
Joey	18		425	430	530	4	60
Carrie	7		500	500	600	0	60
Craig	17		535	535	635	3	60
Carrie	7	1	600	6	700	2	60
Rick	23	1	645	645	740	7	55
Craig	22	Cub	705	705	905	2	
Rick	2		800	800	900	1	60

INFO. COUNTER	SCHEDULE		LUNCH
Mod.	8-4:30		12-
Sue	9-2	H	—
Scot	4:30 - 9		✓
PHOTO LAB			
Mandy	8-4:30		✓
Katy	12-9		✓

GUIDE	SCHEDULE		LUNCH
Brandon	8-4	H	1205
Michael	8-4:30	H	1215
Ron	8-5:30	H	11-
Vic	9-2	H	—
Casey	9-6	H	125
Joey	9-6:30		115
Jared	9:30-2:30	H	—
Carrie	10-6:30		155
Rick	10-9		2-
Craig	11-9		435

FANTASTIC CAVERNS

685

Date July 5, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Over Cast 75° am. Clear 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2700861	1278349		7395
End	2701296	1278599		7398

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Sue	8	–	9–	9–	9:55	1	55
Vic	8	–	9:30	9:30	10:25	0	55
Sue	23	11	10:05	10:05	11–	6	55
Randy	15	1111	10:20	10:20	11:30	2	70
Carrie	11	11	10:40	10:40	11:40	2	60
Ron/Vic	45	11	11–	11	12:10	8	70
Sue	27	1111	11:20	11:20	12:15	4	55
Randy/Carrie	47	111111	11:40	11:45	12:55	9	70
Casey/Michael	45	1111	12:10	12:10	1:10	8	60
Ron	25	11	12:30	12:30	1:30	4	60
Sue	23	11	12:50	12:55	1:55	6	60
Randy/Carrie	49	11 DUG	1:10	1:15	2:15	8	60
Michael	24	1	1:25	1:30	1:35	5	65
Casey/Sue	50	11	1:45	1:50	2:45	12	55
Ron	25	11	2:10	2:10	3:30	1	80
Carrie/Randy	50	1111	2:30	2:30	3:40	5	70
Michael	25	1111	2:45	2:45	2:55	4	70
Casey	25	1	3–	3–	4–	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Sue	24	11	3:20	3:20	4:15	3	55
Ron	24	111	3:35	3:35	4:50	8	75
Michael	24	1	3:50	4–	5:00	3	60
Casey	10		4:15	4:15	5:15	2	60
Randy	15	11	4:30	4:30	5:35	4	66
Carrie	25	1	4:45	4:50	5:50	6	60
Ron	23		5:15	5:15	6:15	5	60
Randy	7		5:35	5:40	6:45	2	65
Michael	13		6:20	6:20	7:30	5	70
Casey	8		6:50	6:50	7:10	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Medi	8-4:30	✓
Nicole	1-9	3:50
PHOTO LAB		
Melissa	8-3:30	✓
Marci	12:30-9	✓

GUIDE	SCHEDULE	LUNCH
Sue	8-4:30	12:20
Vic	9-5:30	—
Carrie	10-5:30	3:45
Randy	10-6:30	3:45
Ron	10-6:30	1:30
Casey	12-9	5:20
Michael	12-9	5:15

FANTASTIC CAVERNS

566

Date July 6th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Rainy 77° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2701296	1278599	/	7398
End	2701681	1278784	/	7411

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6		845	855	945	2	50
Scot	9	11	930	930	1025	2	55
Rick	13	309 1	10-	10-	1050	5	50
Jared	17		1020	1020	1125	2	65
Randy	25	11	1045	1045	1155	7	70
Rick	25	11	1105	1105	1205	5	60
Jared	23	111	1135	1135	1235	5	60
Michael	20	309	1155	1200	105	6	65
Randy	20	1111	1215	1215	120	5	65
Brandon	21	111	1230	1230	130	4	60
Casey	22		1245	1245	135	4	50
Jared	24	11/111	1-	1-	2-	4	60
Rick	24	111111	115	115	210	4	55
Michael	22	111111	130	130	230	5	60
Randy	24	11	145	145	250	4	65
Brandon	22	111	2-	200	3-	4	60
Casey	23	1 309	215	215	310	7	55
Rick	25	111	230	230	325	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	25	11	245	245	345	4	60
Michael	21	PB 1	3-	3-	405	5	65
Brandon	25	11	315	315	415	5	60
Casey	25	111	330	330	420	3	50
Randy	24	Cats 11	350	350	450	7	60
Jared	19	11	410	410	510	1	60
Michael	12	11	430	430	535	3	65
Randy	11	11111	5-	5-	6-	0	60
Katie	10	11	520	520	620	1	60
Casey	7	1	6-	6-	650	0	50
Michael	14		630	630	735	1	65
Katy	13	111	7-	7	8-	0	[illegible]

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	1230
Sue	1230-900	330
PHOTO LAB		
Melissa	8-330	✓
Marci	1230-9	✓
Pam	1230-430	—

GUIDE	SCHEDULE	LUNCH
Rick	8-430	215
~~Vic~~	~~9-630~~	Sick
Randy	10-630	3-
Jared	10-630	210
Casey	12-900	430
Michael	12-900	545
Russ	8-430 (TR)	12-
Brandon	12-400	—
Katy	5-900	—

FANTASTIC CAVERNS

579

Date July 7th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Rain 79° am. Sunny 87° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2701681	1278784		7411
End	2702014	1279032		7418

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	20	—	930	930	1030	2	60
Vic	7	—	10	10	11	2	60
Joey	19	1	1015	1020	1120	4	60
Carrie	9		1035	1035	1035	2	60
Craig	22	IIII	11	1105	1205	2	60
Randy	16	II	1120	1120	1220	3	60
Vic	10	IIIIII	1140	1145	1240	5	55
Joey Carrie	48	IIII	1150	1200	1	10	60
Ron	21	IIII	1220	1220	120	2	60
Rich	23	III	1235	1235	130	2	55
Craig	23	III	1250	1250	150	0	60
Vic	22	1	105	105	205	7	60
Joey	25	1	120	120	220	3	60
Carrie	22	Dog IIII	135	135	235	6	60
Ron	24	IIII	150	150	250	8	60
Rich	23	IIII	205	205	3	6	55
Randy	17	II	220	220	330	5	70
Craig	25	III	240	240	340	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	20	III	255	255	350	7	55
Rick	24	IIII	310	310	405	4	55
Joey	25	III	325	325	420	4	55
Vic	25	Dog I	340	340	440	6	60
Carrie	20	IIIII	4	4	5	4	60
Craig	10	1	420	420	520	2	60
Joey	25	II	440	440	535	0	55
Carrie	14		520	520	620	X	60
Craig	3	1	540	540	635	1	55
Rich	13	II	6	6	655	2	55
Ron	9	II	630	630	725	2	55
Rich	4		7	7	755	2	55
Ron	5		730	730	825	2	

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4 30	✓
Sue	12 30 - 9 00	330
PHOTO LAB		
Katie	8-3 30	✓
Mandy	12 30 - 9 00	✓

GUIDE	SCHEDULE		LUNCH
Randy	8-4 30	H	1230
Russ	8-4 30	(TR)	11 15
Vic	9-6 30		215
Craig	10-6 30		205
Joey	10-6 30		225
Carrie	10-6 30		240
Ron	12-9 00		4
Rich	12-9 00		415

FANTASTIC CAVERNS

801

Date July 8-2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 73° am. Cloudy 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2702014	1279032	/	7418
End	2702554	1279297	/	7429

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	12		830	830	925	1	55
RON	3		850	850	945	1	55
VIC	5		910	910	1010	1	60
Brandon	25	11	945	945	1040	3	55
Randy Michael Carrie	70	WAR SCH	10-	1005	1205	5	120
VIC RON	50	11111	1020	1020	1125	11	65
Joey Brandon	43	1 dog	1045	1045	1145	6	60
Ron VIC	50	11111 11111	1105	1130	1235	3	65
Matt	25	FB- 1111	1140	1140	1245	3	65
Joey Brandon	44	11111	1155	1155	1-	7	65
Casey	12		1215	1215	115	2	60
Jared	24	11111	1240	1240	140	4	60
Randy	22	1	1-	1-	205	3	65
Joey Michael	48	11111	115	115	220	3	65
Casey	25	1	130	130	230	4	60
RON	24	1	150	150	3-	6	70
VIC	25	111	210	210	310	1	60
Jared	25	1111	230	230	330	4	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	25	11	245	245	340	4	55
Brandon	22	111	3-	3-	4-	3	60
RON	25	1	320	320	420	3	60
Michael	23	111	335	335	445	6	70
VIC	23	FB	4-	4-	500	5	60
Randy Jared	50	1 Randy 11111	420	420	530	7	70
Casey	20		440	440	540	4	60
Michael	23	1 dog	515	515	625	2	70
Randy	19		535	535	540	3	65
Jared	18		605	605	600	0	55
Casey	20	11	655	655	755	6	60
Jared	4		735	735	835	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	120
Nicole	12:30-9	315
PHOTO LAB		
Mark	8-3:30	✓
Mandy	12:30-9	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-4:30	1245
Brandon	8-4	105
Vic	9-5:30	1245
Joey	9-2	—
Carrie	9-2 (Disc)	—
Randy	10-6:30 (Disc)	210
Michael	10-6:30 (Disc)	230
Jared	12-9	335
Casey	12-9	350

FANTASTIC CAVERNS

8-23

Date July 9-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Cloudy 75° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2702554	1279297	/	7429
End	2703090	1279585	/	7447

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	7	IIII	830	830	835	2	65
Vic	6		850	850	955	1	65
Brandon	16	IIIII	930	930	1020	4	50
Randy	12	IIII	10	10	11	2	60
Craig	21	I	1020	1020	1120	2	60
Casey	24	I	1035	1035	1130	3	60
Vic	21	II	1050	1050	1150	1	60
Brandon	18	II	1105	1105	12	3 L	55
Jared	19	IIII	1120	1120	1110	3	50
Michael	24	II	1135	1135	1240	6	65
Randy Craig	50	IIIIIIIIII	1150	1150	1250	6 L	60
Casey	25	II	1205	1205	105	5	60
Vic Jared	49	IIIIIIIIIIIIIIIIIIIIIIIIII	1220	1220	120	4 L	60
Brandon	23	IIIIII	1235	1235	135	2	60
Michael	24	II	1255	1255	105	7	70
Randy Casey	15	IIIIIII	115	115	215	11	60
Craig	23	II	135	135	240	1	60
Brandon Jared	37	III IIIIIIIIIII	150	150	250	7	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	25		210	210	310	5	60
Michael	24	I	225	225	325	2 L	60
Craig	25	II	240	240	345	2	65
Brandon Jared	49	IIIII	3	3	4	4 L	60
Casey Randy	50	IIII	320	320	420	9	60
Vic	25	II	335	335	440	6	65
Craig	25	III	350	350	500	7	70
Michael	23	IIIII	410	410	515	2	65
Casey	25	I PB	425	425	530	4	65
Vic/Jared	48	IIIIII PB	440	450	545	7	55
Randy	8	III	510	510	615	1	65
Casey	22		540	540	630	3	50
Michael	11	II	600	600	710	2	
Jared	8		630	630	725	2	55
Michael	10		710	710	805	1	55
Jared	2	III	740	740	835	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1255
Nicole	12:30-9	325
PHOTO LAB		
Mami	8-3:30	✓
Melissa	12:30-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-5:30	130
Craig	8-4:30	100
Brandon	8-4	1205
Randy	9-6:30	225
Casey	10-6:30	225
Jared	11-9	405
Michael	11-9	335

FANTASTIC CAVERNS

768

Date July 10th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 85° am. Sunny 80's° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2703090	1279585		7447
End	2703295	1280148		7459

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5	1	8:45	8:45	8:35	2	50
Ron	12	IIII	9:15	9:15	10:10	2	55
Joey	15		9:35	9:35	10:35	3	60
Casey	22	III	10:00	10:00	10:50	3	50
Carrie	21	1	10:20	10:20	11:20	5	60
Ron	17	II	10:40	10:40	11:35	4	55
Joey	24		11:00	11:00	11:55	3	55
Katy	25	III	11:15	11:15	12:10	4	55
Carrie	25	III	11:30	11:30	12:30	3	60
Casey	24	1	11:45	11:45	12:45	7	60
Ron	25		12:00	12:00	1-	3	60
Craig/Joey	19	IIIII	12:15	12:15	1:05	2	50
Katy	24		12:30	12:30	1:30	4	60
Carrie	23	1	12:45	12:45	1:10	3	55
Casey	24	II	1:00	1:00	2:00	5	60
Craig/Joey	45	3 dogs IIIII	1:15	1:15	2:10	9	56
Ron	25	III	1:30	1:30	2:25	X	55
Katy	24	1 DOG	1:45	1:45	2:40	8	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	24	1	2-	2-	3:00	3	60
Carrie	44		2:15	2:15	3:15	3	60
Craig							
Ron	26		2:30	2:30	3:30	2	60
Joey	25	IIII	2:45	2:45	3:50	3	65
Katy	25	II	3:00	3:00	4-	4	60
Casey	10		3:25	3:25	4:25	2	60
Ron	24	1	3:45	3:45	4:45	8	60
Carrie	25	II	4-	4-	5-		60
Craig	23	1	4:16	4:20	5:20	4	60
Joey	14	IIII	4:40	4:40	5:40	1	60
Katy	25	1	5:00	5:00	5:55	6	55
Carrie	23		5:15	5:15	6:20	6	65
Craig	15	Dog 1	5:45	5:50	6:50	2	60
Katy	18	1	6:05	6:10	7:10	3	60
Craig	14	II	6:55	6:55	8-	3	65
Katie	5		8-	8-	8:55	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Slot	8-4:30	
Madi	12:30-9	
PHOTO LAB		
Mandy	8-3:30	
Melissa	12:30-9:00	

GUIDE	SCHEDULE		LUNCH
Casey	8-4:30	H	11:00
Ron	8-5	H	1:00
Nicole B	9-4:30	H	1:30
Rick	9-5:30	H	Sick
Joey	9-6:30	H	2:20
Carrie	10-6:30	H	3:25
Katy	11-9:00		4-
Craig	11-9:00		3:25

FANTASTIC CAVERNS

615

Date July 11, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 75° am. Clear 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2703295	1280148		7459
End	2703678	1280382		7459

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	3		8:40	8:40	9:30	0	50
Mich	6		9:30	9:30	10:25	1	55
Joey	24		10-	10-	11-	8	60
Craig	22	II	10:20	10:20	11:20	6	60
Jared	18	I	10:40	10:40	11:40	0	60
Ron	26		11-	11:05	12-	6	55
Joey/Carrie	49	II	11:25	11:25	12:25	9	60
Craig	17	II	11:40	11:40	12:40	0	60
Jared	25	II	12-	12-	12:55	3	55
Ron	23	IIII	12:15	12:15	1:15	5	60
Carrie	24		12:30	12:30	1:30	1	60
Joey	24	I	12:45	12:45	1:40	4	55
Craig	23	IIII	1:00	1:00	2-	3	60
Jared	24	II	1:15	1:15	2:15	6	60
Ron	8	21	1:30	1:30	2:30	3	60
Carrie	23	III	1:55	1:55	3-	4	65
Craig	25	II	2:10	2:10	3:10	4	60
Ron	24		2:35	2:35	3:40	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey/Nicole	49	IIII	2:50	2:50	3:50	9	60
Carrie	25		3:15	3:15	4:15	3	60
Craig	12		3:35	3:35	4:30	2	55
Joey	23		3:55	4-	5:00	3	60
Ron/Carrie	45	IIIII	4:20	4:30	5:35	7	65
Joey	16	II	5:05	5:05	6:10	4	55
Craig/Carrie	32		5:35	5:35	6:40	4	60
Ron	2		6:40	6:40	6:40	1	60
Ron	11		7:45	7:45	8:45	4	60

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-4:30	
Scot	4-9	
PHOTO LAB		
Marci	8-3:30	
Katie	12:30-9	

GUIDE	SCHEDULE	LUNCH
Jared	8-2 II	—
Craig	9-6:30	1:45
Carrie	9-6:30	—
Joey	9-6:30	1:45
Ron	11-9	3:45
Nicole B.	11-9	3:55
Mich	9- H	—

FANTASTIC CAVERNS

488

Date July 12, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Rain 77° am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2703678	1280382		7459
End	2703893	1280658		7464

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	15		830	830	925	1	55
Sue	16		9-	9-	955	3	55
Michael	14		920	920	1020	1	60
Casey	12		10-	10-	11-	3	60
Rich	20	11	1035	1035	1130	2	55
Sue	25	111	11-	11-	12-	2	60
Michael	25	111	1115	1115	1215	6	60
Casey	22	1111	1130	1130	1230	4	60
Rich	21	1	1155	1155	1255	4	60
Randy	14		1215	1215	115	2	60
Vic	19	1	1230	1230	130	3	60
Michael	20	1 DOV	1245	1245	145	2	60
Sue	13		105	105	205	2	60
Casey	23	Dov	135	135	220	7	45
Vic	24	11	2-	2-	3-	3	60
Sue	21	1	215	215	315	5	60
Michael	23	111	230	230	335	6	65
Randy	24		245	245	355	6	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rich	8		315	315	410	0	60
Casey	10	11	330	330	430	2	60
Vic	23	1111	345	345	445	3	60
Michael	17	1 Dov	4-	400	505	3	65
Russ	20		435	435	540	3	65
Casey	22		450	455	555	6	60
Randy	16	1	510	510	610	1	60
Vic	5		545	545	645	2	60
Randy	11		650	630	725	0	65
Russ	5		650	650	755	2	65

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	
Nicole	1-9	350
PHOTO LAB		
Melissa	8-330	
Marci	1230-9	

GUIDE	SCHEDULE	LUNCH
Rich	8-430	1-
Sue	8-430 H	1205
Casey	9-530	1230
Michael	9-530	—
Randy	12-9	4-
Vic	12-9	5-
Russ	1-9	550

FANTASTIC CAVERNS

452

Date July 13th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 75° am. pt. sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2703893	1280658		7464
End	2704103	1280905		7465

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	1		850	855	950	1	55
Jared	11		925	925	1025	0	60
Carrie	24	11	10	10	11	1	60
Craig	24	1111	1020	1020	1120	0	60
Russ	22	1	1045	1050	1150	4	60
Jared	19		1110	1105	1205	3	60
Carrie	21		1125	1125	1225	1	60
Craig	22	11	1140	1140	1240	5	60
Rick	25	1	12	1200	1	6	60
Ron	22	111	1215	1225	120	5	55
Brandon	18		1230	1220	130	2	60
Russ	8		1245	1245	145	2	60
Jared	19	PB 1	1	1	2	0	60
Carrie	24	11 PB	115	120	220	4	60
Rick	24	1111	135	135	235	7	60
Ron	15		205	205	305	4	60
Brandon	18	111	225	225	320	5	55
Russ	14	1	245	245	350	4	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	23	1111	3	3	4	3	60
Jared	9		325	325	425	2	60
Carrie	12		340	340	440	4	60
Ron	15	1	4	4	505	4	65
Rick	16	11	420	420	515	4	55
Carrie	17	PB	450	450	555	2	65
Craig	5	11	515	515	615	1	60
Ron	7	100	545	545	650	0	65
Craig	8	1	620	620	720	2	60
Ron	7		650	655	755	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 4 30	SICK
Sue	12 30 - 900	420
PHOTO LAB		
Melissa	8 - 3 30	✓
Katie	12 30 - 900	✓

GUIDE	SCHEDULE	LUNCH
Jared	8 - 4 30	12
Russ	8 - 4 30	1200
Carrie	9 - 6 30	1230
Craig	10 - 4 30 - 9	—
Rick	12 - 800	.
Ron	12 - 900	3.30
Brandon	12 - 400	—
Joey	10 30 - 700	SICK
Katy G	5 - 900	SICK

FANTASTIC CAVERNS

562

Date July 14, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 75° am. cloudy 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	1704103	1280905		7465
End	1704372	1281200		7475

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	5		830	830	930	1	60
Carrie	25	III	915	920	1020	5	60
Randy	8	IIII	930	930	1030	2	60
Vic	19	I	10	10	1100	7	60
Carrie	12	II	1025	1030	1130	1	60
Randy	24	I	1050	1055	1155	5	60
Rick	21		1115	1115	1215	5	60
Ron	3	II	1130	1130	1230	3	60
Vic	23	II	1150	1150	1250	4	60
Randy	20	II	1210	1210	115	6	65
Rick	20	DVD	1230	1230	130	3	60
Carrie	23		1245	1245	145	2	60
RON	24		1—	1—	205	3	65
Vic	18	I	115	120	215	1	55
Rick	16	III	135	135	230	3	65
Carrie	24	II	155	155	250	X	55
Randy	24	DVD III	210	210	315	3	65
Ron	24	IIII	225	225	330	5	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	25	DV	240	240	340	4	60
Rick Matt	46	II DVD	255	3—	400	6	60
Carrie	23	IIII	320	320	420	3	60
Randy	26	II	335	335	440	3	65
Vic	20	I	350	350	450	4 H	60
Ron	23	IIII	420	420	520	3	60
Carrie	16		440	440	545	3	65
Ron	12	III	535	535	650	3	75
Rick	8	III	615	615	710	3	55
Ron	7	DVD	645	7—	8—	0	60
Rick	3	III	730	730	725	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	✓
Sue	12:30-9	4—
PHOTO LAB		
Katie	8-~~2~~ 45-9	✓
Mandy	1230-9 (sick)	—

GUIDE	SCHEDULE	LUNCH
Vic	8-4:30	11:15
Randy	9-5:30	125
Carrie	9-5:30	1150
Craig	10-630	SICK
Joey	10:30-7	SICK
Rick	12-9	405
Ron	12-9	340

FANTASTIC CAVERNS

743

Date July 15 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 67° am. Cloudy 80° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2704372	1281200		7475
End	2704831	1281486	✓	7481

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	15		8:30	8:30	9:30	5	60
Ron	7		9:10	9:10	10:10	2	60
Michael	5		9:35	9:35	10:40	0	65
Casey	16	1	10 -	10 -	10:45	1	45
Javed	18		10:15	10:15	11:15	3	60
Brandon	13	11111	10:30	10:30	11:30	1	60
Ron	19	11111	10:45	10:45	11:45	2	60
Michael	26	1	11 -	11 -	12:05	7	65
Casey	17	1	11:15	11:15	12:15	2	60
Javed	25	1	11:30	11:35	12:25	1	50
Brandon	25	11	11:45	11:45	12:45		60
Vic Michael	53	11111	12:10	12:10	1:20	9	70
Casey Randy	49	11111	12:35	12:25	1:30	7	65
Ron Javed	49	11111	12:45	12:45	2 -	9	75
Brandon	24	1111	1:00	1 -	1:05	5	65
Vic	26	111	1:10	1:25	2:25	1	60
Casey Randy	50	11111	1:30	1:35	2:35	6	60
Ron Michael	46	11	1:50	2 -	3:45	11	75

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic Randy	48	dog 1	2:30	2:35	3:35	11	60
Brandon Javed	47	1111	2:50	2:55	3:55	12	60
Ron Michael	34	11111	3:30	3:30	4:30	5	60
Casey	23	11	3:50	3:50	4:45	4	55
Javed	25	111	4:20	4:20	5:15	6	55
Michael	15		4:35	4:45	5:40	4	65
Vic	18		5:10	5:10	6:10	2	60
Javed	14		5:30	5:30	6:20	2	50
Randy	21		6:00	6:00	7:00	3	60
Vic	15	dog 1	6:30	6:30	7:30	3	60
Randy	15		7:15	7:15	7:10	0	55
Vic	6		7:40	7:50	7:35	3	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 4:30	12:40
Nicole	12:30 - 9	3:30
PHOTO LAB		
Manon	8 - 3:30	✓
Mandy	12:30 - 9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8 - 4	12:15
Ron	8 - 4:30	12 -
Michael	9 - 5:30	1:30
Casey	9 - 5:30	2:45
Javed	10 - 6:30	2 -
Randy	12 - 9	3:50
Vic	12 - 9	3:30

FANTASTIC CAVERNS

979

Date July 16, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 70° am. Sunny 87° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2704831	1281486		7481
End	2705336	1281961		7486

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	6		840	840	950	2	70
Vic	10	IIII	920	920	1020	5	60
Randy	22	IIII	950	950	1020	5	60
Ron	13	I	1010	1010	1110	4	60
Jared	23		1030	1030	1130	1	60
Joey Vic	48		11—	11—	12—	9	60
Randy Michael	49	IIIII	1115	1115	1220	4	65
Brandon	25	IIII	1135	1130	1230	7	60
Casey	24	II PB	1150	1150	1240	6	50
Ron Jared	49	IIIIIII	1215	1215	125	10	70
Joey Michael	49	III	1235	1235	135	6	60
Russ	23	I	1250	1250	150	4	60
Vic Randy	52	IIII	110	110	210	8	60
Casey	24	III	125	125	220	4	55
Brandon Michael	50	III	150	150	250	7	60
Joey Ron	51	IIII	205	205	305	11	60
Russ	23	II	220	220	320	4	60
Vic Randy	60	MSU GR	235	235	345	4	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon Michael	50	IIIII	250	250	355	7	65
Ron Jared	48	PB	310	310	410	8	60
Casey	25	III	330	330	425	4	55
Vic Randy	44	I Dog	350	350	505	5	75
Russ	25	I	415	415	515	3	60
Ron	25	IIII	430	430	535	6	65
Joey	25	III	445	445	550	4	65
Jared	23		5—	505	605	2	60
Casey	24	PB III	530	530	620	4	50
Russ	25	PB IIIII	6—	6—	705	5	65
Jared	25	III	615	615	715	5	60
Casey	25		635	635	730	3	55
Russ	10	II	705	710	8—	1	5

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-4:30	1235
Sue	11:30-9	3:35
PHOTO LAB		
Melissa	8-3:30	✓
Randy	1230-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4	1235
Vic	8-5:30	12—
Randy	8-5:30	1230
Ron	9-5:30	130
Jared	10-6:30	220
Joey	10-6:30	315
Michael	11-4	—
Casey	11-9	230
Russ	11-9	325

FANTASTIC CAVERNS

816

Date July 17, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 83 am. Sunny 91 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2705336	1281961	/	7486
End	2705774	1282341	/	7488

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	4		835	835	935	1	60
Joey	8		915	915	1015	2	60
Katy	9	11	935	935	1035	4	60
Ron	19	1	950	950	1050	2	60
Craig	22	1	1010	1010	1110	4	60
Joey	23	11	1025	1025	1125	3	60
Katie	25	1	1040	1040	1140	2	60
Ron	23	11 PB	1055	1055	1155	5	60
Vic Craig	50	1111	1110	1110	1215	8	65
Russ	24	11	1125	1125	1225	4	60
Carrie	23		1140	1140	1245	2	65
Rick	24	111 PB	1155	1155	100	6	65
Ron/Vic	50	111 door	1210	1215	115	6	60
Joey	24	111	1230	1235	135	6	60
Russ	23	1	1250	1250	150	9	60
Katie	23	11	110	110	205	3	55
Rick	17	1	125	125	120	2	55
Carrie/Craig	28		145	145	245	4	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Joey	23	1 PB	215	215	315	1	60
Katy	27	1	230	230	330	2	60
Ron/Vic	56	youth	245	245	345	0	60
Carrie/Craig	48	11	300	300	400	9	60
Russ	25		315	315	420	3	65
Rick Joey	50	11	330	330	335	7	65
Katy	24	1111	345	350	450	2	60
Ron	20	111	405	410	505	6	55
Craig	22		430	430	535	4	65
Russ	24	1111	445	445	545	1	60
Katie	22		500	500	600	2	60
Carrie	22	11	520	520	625	4	65
Craig	10		535	540	655	2	
Russ	15	1	600	600	705	2	65
Carrie	8		630	635	735	4	60
Russ	3	11	710	710	810	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 12	
Nicole	1130 - 900	305
PHOTO LAB		
Mandi	8 - 4	
Katie	12 - 9	

GUIDE	SCHEDULE	LUNCH
Rick	8 - 430	1125
Ron	9 - 530	130
Joey	9 - 530	1150
Katy	9 - 630	1150
Craig	10 - 630	1220
Vic	11 - 400	4 —
Carrie	11 - 900	430
Russ	11 - 900	200

FANTASTIC CAVERNS

684

Date July 18, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 84° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2705774	1282341		7488
End	2706271	1282530		7494

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	6		8:35	8:35	9:40	2	65
Karen	5		9:20	9:20	9:15	2	55
Rick	25	Life Ch	9:35	9:35	10:35	10	60
Carrie	7		9:50	9:50	10:55	1	65
Jared	20		10:15	10:15	10:10	4	55
Ron	25		10:40	10:40	11:50	5	70
Karen	22		11:00	11:00	12:00	6	60
Michael	25	I	11:20	11:20	12:20	2	60
Russ	25	IIII	11:40	11:40	12:40	0	60
Craig/Jared	44	III	12:00	12:00	1:00	4	60
Casey	17	III	12:20	12:20	1:15	X	55
Ron Rick	46	Nixa	12:35	12:35	1:30	0	55
Carrie	22	1 pop	12:50	12:50	1:50	5	60
Michael/Jared	47	III	1:05	1:05	2:05	9	60
Russ	38	Nixa	1:20	1:20	2:20	0	60
Casey Craig	46	2 dog III	1:35	1:35	2:30	9	55
Rick	25	II	1:50	1:55	2:55	3	60
Brandon	19		2:10	2:10	3:10	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	23	1 pb	2:45	2:45	3:50	7	65
Carrie	25	1 dog	3:00	3:00	4:00	4	60
Ron	23	III	3:15	3:15	4:20	5	65
Rick/Craig	41	II	3:30	3:30	4:30	6	60
Russ	10		3:55	3:55	4:55	3	60
Ron	10	I	4:35	4:35	5:35	1	60
Craig	11	II	5:05	5:05	6:05	2	60
Russ	25	III	5:35	5:30	6:30	3	60
Ron	7		6:00	6:00	7:00	1	60
Craig	18		6:30	6:30	7:25	2	55
Russ	13	I	7:00	7:00	8:00	1	60
Craig	12	I	7:30	7:35	8:35	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-5	✓
Scot	5-9	✓
PHOTO LAB		
Marci	8-4	✓
Katy	12-9 Sick	—
Melissa	4-9	—

GUIDE	SCHEDULE		LUNCH
Karen	8-12	H	—
Carrie	8-430	H	12:00
Rick	8-530	H	11:35
Ron	10-630		1:30
Jared	10-3	H	—
Michael	11-4	H	—
Craig	11-9		2:30
Russ	11-9		2:55
Brandon	12-4	H	—
Casey	12-5	H	—

FANTASTIC CAVERNS

629

Date July 19 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 75° am. Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2706271	1282540		7494
End	2706768	1282663		7510

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig -	4		845	845	940	1	55
Carrie -	6	1	915	915	1020	2	65
Craig -	25		950	950	1045	2	55
Rich -	21	III	1010	1010	1105	6	55
Carrie -	20	III	1030	1030	1135	2	65
Craig -	24	1	1055	1055	1155	4	60
Randy -	24	PB 1	1115	1115	1215	4	60
Joey -	26	[illegible]	1130	1130	1220	5	50
Carrie -	24	II	1145	1145	1245	0	40
Rich Karen	51	III	12 -	12 -	1 -	5	60
Craig Randy	49	PB IIIII	1220	1220	125	4	65
Joey Carrie	49	IIIII	1245	1255	150	8	55
Karen -	22	III	115	115	215	5	60
Rich -	22	Dog	130	130	230	3	60
Joey Randy	30	II BDrm	2 -	2 -	250	6	50
Craig -	24	1	215	215	315	5	60
Karen -	22	II	230	230	330	2	60
Sue Carrie -	46	1	245	250	345	9	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig -	23	1	330	330	430	6 II	60
Randy Rich -	39	II	345	355	400	4	65
Carrie -	19	1	415	420	500	2	60
Joey	9		450	450	545	1	55
Randy -	5	II	525	525	630	2	65
Joey -	19		605	605	605	3	60
Randy -	3		705	705	8 -	1	
Joey -	3		735	735	835	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1235
Madi	11:30 - 9	✓
PHOTO LAB		
Mari	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Craig	8-4:30 #	1:30
Carrie	9-5:30 #	200
Rich	10-6:30 #	245
Randy	11-9	310
Joey	11-9	300
Karen	12-4 #	—
Nicole	3-6:30	—

FANTASTIC CAVERNS

711

Date July 20, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 81° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2706768	1282663		7510
End	2707044	1283098		7521

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	13	1	840	840	935	3	55
Michael	15	11	920	920	1020		65
Ron	18	Dog 1	10	10	1105	2	55
Randy	17	11 Dog	1020	1020	1125	2	60
Casey	57	Parks	1040	1040	1135	0	55
Vic	21	Parks	1055	1055	1155	0	60
Michael	25		1110	1110	1210	8	60
Casey/Ron	49	2 Dogs 111	1140	1140	1230	10	50
Joey	25	11	1155	1155	1250	3	55
Randy	19	Dogs 11	1215	1215	120	2	65
Michael	25	1 dog	1230	1230	135	8	60
Jared	21	111	1245	1245	140	1	55
Casey	25	11 PB	1	1	150	5	50
Joey	24	1111 dog	115	115	215	6	60
Vic	25	111	130	130	225	4	55
Ron	25	1	145	145	245	5	60
Jared	24	Dog	2	2	255	4	55
Casey	24	111	215	215	310	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	24	11	230	230	335	4	65
Ron	24	1	250	250	355	7	65
Casey	24	111	315	315	410	7	55
Jared	24	1	335	330	425	3	55
Randy	22	1111	350	350	450	2	60
Ron	26	11	405	405	505	X	60
Casey	25	1	420	420	520	4	60
Jared	23	111	440	440	540	2	60
Katy	24	1	5	5	6	8	60
Jared	16		540	545	650	3	65
Casey	9		615	615	710	0	55
Katy	7	11	7	7	755	2	55
Casey	6	1	735	735	830	1	
Katy	3		8	805	855	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	12
Nicole	8-12	—
Sue	1130-9	310
PHOTO LAB		
Marci	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-430 2:30 11	12
Michael	9-1 11	—
Randy	9-530	130
Ron	9-530	1230
Joey	10-3	—
Jared	10-630	305
Casey	11-9	525
Katy	5-9	—

FANTASTIC CAVERNS

735

Date July 21st, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 81° am. Sunny 95° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2707044	1283098		7521
End	2707424	1283457		7528

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		830	835	930	0	55
Karen	13		920	920	1020	3	60
Casey	4	11	945	945	1045	2	60
Russ Craig Carrie	22	groups	1040	1040	1115	3	95
Randy	25	1	1015	1015	1115	5	60
Karen	23	11	1055	1055	1155	5	60
Craig	23	11	1110	1110	1210	3	60
Joey	24	111	1125	1125	1220	4	55
Carrie	6	11	1140	1145	1245	2	60
Javed	23	1	12	12	1255	5	55
Karen	21	11	1215	1215	110	2	55
Casey	24		1230	1230	130	8	60
Craig	15	1111	1245	1245	145	4	60
Carrie	25	11	1	1	2	X	60
Russ	20	1	115	115	215	6	60
Joey	24	11	130	130	230	3	60
Randy	25	11 pc	145	145	250	4	65
Javed	25	1111	2	2	3	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Carrie	48	12	215	215	315	9	60
Joey Craig	42	1111	230	230	330	10	60
Russ	24	111	245	245	350	2	65
Javed Randy	50	111	305	305	415	5	70
Joey Casey	50	34 MSU	330	340	430	1	50
Russ	25	1111	355	4	5	3	60
Randy	26	11	415	420	525	3	65
Casey	24	111	445	445	540	3	55
Russ	24	1111	505	505	610	5	65
Randy	18	111	525	530	635	3	65
Joey	26	111	6	6	7	1	60
Javed	11		630	630	735	3	1
Joey	8	1111	705	705	815	3	70
Javed	17		745	745	845	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 4:30	11:30
Sue	11:30 - 9:00	4:10
PHOTO LAB		
Katie	8-1 5-9	—
Melissa	12-5:00	—

GUIDE	SCHEDULE	LUNCH
Casey	8 - 5:30	11:30
Vic	9 - 5:30	SICK
Randy	10 - 6:30	12
Russ	10 - 6:30	12 —
Joey	11 - 9:00	4:45
Javed	11 - 9:00	4:30
Karen	9 - 1:00	—
Carrie	9 - 2:00	—
Craig	9 - 2:00	—

FANTASTIC CAVERNS

885

Date July 22 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 83° am. Clear 93° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2707424	1283457		7528
End	2707977	1283790		7538

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Javed	4		8 30	8 30	9 15	0	45
Brandon	10		9 10	9 10	10 10	1	60
Russ	16	1111	9 35	9 35	10 35	3	60
Casey	26	1	9 50	9 50	10 45	2	55
Javed	24		10 10	10 10	12 05	4	55
Rich Vic	58	1 PB 33	10 30	10 40	11 30	4	50
Brandon Casey	41	PB 1	10 50	10 50	11 40	6	50
Russ	23	Ft WD	11 10	11 10	12 10	1	60
Javed	25	111	11 25	11 25	12 20	3 L	55
Randy Michael	44	1111	11 40	11 40	12 45	6	65
Rich	21	111	12 -	12 -	1 -	2	60
Brand/Vic	47	1111	12 20	12 20	12 15	2	55
Ross	23	PB	12 40	12 40	1 45	2 H	65
Randy Michael	47	PB 1111	12 55	12 55	2 05	8	70
Casey Javed	50	1111	1 15	1 15	2 15	5	60
Rich Vic	45	111	1 30	1 30	2 20	7 H	50
Craig Michael	51	1111	2 -	2 05	3 05	5 H	60
Casey Javed	47	1111	2 20	2 20	3 15	11	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	25	11 dog	2 35	2 35	3 35	3 L	60
Matt	23	11	2 50	2 50	4 -	2 -	70
Michael Vic	35	1	3 20	3 20	4 25	9	65
Javed	25	111	3 35	3 35	4 20	4	55
Casey	25	111	4 -	4 -	5 -	7	60
Craig/Vic	38		4 25	4 25	5 25	12	60
Casey/Randy	51	111	4 50	5 00	5 55	4	55
Vic/Craig	34	11	5 40	5 40	6 40	3	60
Randy	14	111	6 05	6 05	7 05	1	60
Craig	17	dog 1111	6 45	6 45	7 45	4	60
Randy		11	7 15				

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	12 -
Nicole	11:30 - 9	3 30
PHOTO LAB		
Melissa	8-4	✓
Katy	12-5	-
Mandy	5-9	-

GUIDE	SCHEDULE	LUNCH
Javed	8-4:30	12 30
Brandon	8-2 H	-
Russ	9-2	-
Casey	9-5:30	12 -
Rich	9:30 - 2:30	-
Vic	10-6:30	2 30
Randy	11-9	3 40
Craig	2-9	3 15
Michael	11-4	-

FANTASTIC CAVERNS

1260

Date July 23, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 82° am. Sunny 100° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2707977	1283790		7538
End	2708605	1284426		7554

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy	10		9-	905	10-	4	55
Casey	9	IIII	930	930	1020	1	50
Miss	25		945	950	1050	6	60
Joey Katy	48	III	1005	1010	1110	9	60
Michael	26	II	1025	1025	1135	4	70
Randy	25	III	1045	1045	1145	5	60
Casey Vic	48	IIIIIII	1055	1055	1155	5	60
Miss	24	II	1115	1115	1215	4	60
Joey Katy	49	IIIIII	1130	1130	1225	8	55
Michael	24	III	1145	1145	1245	4	60
Randy	24	Dog II	12-	12	100	3	60
Casey Vic	50	IIIIII	1215	1215	115	6	60
Russ	25	3 Dog IIII	1230	1230	130	4	60
Joey Katy	50	group 33	1245	1245	145	8	60
Jared Michael	48	Dog III	1-	105	205	7	60
Randy	24	II Dog	115	115	220	3	65
Vic	49	IIIII IIIIII	130	130	225	5	55
Miss	25	I	145	145	245	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Matt	50	IIIII	2-	2-	3-	7	60
Jared Michael	50	III	215	215	315	6	60
Randy	25	Scan 20	230	230	335	11	65
Joey Katy	50	IIIIII	245	245	345	8	60
Scott Vic	49	IIIIIII	3-	305	4-	7	55
Casey Matt	48	IIIIIII	315	215	415	6	60
Jared Randy	51	III	330	345	440	4	55
Russ	25	IIII	345	350	455	8	65
Joey Vic	50		4-	405	505	6	60
Casey Michael	51	IIIIII	420	420	520	10	60
Jared Randy	50	PB IIIII	445	450	555	8	55
Russ	25	1	510	510	615	3	[illegible]
Joey	25	IIII	530	530	630	7	60
Michael Vic	49	II	6-	6-	700	6	60
Jared	25	II Dog	630	630	730	4	60
Sue Vic	43	II PB IIIII	7-	700	800	6	60
Jared	12	PB	730	740	830	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	
Sue	1130-9	
PHOTO LAB		
Mandy	8-3	
Katy	11-5	
Marci	12-9	

GUIDE	SCHEDULE	LUNCH
Katy	8-4	155
Casey	8-430	1.30
Tom	9-530	Sich
Miss	9-530	255
Joey	9-630	200
Michael	10-3	—
Randy	10-630	
Vic	11-9	515
Karen	11-3	Sich
Jared	1-9	630

FANTASTIC CAVERNS

922

Date: July 24th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 91° am. 89° Clear pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2708605	1284426		7554
End	2709169	1284789		7559

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	5		8:30	8:30	9:25	1	55
Casey	13	11	9:05	9:05	10:05	4	60
Joey	17		9:35	9:35	10:35	4	55
Brandon	20		10:00	10:00	11:00	4	60
Craig	25	1	10:15	10:15	11:15	6	60
Casey	10		10:30	10:35	11:30	2	55
Ron	15	1	10:45	10:45	11:45	3	60
Rick	19	IIII	11:-	11:-	12:-	3	60
Brandon/Vic	44	IIII	11:15	11:26	12:15	8	55
Russ	25	IIII	11:40	11:40	12:35	4	55
Casey/Joey	52	IIII	11:50	11:50	12:45	5	55
Craig	24	II	12:05	12:05	1:15	2	70
Ron	23	403	12:20	12:20	1:15	7	55
Brandon/Rick	48	1	12:35	12:35	1:35	7	60
Russ	24	1	12:50	12:50	1:50	2	60
Vick/Carrie	48	II	1:05	1:05	2:05	6	60
Craig	25	1	1:20	1:20	1:20	5	60
Casey	25	IIII	1:35	1:35	1:30	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick/Joey	50	IIII	1:50	1:50	2:45	6	55
Ron	25	II	2:05	2:05	3:06	5	60
Brandon	26	II	2:20	2:20	3:20	6	60
Vic/Carrie	50	II	2:35	2:36	3:10	5	65
Russ	24	1 DOG	2:50	2:50	3:50	3	60
Casey	PB 22	1 PL	3:05	3:05	4:05	6	60
Joey/Rick	51	DOG IIII	3:20	3:20	4:20	2	60
Craig/Ron	50	III	3:35	3:40	4:40	5	60
Brandon/Vic	36		3:55	4:05	5:10	7	65
Casey	23		4:20	4:20	5:20	4	60
Joey	24		4:35	4:35	5:30	0	55
Craig	22	IIII	4:50	1:50	5:55	7	75
Brandon	24	III	5:20	5:20	6:30	4	70
Russ	19	1	5:15	5:45	6:55	3	70
Carrie	7		6:20	6:20			
Russ	12	II	7:10	7:10			

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-12	—
Nicole	11:30-9:00	✓
PHOTO LAB		
Manci	8-4	✓
Mandy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-4:30	12:06
Vic	9-5:30	12:20
Casey	9-5:30	1:50
Ron	9-5:30	1:20
Joey	9-5:30	1:30
Brandon	9-6:30	1:45
Craig	10-6:30	2:25
Russ	11-9:00	2:00
Carrie	1-9:00	

FANTASTIC CAVERNS

705

Date July 25, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Rain 69° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2709169	1284789		7559
End	2709607	1285066		7559

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	9		9:30	9:30	10:25	3	55
Ron	24		10:00	10:00	11:00	2	60
Rick/Nicole	28 15	Steel	10:15	10:15	11:15	1	60
Jared/Carrie	47	Moving	10:30	10:35	11:35	0	60
Michael	25	1	10:50	10:50	11	4	70
Ron	24		11:05	11:05	12:05	6	60
Rick	24	1111	11:25	11:25	12:25	5	60
Jared	24	1 pk	11:45	11:45	12:40	1	55
Carrie	24	dog	12-	12-	1-	4	60
Michael	23	1	12:20	12:15	1:15	5	60
Ron	23	11	12:35	12:30	1:35	5	65
Jared	23	1	12:50	12:50	1:50	1	60
Rick	24	dog 1	1:10	1:10	2:10	4	60
Michael	25	11	1:25	1:30	2:30	6	60
Carrie/Nicole	49	111	1:40	1:45	2:45	9	60
Ron	24		1:55	2:00	3:00	4	60
Jared Ric	48	1 pk	2:10	2:20	2:25	7	55
Michael	25	1	2:45	2:45	3:50	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	24	11	3:05	3:05	4:05	3	60
Ron	24	111	3:20	3:20	4:20	3	60
Rick	22	111	3:35	3:35	4:30	6	55
Jared	24	1111	4:00	4:00	4:55	5	55
Michael	21		4:15	4:15	5:15	6	60
Rick	25	1	4:45	4:50	5:40	6	R 50
Ron	19		5:05	5:05	6:00	2	55
Jared	5	1	5:30	5:30	6:20	2	50
Ron	15	11	6:10	6:15	7:15	3	60
Jared	20	111	6:50	7:00	8:00	3	60
Ron	6	1	7:40	7:40	8:35	3	55

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-5	✓
Scott	5-9	
PHOTO LAB		
Mandy	8-4	
Katy	12-9	

GUIDE	SCHEDULE	LUNCH
Carrie	8-430	1:10
Rick	8-530	12:40
Ron	9-~~630~~ 9	4:30
Jarred	9-9	3:30
Michael	1030-7	no lunch
Craig	11-9	SICK
Joey	11-9	—

FANTASTIC CAVERNS

582

Date July 26-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather pt. sunny 78° am. 77° Rain pm.

	#1 TICKET	#2 TICKET	GIFT CERT	SEASON PASS
Begin	2709607	1285066		7559
End	2710096	1285160		7565

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	4		830	830	940	0	70
Rick	9	1	915	915	1010	2	55
Carrie	21	Schw 9	930	930	1040	~~NP~~	70
Craig	11	11	950	955	1050	4	55
Randy	21	1	1010	1010	1115	7	65
Rick	19	11	1030	1030	1130	5	60
Carrie	24	111	11-	11-	12-	2	60
Ron	25	1	1115	1115	1215	3	60
Russ	25	111	1130	1130	1235	3	65
Craig Randy	43	111111	1145	1145	1250	5	65
Rick	26	dog	12-	12-	1-	2	60
Carrie	23	111	1225	1225	125	2	60
Ron	25		1245	1245	145	7	60
Russ	22	1	1-	1-	205	3	65
Randy	26	cox LC	115	115	215	0	60
Craig	24	11	135	135	240	6	65
Ron Rick	49	4 dogs 11111	2-	2-	315	5	75
Russ	14	1111	220	220	325	3	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	16	1	240	240	340	4	60
Craig	23	1	3-	305	410	6 H	65
Randy	24	1	320	320	420	0	60
Rick	26	11	340	340	440	4	60
Michael	4	1	4-	4-	500	1	60
Carrie	18	111	420	420	520	3	60
Ron	9	11	455	455	600	3	65
Russ	9		515	515	615	1	60
Michael	9		535	610	710	4	60
Ron	15		630	630	755	2	85
Russ	8		705	705	805	1	60
Michael	7		730	735	840	2	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1205
Madi	11:30-9	✓
PHOTO LAB		
Mari	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Craig	8-4:30 H	1-
Rick	8-6:30 H	105
Carrie	9-5:30 H	130
Randy	10-6:30 H	215
Ron	11-9:00	330
Russ	11-9:00	330
Michael	4-9	—

FANTASTIC CAVERNS

565

Date July 27, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Rain 71° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2710096	1285160		7565
End	2710250	1285375		7565

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	5		830	830	930	2	60
Randy	7		905	905	1000	2	55
Craig	16	11	945	945	1045	5	60
Karen	24	11	1015	1015	1115	10	60
Rick Randy	45	Start	1030	1030	1130	0	60
Ron	24	111	1045	1045	1145	6	60
Carrie	25	11111	1100	1100	1200	2 L	60
Casey	16	11111	1115	1120	1220	2	60
Vic	26	11	1135	1135	1235	4	60
Russ	19	Day	12-	12-	1-	5	60
Craig - Karen	44	1111	1215	1215	120	5	65
Ron	25	11111	1230	1230	140	3 L	70
Casey	23	1	1245	1245	145	5	60
Carrie	25	11	1-	1-	2	1	60
Vic	25	11	115	115	210	6	55
Russ	24	1	130	130	235	7	65
Ron	25	11	145	145	245	3 L	60
Casey	21	1111	2-	2-	355	1 L	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	24	1	215	215	315	4	60
Carrie	24		230	230	330	2	60
Vic	2		245	245	345	1	60
Russ	11	111	3-	3-	400	1	60
Ron	16		330	330	425	3	55
Craig	16	11	345	345	450	2	65
Casey	16	111	415	415	505	4	50
Vic	9		440	440	535	2	55
Katy	3	1	500	5-	550	1	50
Ron	9	11	530	530	625	1	55
Casey	9		6-	6-	7-	2	60
Russ	2		630	630	735	1	
Katy	6		7-	7-	755	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-12	—
Madi	8-430	1145
Sue	1130-9	330
PHOTO LAB		
Maria	8-4	✓
Katy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Carrie	8-430	1210
Randy	9-2	—
Rick	9-2	—
Karen	10-2	—
Ron	10-630	255
Casey	10:30-7	3-
Vic	11-9	350
Russ	11-9	420
Katy	5-9	—
Craig	9-530	125

FANTASTIC CAVERNS

639

Date July 28th 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 84° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2710250	1285575	/	07565
End	2710574	1285920	/	7572

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3		8:30	8:30	9:30	0	60
Vic	14	1	9:10	9:15	10:15	1	60
Casey	13	11	9:45	9:45	10:45	1	60
Karen	13	1	10:05	10:05	11:05	2	60
Randy	24	1	10:20	10:20	11:20	10	60
Vic	24	1	10:35	10:35	11:30	3	55
Casey	18		10:55	10:55	11:50	2	55
Karen	22	1111	11:10	11:10	12:10	4	60
Rick Michael	47	1111 dogs	11:20	11:20	1:30	11	65
Randy	21	11111	11:45	11:45	12:45	2	60
Vic	21	1	12-	12-	1:55	3	55
Karen	23	11	12:15	12:15	1:10	3	55
Nicole/Rick	41	1 dog 111	12:30	12:30	1:30	5	60
Michael	22	1	12:50	12:50	1:50	5	60
Casey	13	1	1:10	1:10	2:10	1	60
Randy	24	11	1:30	1:30	2:30	3 2	60
Rick	25	11 1 pb	1:45	1:45	2:40	1	55
Vic	19	11	2-	2-	3-	5	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	20	11	2:15	2:15	3:15	4	60
Casey	23	pb 1	2:30	2:30	3:30	5	60
Rick Nicole	51	111111	2:50	2:50	3:50	6	60
Randy	19	11111	3:05	3:05	4:05	4	60
Vic	23	1	3:20	3:20	4:20	0	60
Michael	25		3:40	3:40	4:40	6	60
Casey	14		4-	4:0	5-	1	60
Randy	11		4:15	4:15	5:10	0	55
Vic	19	1	4:30	4:30	5:30	3	60
Rick	12		5-	5-	6:05	3	65
Nicole	10		5:50	5:50	6:40	3	50
Rick	11	1	6:30	6:30	7:05	2	55
Nicole	15		7:15	7:15	8:05	7	50

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4:30	11:30.
Sue	11:30-9:00	3:40
PHOTO LAB		
Melissa	8-4	✓
Marci	12-9	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-5:30	12-
Vic	9-5:30	1-
Craig	9:30-6:00	—
Randy	10-6:30	2:35
Rick	11:30-9:00	3:55
Nicole	12-9:00	3:55
Karen	10-2 H	—
Michael	11:30-4:30	—
Javed	11-9	SICK

FANTASTIC CAVERNS

618

Date July 29-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 76° am. Sunny 83° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2710544	1285920		7572
End	2710923	1286161		7572

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	11		850	850	1145	2	55
Casey	13	11	910	910	1005	4	55
Russ	17		935	935	1045	3	70
Jared	14		10-	10-	1055	4	55
Vic	20		1020	1020	1125	5	65
Carrie	23	11	1040	1040	1145	6	65
Casey	23	2 dog 11	11-	11-	12	5	60
Russ	23		1115	1115	1215	3	60
Jared	21	1111	1130	1130	1130	1	60
Vic	17		1145	1145	1140	1	55
Rick Randy	39	AFB	12-	12-	130	2	90
Casey Carrie	37	1	1215	1215	110	7	50
Michael	24	1111	1250	1250	150	3	60
Jared	15		105	105	2-	1	55
Brandon	21	11	125	125	225	3	60
Carrie	25	11	145	145	240	0	55
Vic	15	111	2-	2-	305	3	60
Russ	21	111	220	220	325	4	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	25	1	240	240	340	5	60
Randy	24		3-	3-	4-	7	60
Michael	23	1111	315	315	420	3	65
Jared	24		330	332	430	3	60
Brandon	25	PB 111	345	345	445	3	60
Vic	17	PB	4-	4-	5-	1	60
Casey	19	1111	420	420	515	4	55
Jared	14	11	445	445	540	2	55
Randy	17	dog 11	510	510	610	1	60
Vic	7		530	530	635	3	65
Rick	11		555	555	655	3	60
Randy	13	111	630	630	735	3	45
Rick	13		715	715	815	2	60
Randy	4		740	740	840	1	

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1240
Nicole	11:30-9	3-
PHOTO LAB		
Melissa	8-4:30	✓
Katy	12-9	—
Mary		—
Mandy		—

GUIDE	SCHEDULE	LUNCH
Casey	8-5:30	120
Jared	8-6	1235
Russ	9-4:30	1230
Carrie	10-4	—
Vic	10-6:30	310
Randy	11-9	410
Rick	11-9	410
Michael	11:30-430	205
Brandon	12-7	245

FANTASTIC CAVERNS

956

Date July 30 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 76° am. Clear 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2710423	1286141	—	7570
End	2711479	1286561	—	7590

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	11	11	830	830	935	3	65
Jared	6		910	910	905	1	55
Casey	24		945	945	1040	3	55
Brandon	22	1/2	10	10	11	6	60
Karen	23		1015	1015	1110	5	55
Randy	25	PB	1030	1030	1135	1	65
Michael	25	11	1045	1045	1145	8	60
Ron	26	11	11	11	12	7	60
Vic	24	1	1115	1115	1220	4	65
Casey Jared	51	11/11/11	1130	1130	1230	4 L	60
Russ	26	11	1145	1145	1245	4	60
Karen	24	111	12	12	1255	5	60
Randy	25	1111 PB	1215	1215	120	5	65
Michael	24	11	1230	1230	135	5	65
Ron Brandon	49	11/11 PB	1245	1245	155	7	70
Russ Vic	49	11/11/11 dog	1	1	210	4	70
Jared Karen	48	11/11/11	120	120	220	7	60
Casey	25	dog 11/11	135	140	240	6	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon Michael	50	111	150	2	310	8	70
Randy	24	1	215	215	315	1	60
Vic Russ	49	1	230	230	340	10	70
Ron Jared	49	11/11/11	245	245	350	14	65
Brandon	24	11	305	315	425	4	70
Casey Randy	36	11/111	330	330	430	2	60
Ron Jared	50	11/11/11	350	4	5	4	60
Russ	25		425	425	535	7	70
Vic	23		440	440	545	6	65
Randy	25		510	510	615	1	55
Russ	25	1111	540	540	650	4	70
Vic	24	1111	610	610	715	5	65
Russ	27	111	710	710	715	0	
Vic	17	1 dog	745	745	845	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 4:30	1230
Nicole	11:30 - 9	330
PHOTO LAB		
Melissa	8 - 4:30	✓
Mandy	12 - 9	✓

GUIDE	SCHEDULE	LUNCH
Casey	8 - 4:30	1230
Brandon	8 - 4	1155
Jared	9 - 5:30	1230
Ron	10 - 5:30 (time ticket)	2
Karen	10 - 2:30	—
Michael	10 - 3	—
Randy	10 - 4:30	125
Vic	11 - 9	355
Russ	11 - 9	355

FANTASTIC CAVERNS

844

Date July 31, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 78° am. Cloudy 76° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2711479	1286561		7590
End	2711941	1286943		7596

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6	III	830	830	930	3	60
Katy	19		910	910	1010	2	60
Ron	17	1	940	940	1040	2	60
Casey	24	III	1005	1010	1110	3	60
Jared	24	III	1030	1030	1130	7	60
Rick	24	II	1045	1045	1140	4	55
Ron Katy	44	Dog IIIII	11-	1105	1205	9	60
Russ	24	III	1115	1115	1215	6	60
Casey	26	III	1130	1130	1225	5	55
Jared	25	1	1145	1145	1240	5	55
Carrie/Rick	50	III	12-	1200	105	9	65
Ron	18	II	1215	1220	115	4	55
Casey	50	1	1230	1230	130	10	60
Russ	25	IIII	1245	1245	145	3	60
Jared	13	1	100	105	200	5	55
Ron Carrie	49	III	120	125	220	8	55
Katy	25		135	140	240	4	60
Rick	24	Dog	155	155	250	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	25		210	210	310	3	60
Casey/Carrie	49	IIIII	225	230	325	10	55
Jared	25		240	240	340	2	60
Ron	24	1	255	3-	4-	6	60
Rick	25		310	315	410	9	55
Katy/Casey	17	IIII	330	330	425	9	55
Jared	13		345	345	440	2	55
Russ	10		410	410	515	4	65
Ron	21		425	425	520	3	60
Carrie	23	II	445	445	540	3	55
Katy	17		510	510	615	2	65
Jared	12	IIII	530	530	630	6	60
Russ	3	1	550	550	655	0	
Carrie	10	II	630	630	725	1	55
Russ	16	III	700	700	805	1	65
Carrie	4		740	745	850	1	65

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	✓
Nicole	1130-9	✓
PHOTO LAB		
Marci	8-12	—
Mandy	12-9	✓
Madi	2-4	—

GUIDE	SCHEDULE	LUNCH
Rick	8-430	110
Casey	9-530	130
Ron	9-530	225
Katy	9-630	240
Jared	10-630	210
Carrie	12-9	330
Russ	11-9	315

FANTASTIC CAVERNS

576

Date Aug. 1, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 73° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2711941	1286943		7596
End	2712277	1287186		7601

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	16	1	835	835	945	5	75
Karen	7	11	905	905	1010	2	65
Brandon	20		945	950	1050	3	60
Michael, Randy, Nick	20	Ozark	1010	1010	1155	0	
Carrie	14	IIIII + Roo	1025	1035	1130	5	55
Randy, Nick, Michael	19	Ozark	1050	1050	1150	0	60
Karen	25		11	11	1155	4	55
Brandon	19	Shawnee	1115	1115	1210	2	55
Casey	42	6	1130	1130	1230	8	60
Michael	24	IIII	1200	1205	105	3	60
Karen	24		1220	1220	120	3	60
Carrie	16		1235	1235	135	2	60
Casey	23	III	1250	1250	115	7	55
Randy	22	IIII	105	105	120	5	15
Brandon	22		120	120	120	4	60
Wheel Chair Carrie	22	11	135	135	235	4	60
Michael	19	IIII	150	150	250	6	60
Casey	20	III	210	210	310	4	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	24	111	225	225	325	3	60
Randy	25	Ewan	240	240	350	6	70
Brandon	20	1	3	300	405	4	65
Carrie	22	1	315	315	420	4	65
Michael	12		330	330	430	3	60
Nick	25	1	355	355	450	5	55
Casey	22	IIII	420	420	520	7	60
Randy	3		455	455	555	0	60
Carrie	4	1	530	540	640	2	60
Casey	8		610	610	705	3	55
Randy	8	11	635	635	735	1	60
Carrie	8		655	655	755	0	60
Casey	1	11	710	710	800	0	

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	
Scot	1130-9	
PHOTO LAB		
Marci	8-4	
Melissa	12-9	

GUIDE	SCHEDULE	LUNCH
Brandon	8-430	1220
Karen	9-2	—
Nick	9-530	1145
Randy	930-7	[illegible]
Michael	930-330	—
Carrie	10-630	
Casey	11-9	120
Ron	11-9	✓

FANTASTIC CAVERNS

515

Date August 2, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2712277	1287186	/	7601
End	2712517	1287461	/	7602

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	12		910	915	1015	2	60
Carrie	18	IIIIII	950	950	1050	4	60
Rick	14		1015	1015	1115	3	60
Sue	22	I	1040	1040	1135	4	55
Jared	24	II	11	11	1155	3	55
Brandon	23	III	1115	1115	1220	5	65
Ron	24	III	1130	1130	1225	2	55
Carrie	24	III	1145	1145	1245	3	60
Rick	23	I Dog	12	1205	100	X	55
Jared	22	II	1220	1225	120	2	55
Sue	24	I	1255	1255	1250	4	55
Brandon	23	II	115	115	120	5	65
Carrie/Ron	49	IIII	135	130	240	9	70
Rick	10	I	150	150	245	1	55
Jared	19	IIII	210	210	310	4	60
Brandon	24	I	230	230	335	3	65
Carrie	23	IIIII	245	250	350	1	60
Ron	16	IIII	305	305	405	4	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	15	I Dog III	320	320	420	5	60 F
Brandon	20	I	340	340	445	3	65
Jared	23	III	355	355	455	7	60
Russ	21		450	450	550	1	60
Sue	12	I	515	515	616	1	60
Jared	13	I	535	535	630	2	55
Russ	8		605	605	705	2	60
Ron	6		655	655	755	3	60
Russ	3		730	735	830	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-430	✓
Nicole	12-9	310
PHOTO LAB		
Marci	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-430	1200
Carrie	9-430	1250
Rick	10-630	105
Sue	10-630	245
Jared	1030-7	140
Ron	11-9	405
Russ	4-9	—

FANTASTIC CAVERNS

549

Date August 3rd, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 78° am. Sunny 93° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2712517	1287461		7602
End	2712660	1287867		7604

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	9		905	905	955	1	50
Vic	6		930	930	1030	1	60
Brandon	15	II	10-	10-	11-	3	60
Randy	23		1020	1025	1125	6	60
Vic	14		1050	1050	1150	3	60
Casey	19	II	1110	1110	12-	2	50
Brandon	9		1130	1130	1230	4	60
Jared	12	III	1145	1145	1245	3	60
Vic	25	III	1210	1210	105	4	55
Randy	23		1225	1225	125	5	60
Casey/Nicole	49	IIII	1245	1245	140	11	55
Jared	18	IIII	1-	1-	2-	2	60
Brandon	24		125	125	230	5	60
Vic	25	1	150	150	250	4	60
Casey	25	1	205	205	3-	6	55
Jared/Randy	49	IIII	220	220	320	7	60
Brandon	25	II	235	235	235	5	60
Nicole/Vic	50	Hog III	250	250	350	8	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	23	II	325	330	430	3	60
Brandon	20	III	345	350	450	1	60
Casey	19	1 pi	405	405	505	3	60
Vic	19		420	420	520	4	60
Randy	6	1	440	440	540	1	60
Jared	21	IIIII	5-	5-	6-	1	60
Katy	11		520	520	620	1	60
Casey	7		545	545	640	2	55
Jared	4		615	615	710	0	55
Katy	2		645	645	740	1	55
Jared	3	1	735	735	830	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4 30	105
Sue	11 30 - 9 00	3 30
PHOTO LAB		
Katie	8-4 00	✓
Melissa	12-9 00	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4 30	1235
Vic	9-5 30	115
Nicole	10-6 30	150
Randy	10-6 30	135
Casey	10 30 - 8	320
Jared	11 - 9	330
Katy	5-9	—

FANTASTIC CAVERNS

582

Date August 4, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 80° am. Sunny 96° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2712660	1287867	/	07604
End	2713039	1288071	/	7606

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	1		835	835	925	1	50
Rick	10		915	920	1015	4	55
Brandon	7	IIII	950	955	1050	2	55
Jared	16	1	1010	1010	1105	4	55
Rick	20	1	1040	1040	1140	2	60
Brandon	25	IIII	11-	1105	1210	4	65
Craig	24	III dog	1120	1125	1220	7	55
Jared	22	III	1135	1135	1235	6	60
Rick	25	II	1150	1150	1250	6 L	60
Casey	25	IIII	1210	1210	1-	2	50
Vic Nicole	48	II	1230	1235	130	11	55
Craig	24	II	1250	1250	150	4	60
Jared	22	dog	105	105	2-	2	55
Brandon	25	1	120	120	225	3	65
Casey	24		135	135	235	3	60
Rick Vic	49	dog IIIII	150	150	240	5	50
Craig	25	III	205	205	305	3	60
Brandon	25	1	225	230	330	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	25	II	245	245	340	3	55
Casey	17	dog III	3-	3-	355	4	55
Vic	19	IIIIII	330	330	430	6	60
Craig	16	II	350	350	455	1	65
Rick	10	1	410	410	505	0	55
Jared	3		430	430	525	1	55
Craig	7	1	5-	5-	6-	2	60
Casey	19	dog III	520	520	615	3	55
Jared	11	1	535	535	635	1	60
Vic	20	III	6-	6-	705	2	65
Craig	16	II	620	620	730	5	70
Casey	6		650	650	755	1	65

INFO COUNTER	SCHEDULE	LUNCH
Madi	8-4 30	1-
Sue	11 30 - 900	315
PHOTO LAB		
Melissa	8-4	✓
Marci	12-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4 30	1220
Rick	9-5 30	105
Jared	10-6 30	205
Nicole	10-6 30	140
Craig	11-7 00	315
Casey	12-9 00	4-
Vic	12 30 - 900	440

FANTASTIC CAVERNS

731

Date August 5 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 78° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2713039	1288071	/	7606
End	2713434	1288410	/	7610

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	14	1	830	830	930	2	60
Jared	4		930	930	1025	1	55
Karen	20	11	950	950	1045	2	55
Vic	18		1010	1010	1105	3	55
Carrie / Michael	37	11111	1030	1030	1140	5	70
Casey	23	111	1045	1045	1145	2	60
Jared	22	11111	11 -	1105	1206	5	60
Karen / Vic	49	1111	1120	1120	1220	8	60
Carrie	24	dog 1	1135	1140	1240	4	60
Michael	24	dog	1155	1155	1255	5	55
Casey / Carrie	25	1	1215	1215	105	6	50
Randy	25	1	1230	1230	130	3	60
Vic	25	PB	1245	1245	145	2	60
Craig	23	1	1 -	1 -	2 -	2	60
Jared	24	1111	115	115	210	2	55
Carrie / Michael	47	1111 PB	130	130	230	9	60
Casey	24	11	145	145	240	5	55
Craig	25	1	2 -	2 05	3 -	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	23	111	215	215	315	2	60
Carrie / Randy	47		235	235	335	2	60
Michael	25	11111	255	255	355	3	60
Casey	23	1	315	315	410	3	55
Jared	20	11	330	330	430	3	60
Carrie	18	1	350	350	450	5	65
Craig	5	1	410	410	510	1	60
Jared	18		435	435	530	3	60
Casey	23	111	500	500	600	6	60
Carrie	25		525	525	630	1	65
Randy	24	11111	555	555	750	2	60
Craig	12	111	625	625	730	3	65
Randy	10		710	710	815	1	60
Craig	11	1111	750	750	850	4	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	12 -
Nicole	11:30-9	315
PHOTO LAB		
Kath	8-4	✓
Marci	12-9	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Jared	9-5:30	1210
Vic	10-2	—
Casey	10-6:30	110
Carrie	10-6:30	1245
Michael	10-4	—
Randy	12-9	350
Craig	12:30-9	315

FANTASTIC CAVERNS

1081

1071

Date August 6, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sprinkling 75° am. 76° Cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2713434	1288410		7610
End	2714078	1288839		7615

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	3		830	830	935	1	55
Casey	14	dog	915	915	1015	1	60
VIC	12		945	945	1045	3	60
RON	25	1	1010	1010	1105	8	55
Russ	23	III	1025	1025	1125	3	60
Casey	25	1	1040	1040	1130	3	60
VIC	23	III	1055	1055	1150	3	55
Randy Michael	50	III	1115	1115	1215	6	60
Ron Karen	50	II	1130	1130	1230	7	60
Casey Russ	49	dog III	1145	1145	1245	6	60
VIC Jared	49	dog IIII	1210	1210	110	7	60
Randy/Michael	50	III IIII	1230	1230	135	10	60
Ron Karen	49	IIIII	1245	1245	145	4	60
Casey Craig	50	IIIIII	1	1	2	5	60
Jared VIC	48	IIIII	115	115	225	2	70
Randy Michael	47	dog IIIII	140	140	245	9	65
Russ Karen	49	III	2	2	3	9	60
Ron Craig	50	IIII	220	220	330	9	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Randy	49	1	245	245	345	6	60
Michael Karen	51	IIIII	305	305	405	3	60
VIC Russ	51	IIIII IIIII	330	330	435	8	65
Ron Craig	49	IIII	345	345	455	14	70
Casey	25	III	410	410	510	21	60
Jared	17	III	425	425	530	4	55
VIC/Randy	45	IIII	445	445	550	4	65
Ron	25	III	505	505	610	7	65
Jared/Craig	51	IIII	530	530	640	8	70
Randy	24	II	600	600	710	6	70
Jared	19	II	635	645	735	5	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8 - 4:30	1245
Nicole	11:30 - 9	3 —
PHOTO LAB		
Marci	8-4	✓
Amanda	12-9	✓

GUIDE	SCHEDULE	LUNCH
Russ	8-4:30	1255
Casey	9-5:30	110
VIC	9:30 - 6	235
Ron	10-6:30	159
Randy	11-7	355
Michael	11-4	—
Jared	12-9	235
Craig	12:30 - 9	505
Karen	11-4	—

FANTASTIC CAVERNS

809

806

Date August 7th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Rain 77° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2714078	1288839		7615
End	2714600	1289125		7617

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	17	11	835	835	930	2	55
Rick	9		910	910	1010	3	60
Brandon	24	1	950	950	1050	4	50
Ron	24	1	1010	1005	1105	6	60
Casey	24	11	1025	1025	1125	5	60
Rick	22	2 1111 2 DOG	1040	1040	1140	2	60
Brandon	23		1055	1055	12	4	65
Carrie	22	1111	1110	1110	1210	2	60
Russ	23		1125	1130	1230	6	60
Rick / Ron	48	10	1145	1145	1245	12	60
Casey	25	111	1205	1205	105	2	60
Katy / Craig	48	1111	1220	1220	120	5	60
Carrie	19	11	1240	1245	140	4	65
Brandon / Ron	46	11	1	105	115	11	75
Russ	24	11	120	120	220	2	60
Craig	23	111	140	140	240	2	Y
Rick / Katy	49		2	2	305	4	65
Carrie	25	DOG 111	215	220	320	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	24	1111	235	235	335	2	60
Casey	25	111	250	250	350	4	60
Russ	24	11	310	310	410	7	60
Rick / Katy	46	111	325	330	430	9	60
Carrie / Brandon	44	DOG 111	345	345	445	7	60
Ron	24		410	410	515	2	65
Casey	17	11	425	425	520		55
Rick	22	1111	445	445	530	2	
Craig	25	1111	500	505	610	1	65
Ron	16	1	520	530	630		60
Russ	13	111	6	6	7	4	60
Carrie	14	1	630	635	735	2	60
Katy	9	11	7	7	755		
Craig	8	11	730	730	835	3	65
Carrie	3	11	755	755	845	1	

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 430	230
Madi	1130 - 900	✓
PHOTO LAB		
Melissa	8 - 4	✓
Amanda	12 - 9	✓

GUIDE	SCHEDULE		LUNCH
Brandon	8 - 430	H	✓
Rick	9 - 530	H	1
Ron	10 - 630	H	225
Casey	1030 - 600	H	✓
Carrie	11 - 900		500
Russ	11 - ~~8~~ 700	H	425
Katy	12 - 9		440
Craig	12 - 9		410

FANTASTIC CAVERNS

495

Date August 8, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Rain 78° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2714600	1289125		7617
End	2714890	1289330		7617

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	9	II	9	9	10:05	3	65
Ron	11	I	930	930	1020	1	50
Randy	4		10	10	11	2	60
Michael	26	IIIII	1020	1020	1130	5	70
Brandon	25	III	1040	1040	1140	5	60
Carrie	12	II	11	11	1200	1	60
Ron	20	II	1120	1120	1220	5	60
Randy	23	I	1145	11[illegible]	145	3	60
Michael Karen	28	IIIII	125	1210	110	6	60
Carrie	17	I	1225	1225	125	2	60
Rick	21	I	1245	1245	145	1	60
Brandon	20		1	1	2	2	60
Karen	11		115	115	215	2	60
Michael	19	III	130	130	230	4	60
Ron	15	DL	145	145	245	5	60
Randy	17	I	200	200	300	2	60
Brandon	21	II	215	215	315	4	60
Rick	22	IIII	230	235	330	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	24	IIIII	245	250	350	4	60
Carrie	16		305	305	410	5	65
Ron	9	I	320	320	420	4	60
Randy	15	II	340	340	440	0	60
Craig	21	IIII	4	410	510	3	60
Carrie	24	III	430	430	530	3	60
Randy	7		450	450	550	0	60
Carrie	22	II	540	540	635	4	55
Craig	11		600	600	700	3	60
Rick	18	IIIII	630	630	730	3	
Craig	2		740	740	840	1	

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-430	12-
Scot	1130-9	330
PHOTO LAB		
Melissa	8-4	
Mandy	12-9	

GUIDE	SCHEDULE		LUNCH
Brandon	8-430	H	12:05
Ron	9-530		1240
Randy	930-6		1255
Michael	10-4	H	—
Carrie	1030-7		155
Karen	11-4	H	—
Rick	12-9		335
Craig	2-9		✓

FANTASTIC CAVERNS

479

Date August 9, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 78° am. Sunny 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2714890	1289330		7617
End	2715149	1289552		7617

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Sue	2		8:30	8:35	9:30	1	55
Michael	17	III	9:30	9:35	10:40	5	65
Ron	18	1	10	10:05	11:20	5	75
Sue	24		10:30	10:30	11:30	3	60
Carrie	21	III	10:50	10:50	11:50	2	60
Michael	22	Pogs	11:10	11:10	12:10	4	60
Rick	25	III	11:25	11:25	12:25	4	60
Karen	21	III	11:40	11:40	1:40	1	60
Ron Carrie	38	IIIIII	12	12:10	1:20	12	70
Michael	23		12:30	12:30	1:30	3	60
Rick	25	1 pc	12:45	12:45	1:45	7	60
Karen	18	1	1:00	1:05	2:05	3	60
Ron	11		1:20	1:25	2:20	3	55
Sue Carrie	42	Salvador	1:35	1:40	2:40	2:50	60
Rick	25	1	1:55	1:55	2:55	3	60
Michael	13	1	2:15	2:15	3:15	4	60
Karen	24	1	2:40	2:40	3:40	1	60
Ron Sue	37	Pog IIII	3:10	3:10	4:20	6	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	13	1	3:40	3:40	4:40	0	60
Russ	7		4:10	4:10	5:15	1	65
Ron	22		4:45	4:45	4:50	5	65
Carrie	11		5:05	5:05	6:10	2	65
Rick	14		5:35	5:35	6:30	4	55
Russ	2		6:00	6:00	7:10	0	70
Rick	2		6:40	6:40	7:40	0	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4:30	✓
Nicole	12-9	3:10
PHOTO LAB		
Mandy	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Sue	8-4:30	12:15
Michael	9-3:30 H	1:40
Ron	10-6:30	2:30
Carrie	10:30-8 late	2:45
Karen	11-4 H	—
Rick	11-9	4-
Russ	4-9	—

FANTASTIC CAVERNS

485

Date August 10, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 77° am. Sunny 95° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2715149	1289552	/	7618
End	2715240	1289948	/	7621

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Carrie	8	1	920	930	1025	1	50
Rick	13	III	1005	1005	11	1	55
Casey	23	II	1030	1040	1140	2	60
Carrie	23	III	1055	11	12	5	60
Craig	24	1	1115	1115	1220	3	65
Rick	23	1	1130	1130	1230	6	60
Casey	23	III	1150	1150	1245	4	55
RON	23		1210	1210	105	7	55
Craig	23	1	1225	1225	125	3	60
Rick	19	PB 1	1240	1245	145	1	60
Carrie	22	III	1	10	205	5	60
Casey	14	1	120	120	225	4	65
Craig	26	II	140	145	290	4	65
RON	24	IIII	2	2	205	5	65
Carrie	24		220	220	325	3	55
Rick	25	1	235	235	335	8	60
Casey	21	PL	250	250	350	2	60
Craig	25	II	310	310	410	1	60

GUIDE	# OF. PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	12	III	325	330	440	1	70
Carrie	20		345	345	450	3	65
Rick	11		400	410	5	1	50
Casey	14	II	430	430	530	1	60
Katy	18	1 PB	510	510	605	6	55
RON	20	IIII	6	6	720	3	80
Katy	6		640	640	735	2	55
RON	2		710	725	805	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Jodi	8-6 30	1155
Sue	11 30 - 900	320
PHOTO LAB		
Melissa	8-4	✓
Katy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Nicole	8-6 30	1155
Carrie	9-5 30	1205
Rick	10-6 30	150
Casey	10 30 - 5 30	355
Ron	12-9	445
Craig	11-4	—
Katy	5-9	—

FANTASTIC CAVERNS

449

Date August 10, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 80° am. Sunny 95° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2715240	1289948		7621
End	2715477	1290162		7623

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	8		915	920	1020	2	60
Ron	12	1	940	940	1040	2	60
Jared	8	Dog	1010	1010	1105	2	55
Brandon	24		1035	1040	1140	5	60
Ron	25	11	1100	1105	1210	4	65
Craig	24	1111	1130	1130	1225	3	55
Jared	16		1145	1145	1235	1	50
Randy	24	111 PB	1205	1205	105	3	60
Brandon	18		1220	1220	115	3	55
Craig	25	11	1240	1240	140	3	60
Vic	11	11	1-	1-	2-	3	60
Ron	18	11	115	115	215	4	60
Jared	7		130	130	225	2	55
Randy	19		150	150	250	0	60
Brandon	21	11111	210	210	320	4	70
Craig	15	111	230	230	330	3	60
Vic	16	1	245	245	345	3	60
Jared	9	11	3-	3-	355	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	18	111 PB	320	320	435	6	75
Brandon	24	12	340	340	450	2	70
Randy	24	PB, 4-	2-		5-	3	60
Craig Jared	28	11	430	430	535	7	65
Ron	7		445	445	545	0	60
Vic	17	1111	510	510	620	2	70
Jared	7		535	540	635	1	55
Craig	5		6-	6-	710	3	70
Randy	3		630	630	730	2	60
Vic	3		7-	7-	8-	2	60
Randy	5		745	745	840	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Macli	8-430	1140
Sue	1130-9	4-
PHOTO LAB		
Marci	8-4	✓
Katy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-430	1145
Ron	9-530	1220
Jared	10-630	230
Craig	11-7	340
Randy	12-9	315
Vic	1230-9	4-

FANTASTIC CAVERNS

596

Date Aug 12-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Partly Sunny 80° from am. Rain 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2715477	1290162		7623
End	2715830	1290407		7624

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	6		830	835	940	2	65
Jared	11		920	920	1020	4	60
Casey	23	11	1015	1015	1115	3	60
Michael	23	1	1030	1030	1130	5	60
Brandon	24	111	1045	1045	1150	3 L	65
Jared	25	11111	11-	11-	1155	3	55
Craig	17	11	1115	1115	1215	4	60
Craig	25	111	1135	1135	1230	1	55
Michael	19		1150	1150	1255	5	65
Randy	22	111	1210	1210	110	0	60
Vic	25	1	1230	1230	130	2	60
Jared	19	111	1245	1245	140	3 L	55
Craig	25	11	1-	1-	2-	3	60
Michael	22	11	115	115	230	1	65
Casey	25	111	130	130	230	4	60
Randy	24	11	145	145	245	6	60
Vic	24		2-	2-	305	5	65
Brandon	24	1	215	215	320	4	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	22	1	230	231	330	3 L	60
Jared	25	1	245	245	345	3	60
Michael	18		3-	3-	410	5	70
Casey	20	11111	315	315	420	0	65
Brandon	22	1	330	330	435	5	65
Randy	15		345	345	445	3	60
Jared	10	1	410	410	505	1	55
Vic	22	1	435	435	530	4	55
Craig	14	111	5-	5-	555	3	55
Randy	15	11 dog	530	530	630	5	60
Craig	2		6-	6-	705	1	65
Vic	8		630	630	730	1	60
Randy	18		730	730	830	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1210
Nicole	11:30-9	3-
PHOTO LAB		
Mari	8-4	✓
Katy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8-4:30	1155
Jared	9-5:30	150
Casey	10-6:30	1240
Michael	10-4	—
Craig	11-7	345
Randy	12-9	255
Vic	12:30-9	35

FANTASTIC CAVERNS

726
- 5 [illegible]
721

721

Date Aug. 13-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 74° am. Sunny 83° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2715830	1290407		7624
End	2716230	1290733		7632

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	21	1	915	915	1015	5	60
Casey	20	11111	950	950	1045	7	55
Vic	11	1	1020	1020	1120	2	60
Russ	19	1111	1040	1040	1145	4	65
Karen	24	11	11-	11-	1155	6	55
Randy	23	1111	1115	1115	1220	1	65
Jared	25	dog	1130	1130	1230	5	60
Vic	25	1	1145	1145	1240	1	55
Casey	25	1	12-	12-	1255	3	55
Karen	25	11	1215	1215	110	6	55
Russ Randy	39	11111	1230	1230	135	5	65
Vic	26	church GR	1250	1250	150	2	60
Casey Jared	50	PB 11111	110	110	210	9	60
Karen	25	11	130	130	230	3	60
Russ	24	1111 dog	150	150	255	4	65
Randy	25	11111	205	205	310	2	65
Jared	20	111111	220	220	315	2	60
Karen	23	dog	235	235	330	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	25		250	250	340	1	50
Vic	24	11111	305	305	400	3	55
Russ	25	PB 1111	320	320	425	2	65
Randy Jared	50	PB 11111	340	340	440	6	60
Casey	22	11111	355	355	455	4	60
Vic	25	111	420	420	515	5	55
Jared	24	dog 111111	445	445	545	0	60
Vic	23		520	525	625	3	60
Randy	23	PB 11	550	550	700	2	70
Jared	18	11	625	625	720	4	55
Randy	12	111	705	710	815	2	65
Jared	5		745	745	740	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1-
Nicole	11:30-9	315
PHOTO LAB		
Mandy	8-4	✓
Mari	12-9	✓

GUIDE	SCHEDULE	LUNCH
Russ	8-4:30	1 1150
Casey	9-5:30	215
Vic	10-6:30	2-
Karen	11-4	1 —
Randy	11-9	450
Jared	11-9	550

FANTASTIC CAVERNS

703

Date August 14, 2015

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Overcast am. Clady 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2716230	1290733		07632
End	2716635	1291032		07642

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	1		8:35	8:35	9:35	1	60
Brandon	4		9:20	9:20	10:20	1	60
Russ	19	III	10	10	11	3	60
Ron	23	I	10:20	10:20	11:20	6	60
Rick	18		10:40	10:40	11:40	4	60
Brandon	21	I	10:55	10:55	11:55	5 L	60
Russ	21	IIII	11:10	11:10	12:15	5	65
Carrie Katie	46	I	11:25	11:30	12:30	6	60
Casey	21		11:45	11:45	12:45		60
Ron	25	III	12	12	1:00	2	60
Rick	24	I	12:15	12:15	1:15	5	60
Carrie	26	III	12:30	12:30	1:35		60
Katy	25	II	12:45	12:50	1:50	6	60
Casey	15	III	1:05	1:05	2:05	5	60
Ron	24		1:20	1:20	2:20	4	60
Russ	25	II	1:35	1:35	2:35	8	60
Brandon Carrie	48	III	1:50	1:50	2:50	6	60
Rick	14	IIIII	2:05	2:05	3:05	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Katy	48	I	2:20	2:20	3:20	8	60
Ron	24		2:35	2:35	3:40	7	65
Russ	23	II IIIII	2:50	2:50	4	4	70
Brandon Carrie	48	III	3:05	3:05	4:10	10	65
Rick Katie	44	IIII	3:20	3:25	4:25	7 H	60
Ron	24	II	3:45	3:50	4:50	1 L	60
Casey	19	II	4	4:05	5:05	7	60
Katie	18	IIIII	4:20	4:20	5:20	2	60
Rick	25	II R L	5:00	5:00	5:50	5	50
Carrie	8		5:15	5:15	6:10	1	55
Casey	5	II	5:50	5:50	6:50	0	60
Carrie	13		6:30	6:30	7:30	4	60
Casey	4		7	7	7:55	1	

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-4:30	3:30
Madi	11:30-9:00	✓
PHOTO LAB		
Amanda	8-4:00 H	✓
Katy	12-9:00	✓

GUIDE	SCHEDULE		LUNCH
Brandon	8-4:30	H	12
Russ	8-4:30	H	12:30
Rick	9-5:30	H	1:35
Ron	10-6:30	H	?
Carrie	11-9:00		4:20
Casey	11-9:00		3:25
Katie	11:30-4	H	—

FANTASTIC CAVERNS

355

Date August 15, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Foggy 67° am. Rain 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2716635	1291032		07647
End	2716992	1291032		7655

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Brandon	4		8:40	8:45	9:40	2	55
Vic	2		9:15	9:15	10:20	1	65
Brandon	14		9:50	9:50	10:40	4	50
Jared	24	11	10:20	10:20	11:20	1	60
Vic	17	IIIII	10:35	10:35	11:35	3	60
Brandon	25	1	11	11	12	5	60
Michael	13	1	11:30	11:30	12:30	4	60
Carrie	15	III	11:50	11:50	12:50	4	60
Jared	12		12:10	12:10	1:10	1	60
Vic	13	11	12:30	12:35	1:35	1	60
Rick	21	III	12:50	12:55	1:50	6	55
Karen	9		1:10	1:10	2:10	0	60
Michael	19		1:30	1:30	2:30	4	60
Carrie	22	11	1:45	1:45	2:45	4	60
Rick	21	III	2:05	2:05	3:05	5	60
Brandon	4	III	2:20	2:25	3:25	6	60
Jared	21		2:40	2:45	3:45	6	60
Karen	12	11	3:05	3:05	4:05	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	15	III	3:20	3:25	4:15	1	60
Brandon	15	11	3:40	3:45	4:45	3	60
Carrie	14	1	4:30	4:30	5:25	4	55
Jarod	11		4:55	4:55	5:45	1	50
Rick	4	11	5:30	5:30	6:30	2	60
Carrie	18		6:20	6:20	7:15	3	55
Rick	6		6:50	6:50	7:45	2	55

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4:30 (1PM)	✓
Scot	11:30-9	5-
PHOTO LAB		
Melissa	8-4	✓
Katy	12-9	✓

GUIDE	SCHEDULE	LUNCH
Brandon	8:40-4:30	1:00
Vic	9-2	—
Jared	10-6:30	
Carrie	11-9	1:50
Michael	11:30-4	—
Rick	12-9	
Karen	12:30-5:30	—

FANTASTIC CAVERNS

249

Date August 16, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Rainy 67° am. Sunny 82° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2716992	1291032		7655
End	2717241	1291032		7666

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	4		9-	9-	10-	0	60
Nick	9		10-	10-	11-	3	60
Karen	15	Dog 6	1030	1030	1130	2	60
Nick	25	1111	11-	1105	1150	11	75
Karen	23		1130	1130	1230	3	60
Nick	24	11 Dog	12-	1205	1250	5	55
Karen	14	111	1230	1235	130	4	55
Nick	18		1-	100	200	1	60
Craig	20	1111	130	130	230	3	60
Ron	22	11	210	210	310	5	60
Craig	9		245	250	350	4	60
Ron	15		330	330	430	3	60
Craig	20	1	4-	4-	355	2	55
Ron	9	1	445	445	555	1	70
Russ	5		515	515	615	1	60
Craig	3	11	610	610	710	1	60
Russ	7		7-	7-	800	1	70
Ron	2		8-	8-	855	0	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Hodi	8-1	—
Scot	1-8	4-
Sue	230-8	525
PHOTO LAB		
Marci	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Nick	9-2	—
Craig	1-730	505
Ron	2-9	6-
Russ	5-9	—

FANTASTIC CAVERNS

166

Date August 17th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 82° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2717241	1291032		7666
End	2717410	1291032		7671

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	12	1	9-	905	10-	4	55
Rick	5	1	950	10-	1055	2	55
Carrie	10	1	1030	1035	1130	2	55
Ron	18	III	1110	1115	1205	3	50
Rick	14		1140	1150	1250	4	60
Carrie	5		1220	1220	120	2	60
Rick	12	II	1255	1255	145	3	60
Vic	8		120	125	230	4	65
Carrie	15		150	155	250	3	55
Nicole	13	III	215	215	310	3	55
Vic	13	II	240	240	330	0	50
Nicole	9	1	320	320	410	1	50
Vic	11	dog	4-	4	5-	1	60
Brandon	4		420	420	520	1	60
Nicole	6		450	450	540	1	50
Brandon	7		530	530	640	2	70
Vic	4		620	620	720	0	60
Brandon	3		645	645	755	0	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-100	—
Sue	230-900	4-
PHOTO LAB		
Melissa	8-400	✓
Amanda	12-900	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-100	—
Rick	9-200	—
Carrie	10-300	—
Brandon	4-900	—
Katy	5-900	Sick
Nicole	2-9	415
Vic	1-730	505

FANTASTIC CAVERNS

254

Date August 18, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 70° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2717410	1291032		7671
End	2717470	1291032		7675

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	2		910	910	1020	1	70
Jared	14		940	945	1050	3	65
Michael	20	III	1010	1030	1130	3	60
Carrie	9		11–	11–	1200	1	60
Jared	16		1125	1135	1230	2	55
Michael	14	1	12–	1205	105	1	60
Carrie	17	1	1230	1230	130	1	60
Jared	22		1250	1250	150	3	60
Vic	10	1 pk	115	120	220	2	60
Michael	19	1	145	155	205	1	70
Carrie	16	1	210	220	320	6	60
Randy	9		240	240	340	1	60
Vic	25	1 dug	320	320	425	3	65
Randy	19	PB PB 11 PB	350	4–	505	2	65
Vic	16	1	430	430	530	4	60
Randy	8	1	510	530	630	1	60
Vic	19	IIII	630	630	730	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Vadi	8-1	—
Sue	730-9	405
PHOTO LAB		
Mandy	8-4	✓
Melissa	12-9	✓

GUIDE	SCHEDULE	LUNCH
Michael	8-1	—
Jared	9-2	—
Carrie	10-3	—
Vic	1-830	535
Randy	2-9	630

FANTASTIC CAVERNS

266

Date Aug 19-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Sunny 88° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2717672	1291032		7675
End	2717939	1291032		7676

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	11	dog	830	830	930	1	60
Randy	11		915	915	1000	3	65
Vic	9	1	1020	1020	1120	2	60
Carrie	15	11	1040	1040	1145	5	65
Randy	12	1	11-	11-	1205	3	65
Vic	24	1	1130	1130	1230	4	60
Carrie	16	1 PB 1	1150	1155	12-	2	65
Randy	3		1230	1230	135	1	65
Carrie	24	1	1-	1-	2-	3	60
Jared	8		130	130	230	1	60
Randy Carrie	39	PB 14 1	205	205	310	3 14 14	65
Casey	12	11	230	230	335	2	65
Jared	14	11 PB	310	315	410	5	55
Casey	15		350	350	450	3	60
Jared	12	11	440	440	540	2	60
Casey	4		530	530	630	1	60
Jared	13		610	610	615	2	65
Casey	8		635	635	725	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	10		715	720	820		60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	110
Nicole	12:30-9	330
PHOTO LAB		
Katy	8-4	✓
Mari	12-9	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-1	—
Randy	9-2-3 No lunch	—
Carrie	10-3	—
Jared	1-8:30	235
Casey	2-9	430

FANTASTIC CAVERNS

462

464

Date August 20, 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 70° am. Cloudy 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2717939	1291032	/	7476
End	2718404	1291032	/	7681

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen.	12	III	930	930	1030	2	60
Randy.	26	PB	10	10	1105	4	65
Carrie	13	IIII	1020	1020	1120	2	60
Karen	22	III	1045	1045	1140	7	55
Jared	24	IIIII	1105	1105	12	7	55
Randy	12	III	1120	1120	1225	3	65
Carrie	12	II	1140	1140	1240	4	60
Karen.	24	III	12	12	1	2 H	60
Jared.	18	I	1220	1220	120	2	60
Randy.	21		1250	1250	155	5 H	65
Carrie	25	I	105	105	205	8	60
Carry Russ.	49	chart	120	120	230	17	70
Jared	25	IIII	140	140	240	3	60
Carrie	25	IIII	210	210	310	3	60
Ron.	25	III	230	230	330	7	60
Jared.	22	I	250	250	345	2	55
Casey.	25	I	320	320	420	6	60
RON.	25		405	405	500	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey.	15	II	435	435	530	2	55
Ron.	11		515	515	615	2	60
Casey.	25		605	605	705	3	60
Ron.	6	I	645	645	745	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	225
Nicole	12:30-9	315
PHOTO LAB		
Mari	8-4	✓
Amanda	12-9	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Randy	9-2	—
Carrie	10-3	—
Russ	11-3	—
Jared	11-4	—
Casey	1-9	535
Ron	2-9	645

FANTASTIC CAVERNS

348

Date August 21, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2718404	1291032		7681
End	2718752	1291032		7686

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	6		9:30	9:35	10:35	2	60
Casey	9	1	10:00	10:00	10:55	2	55
Cannie	24		10:20	10:20	11:20	6	60
Katie	13	pov	10:45	10:45	11:45	2	60
Jared	12		11:00	11:00	12:00	3	60
Brandon	5	1	11:20	11:25	12:25	2	60
Cassie	23		11:50	11:50	12:50	4	60
Jared	21		12:10	12:10	1:10	2	60
Cannie	17	1	12:25	12:25	1:25	4	60
Katy	20	11	12:45	12:45	1:45	6	60
Brandon	19	1	1:15	1:15	2:15	4	60
Carrie	21		1:30	1:35	2:30	3	55
Katy	23		1:45	1:45	2:45	2	60
Ron	14	III	2:05	2:10	3	4	50
Rick	23	IIII	2:25	2:25	3:25	3	60
Brandon	21	1	2:50	2:50	3:50	0	60
Ron	22	III	3:25	3:25	4:25	7	60
Rick	18	III	3:55	4:00	5	4	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	18	1	4:50	4:50	5:55	1	55
Rick	14	II	5:30	5:30	6:30	3	60
Rick	2		6:30	6:35	7:30	0	50
Ron	5		7:15	7:15	8	2	

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-2:00	✓
Madi	1:30-8:00	✓
PHOTO LAB		
Amandi	8-4:00	—
Marci	12-8:00	✓

GUIDE	SCHEDULE		LUNCH
Jared	8-1	H	—
Casey	9-2	H	—
Carrie	10-3	H	—
Katy	10-3	H	—
Brandon	11-4	H	—
Ron	1-7:30		6
Rick	2-8:00		

FANTASTIC CAVERNS

156

Date August 22, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 63° am. Sunny 80° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2718752	1291032		7686
End	2718908	1291032		7687

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	1		9-	9-	950	1	50
Craig	7		1020	1020	1120	2	60
Michael	18		1050	11-	1200	4	60
Casey	19	IIII	1120	1120	120	4	60
Craig	11		12-	1205	100	4	55
Michael	4	1	1240	1240	1248	1	65
Craig	12		105	105	110	1	65
Ron	20		120	125	220	4	60
Michael	8		200	200	315	2	75
Randy	6		230	230	435	2	65
Ron	13	II	315	315	420	4	65
Randy	1		4-	4-	5-	0	60
Ron	14		440	445	6-	2	75
Randy	8		530	530	640	2	65
Ron	7		610	610	715	0	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	—
Nicole	130-8	4-
PHOTO LAB		
Marci	8-4	✓
Mandy	12-8	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-1	—
Craig	9-2	—
Michael	10-3	—
Ron	1-730	420
Randy	2-8	5-

FANTASTIC CAVERNS

188

Date August 23, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Rain 72° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2718908	1791032		7687
End	2719096	1291032		7690

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	9	1	830	830	930	1	60
Nick	4		905	905	950	2	45
Karen	2		940	940	1040	1	60
Nick	14		1030	1035	1130	4	55
Karen	24	1	1130	1135	1235	0	60
Nick	24	111	12-	1200	1255	4	55
Karen	16		1240	1250	145	4	55
Craig	12	1	110	115	210	4	55
Rick	15		140	140	230	5	50
Ron	12	1	210	210	305	1	55
Craig	16		310	310	420	2	70
Ron	8		325	345	445	3	60
Craig	10		420	420	540	4	80
Russ	6		5-	500	600	1	60
Sue	14		540	545	645	3	60
Craig	2		640	640	740	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-8	350
PHOTO LAB		
Melissa	8-4	✓
Katy	12-8	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Nick	9-2	—
Craig	1-730	545
Ron	2-5	—
Russ	5-8	—

FANTASTIC CAVERNS

158

Date August 24, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 81° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2719096	1291032		7690
End	2719254	1291032		7691

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	3	1	910	915	10-	1	45
Rick	13		940	945	1035	2	50
Carrie	21		1020	1030	1120	5	50
Jared	8		11-	11-	1150	0	50
Rick	21	3 strgs 11	1130	1135	135	7	60
Jared	11		12-	1205	110	4	65
Carrie	9		1215	1230	130	2	60
Vic	13	111	1250	1250	150	2	60
Rick	5		105	105	2-	1	55
Carrie	25		150	150	250	1	60
Vic	12		220	220	320	3	60
Vic	8	111 dog	340	345	440	2	55
Brandon	5		5-	5-	610	4	70
Katy	4		6-	6-	7-	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-1	—
Scot	1-2	—
Sue	130-8	325
Nicole	8-5 (GS)	1210
PHOTO LAB		
Melissa	8-4	✓
Katy	12-8	✓

GUIDE	SCHEDULE	LUNCH
Jared	8-1	—
Rick	9-2	—
Carrie	10-3	—
Vic	12-5	—
Brandon	4-8	—
Katy	5-8	—

FANTASTIC CAVERNS

162

Date August 25, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 72° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2719254	1291032		7691
End	2719416	1291032		7691

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	20	Group	830	835	1005	0	90
Jared	12		940	940	1035	4	55
Vic	10	11	1010	1010	1110	2	60
Michael	10	Dog	1040	1050	1150	3	60
Jared	11		1120	1120	1210	1	50
Vic	10		1150	1155	1255	3	60
Michael	4		1210	1210	110	0	60
Jared	3		1230	1230	130	1	60
Rick	12		1250	1255	155	1	60
Vic	11	111	120	120	215	1	55
Jared	21		140	140	245	5	65
Rick	6	Group	2-	200	3-	3	60
Vic	10		240	240	340	1	60
Rick	7		335	335	430	2	55
Vic	8		420	420	520	0	60
Rick	2		455	455	6-	1	65
Russ	2		630	630	740	1	70
Rick	3	1	7-	7	750	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-8	335
Marci	8-5 (GS)	✓
PHOTO LAB		
Katy	8-4	✓
Mandy	12-8	✓

GUIDE	SCHEDULE	LUNCH
Michael	8-1	—
Jared	8-2 (3)	—
Vic	10-5	345
Rick	12-8	305
Russ	5-8	—

FANTASTIC CAVERNS

240

Date August 26 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 72° am. Cloudy 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2719416	1291032		7691
End	2719656	1291032		7696

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	11	1	915	915	1015	1	60
Vic	12		955	955	11 -	4	65
Michael	14		1035	1035	1135	2	60
Vic	21	IIII	1110	1110	1210	0	60
Casey	24	II	1140	1140	1240	5	60
Michael	25		1225	1225	135	1	70
Vic	23		1245	1245	150	6	65
Casey	7		125	125	215	1	50
Jared	18	IIIII	2 -	2 -	252	3	55
Vic	13	IIII	240	240	335	2	55
Jared	18	1	315	315	1120	2	65
Vic	15	III	350	350	455	2	65
Casey	17	IIIIII	440	440	530	3	50
Jared	22		515	515	615	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1235
Nicole	12:30 - 8	320
(Maria GS)	8-5	1 -
PHOTO LAB		
Mandy	8-4	✓
Katy	12 - 8	✓

GUIDE	SCHEDULE	LUNCH
Michael	8 - 1	—
Vic	9 - 5:30	2 -
Casey	11:30 - 8	225
Jared	1 - 7:30	425

FANTASTIC CAVERNS

404

405

Date August 27-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2719456	1291032		7696
End	2720061	1291032		7706

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	4		830	830	930	2	60
Randy	19		915	915	1020	10	65
Karen	23	1111	945	945	1050	7	65
Nicole	9	11	1010	1010	1110	3	60
Randy	23	11	1050	1050	1150	6	60
Karen	24	1111	1110	1110	1210	3	60
Vic	25	1111	1130	1130	1230	3	60
Michael	24	11	1205	1205	110	7	65
Randy	24	1	1225	1225	125	4	60
Vic	25	11111	1240	1245	145	9	60
Casey	22	1	110	110	2-	7	50
Michael	22	1	140	140	240	6	60
Vic	21	11	205	205	3-	7	55
Craig	22	dog 11	230	230	330	5	60
Michael	14		250	250	350	1	60
Vic	20	dogs	310	310	405	3	55
Casey	17	1	330	330	430	2	60
Michael	22	1 dog	355	355	5-	0	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	15	11	430	430	520	1	55
Casey	9	111	520	525	615	5	50
Craig	15	11111	605	605	710	2	65
Casey	5		640	640	630	2	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1140
Nicole	12:30-8	215
PHOTO LAB		
Katy	8-4	✓
Melissa	12-8	✓

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Randy	9-2	—
Nicole	10-3	—
Vic	11-4	—
Michael	12-5	—
Casey	1-7:30	230
Craig	2-8	345

FANTASTIC CAVERNS

393

Date August 28th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny am Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720061	1291032		7706
End	2720456	1291082		7715

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	6	1	8:35	8:35	9:25	1	60
Casey	9	Dog	9:15	9:15	10:15	2	60
Jared	13		9:40	9:40	10:40	4	60
Craig	7		10:05	10:20	11:20	1	60
Casey	18	1	10:45	10:50	11:30	4	60
Jared	25	IIII	11:05	11:10	12:10	4	60
Brandon	16	II	11:25	11:30	12:20	2	50
Craig	23		11:05	11:45	1:45	1	60
Casey	22	Dog	12:00	12:00	1	3	60
Brandon	15		12:30	12:30	1:30	3	60
Craig	22	1	12:50	12:55	1:55	4	60
Jared	15	III	1:10	1:10	2:10	2	60
Brandon	23	1	1:30	1:40	2:40	4	60
Casey Craig	45		1:50	2:00	3:00	7	60
Rick	11	1 Dog	2:20	2:25	3:35	3	70
Brandon	15	III	2:45	2:50	4:25	3	75
Jared	19	IIII	3:30	3:30	4:10		40
Rick	19	IIIIIII	4:00	4:05	5	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	24	1	4:35	4:35	5:35	5	60
Rick	26	III	5	5	6	4	60
Jared	13	Dog	5:40	5:40	6:45	3	65
Rick	9		6:20	6:20	7:10	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Sloty	8-2:00	✓
Nadia	1:30-8:00	✓
PHOTO LAB		
Melissa	8-4:00	✓
Kathryn	12-8:00	✓

GUIDE	SCHEDULE		LUNCH
Jared	8-7:30	H	1:30
Casey	9-3:30	H	✓
Craig	10-3:00	H	—
Brandon	11-4:00	H	—
Rick	2-8:00		No lunch

FANTASTIC CAVERNS

150

Date August 29, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Partly Cloudy 75° am. Clear 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720456	1791032		07715
End	2720606	1791032		7719

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		835	835	930	1	55
Craig	5	1	10-	10-	1105	0	60
Casey	5		1035	1035	1110	2	50
Craig	18		1110	1110	1210	4	60
Casey	18		12-	12-	1255	4	55
Rick	12		1220	1225	125	5	60
Craig	9		100	100	200	2	60
Casey	11	1	125	125	215	2	50
Rick	14		200	200	255	2	55
Casey	12	111	3-	3-	4-	4	60
Rick	22	1	4-	4-	500	4	60
Rick	3		510	510	505	1	55
Katy	7	1	535	540	655	1	75
Rick	12		615	615	715	6	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	
Nicole	130-8	
PHOTO LAB		
Mandy	8-4	✓
Melissa	12-8	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	—
Craig	9-2	—
Ron	11-4	Dick
Rick	7-8 12-8	310
Katy	5-8	—

FANTASTIC CAVERNS

116

Date August 30, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 73° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720606	1291032		7719
End	2720722	1291032		7720

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	11	209	10	10	1050	2	50
Nick	6		1025	1025	1120	3	55
Michael	6		11	1105	1201	2	60
Craig	8	1	1135	1135	1:35	4	60
Rick	11	111	1270	1240	135	4	50
Michael	8		1240	1240	145	1	65
Craig	15		1[illegible]	115	220	2	65
Michael	12		140	150	255	1	65
Rich	13	11	220	220	330	3	70
Craig	12	1	300	3	4	3	60
Michael	13		340	340	445	0	65
Craig	1		520	520	620	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-8	335
PHOTO LAB		
Mandy	8-4	✓
Marci	12-8	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-12	—
Nick	9-4	125
Michael	10-3	—
Craig	11-8	410
Ron	2-8	Sick
Russ	5-8	—

FANTASTIC CAVERNS

93

Date August 31, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Rain 73° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720722	1291032		7720
End	2720815	1291032		7724

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	1		9-	9-	940	1	40
Rick	1	11	930	935	1030	1	55
Ron	13		1030	1130	1120	2	50
Craig	14		1130	1135	1230	4	50
Ron	4		1200	1200	100	2	60
Rick	7		1230	1220	120	3	60
Vic	4		100	105	155	2	50
Craig	15		130	130	250 *	3	80
Vic	7		210	215	310	1	55
Craig	4		305	305	415	1	70
Vic	7		340	340	440	0	60
Brandon	10	1111	430	430	535	3	65
Katy	2	dis	545	545	650	1	65
Brandon	4		630	630	725	0	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO
* breakdown						

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-8	340
PHOTO LAB		
Melissa	8-4	✓
Marci	12-8	✓

GUIDE	SCHEDULE	LUNCH
Ron	8-1	—
Rick	9-2	—
Craig	11-4	—
Vic	12-5	—
Brandon	4-8	—
Katy	5-8	—

FANTASTIC CAVERNS

128

Date September 1, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 70° am. Sunny 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720815	1291032	/	7724
End	2720943	1291032	/	7724

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		920	920	1015	1	55
Randy	6		945	950	1045	1	55
Rick	8		1015	1015	1120	2	65
Karen	10		1045	1050	1150	2	60
Randy	11	IIII	1120	1120	1220	3	60
Rick	6		1145	1145	1250	1	65
Karen	2		1230	1230	135	1	65
Randy	8		100	100	2-	2	60
Jared	9		130	130	230	4	60
Karen	2		150	150	3-	1	70
Jared	11	1	235	235	330	0	55
Vic	22	II	310	310	410	5	60
Jared	9	III	4-	400	5-	0	100
Vic	8	I	430	430	530	0	60
Jared	12	IIII	545	545	650	1	65
Jared	2	II	7-	7-	750	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-100	—
Sue	130-800	350
PHOTO LAB		
Amanda	8-4	✓
Melissa	12-8	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-100	—
Randy	9-200	—
Karen	1030-330	—
Jared	1-800	505
Vic	230-800	—

FANTASTIC CAVERNS

273

Date September 2 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 63° am. Clear 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2720943	1291032		7724
End	2721216	1291032		7727

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	4		830	830	925	2	55
Randy	7		910	910	1015	2	65
Rick	12	11	10	10	1055	5	55
Randy	9		1030	1030	1130	3	60
Michael	9	11	1050	1050	12	2	70
Rick	7	1	1120	1120	1220	1	60
Randy	10	111	1150	1150	1250	2	60
Michael	8		1220	1220	125	4	65
Craig	26		105	110	205	4	55
Michael	12		125	130	235	1	65
Randy	23		210	210	305	1	55
Michael	15		235	240	340	2	60
Jared	25	//////	315	315	405	3	50
Craig	23	11	335	335	445	5	70
Randy Michael	39	Tifan 34	350	350	5	6	70
Jared	15		430	430	540	2	70
Craig	17	11	530	530	530	2	65
Jared	6		610	610	6	2	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	7		645	645	745	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1230
Nicole	12:30-8	3
Logan (GS)	8-5	✓
PHOTO LAB		
Kate	8-4	✓
Melissa	12-8	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-1	—
Randy	9-4:30	100
Michael	10:30-3:30	—
Craig	1-8	250
Jared	2:30-8	—

FANTASTIC CAVERNS

799

799

Date September 3-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather cloudy 63° am. clear 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2721216	1291032	/	7727
End	2721691	1291356	/	7739

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	6		830	830	925	0	55
Randy	17	1	930	930	1030	2	60
Vic	16		950	950	1050	3	60
Karen	22	11111	1000	100	1100	3	60
Russ	24	11	1030	1030	1135	7	65
Jared	24	1	1045	1045	1145	4	60
Randy	16	111	11-	11-	12-	3	60
Michael	22	1111	1120	1120	1220	6	60
Vic	25	111	1140	1140	1245	3	65
Karen	25	111	1155	1155	1255	8	60
Russ Ron	46	11111	1215	1215	120	9	65
Jared Randy	48	dog 111111	1235	1235	140	10	65
Craig	25		1255	1255	155	5	60
Michael	25	11111	110	110	215	5	65
Vic Ron	49	1111	130	130	230	6	60
Karen	25	1	145	145	250	4	65
Jared Craig	48	11 dog	2-	2-	310	9	70
Russ	23	11 PB 1	215	215	325	3	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy Michael	47	1111	230	230	330	4	60
Vic Ron	49	111 PB 1	3-	3-	4-	7	60
Russ	23	111	320	320	320	5	60
Randy Michael	48	11111	340	340	450	3	70
Jared Craig	49	111	4-	4-	505	7	65
Russ	24	dog 1	430	430	530	5	60
Craig	24	1	505	515	615	7	60
Jared	23	11	540	540	635	1	55
Craig	24	1	620	625	735	6	70
Jared	6		715	715	810	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1205
Nicole	11:30-8	215
PHOTO LAB		
Mami	8-5	✓
Amanda	10-8	✓

GUIDE	SCHEDULE	LUNCH
Vic	8-4:30	1255
Randy	9-5:30	150
Karen	10-3	—
Russ	10-6:30	130
Jared	10:30-8	315
Michael	11-4	—
Craig	12:00-8	315
Ron	11:30-4	—

FANTASTIC CAVERNS

832

832

Date September 4th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 55° am. Clear 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2721691	1291356		7739
End	2722061	1291818		07753

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy	7		8 35	8 35	9 35	3	60
Jared	9	11	9 05	9 05	10 00	2	55
Casey	15	1	9 25	9 25	10 25	1	50
Katy	17		9 50	9 50	10 50		60
Jared	22	1111	10 15	10 15	11 10	6	55
Russ	19	1	10 30	10 30	11 25	3	55
Casey	23	111	10 45	10 45	11 40	8	55
Katy Brandon	47	111 OL	11 -	11 05	12 05	9	60
Jared	24	11111	11 20	11 20	12 15	5	55
Russ Nicole	49	1111	11 35	11 35	12 35	12	60
Mick	23	11	11 50	11 50	12 45	5	55
Casey Brandon	50	2 Dogs 1	12 05	12 10	1 05	11	55
Jared	23	1	12 25	12 25	1 25	2	60
Russ Katy	48	1111	12 40	12 45	1 35	6	50
Mick	24	1111 11	12 55	12 55	1 55	5	60
Brandon Craig	48	1111	1 15	1 15	2 20	11	65
Jared	24		1 30	1 30	2 30	2	60
Casey	24	1	1 45	1 45	2 50	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Katy	25	1	2 -	2 -	3 -		60
Russ Craig	49	111	2 25	2 30	3 25	7	55
Mick	24	1	2 45	2 45	3 50	3	65
Brandon Casey	43	111	3 -	3 10	4 -	3	50
Jared Katy	50	11	3 30	3 30	4 35		65
Mick Russ	46	1	4 -	4 -	5 -	7	60
Casey	24	1	4 35	4 25	5 30	3	65
Brandon	24		4 45	4 50	5 50	4	60
Jared	20	11	5 -	5 05	6 -	8	55
Russ	23	111	5 25	5 25	6 25	4	60
Rick	14		5 45	5 45	6 45	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 4 30	✓
Madi	11 30 - 7 00	✓
PHOTO LAB		
Katie	8 - 5	✓
Marci	10 - 7	✓

GUIDE	SCHEDULE	LUNCH
Katy	8 - 4 30 H	12 10
Casey	9 - 5 30 H	1 15
Jared	9 - 6 30	2 40
Russ	10 - 6 30	1 45
Rick	10 30 - 7 00	2 -
Brandon	10 30 - 7 00	2 25
Nicole	10 30 - 7 00	3 05
Craig	11 30 - 7 00 8 40 Rick	—

FANTASTIC CAVERNS

602

Date September 5, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 86° am. sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2722061	1291818		07753
End	2722318	1292164		7757

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	17		8:35	8:40	9:30	6	50
Jared	5	1	9:20	9:20	10:10	0	50
Casey	11	11	9:45	9:55	10:40	2	45
Karen	21		10:15	10:15	11:10	3	55
Russ	24		10:30	10:35	11:30	3	55
Michael Jared	49	dog |||||	10:45	10:50	11:50	9	60
Casey	18	|||	11:-	11:-	11:55	4	55
Karen	23	||||	11:20	11:20	12:15	5	55
Nick	43	||	11:40	11:40	12:40	5	60
Russ	24	|||	12:-	12:-	1:05	3	65
Michael	14	||	12:15	12:15	12:25	6	60
Karen	24	||	12:35	12:35	1:30	6	55
Jared	21	||||	12:55	12:55	1:55	1	60
Ron	24		1:10	1:10	2:10	6	60
Michael	24	||||||	1:25	1:30	2:30	5	60
Karen Nick	42	dog |||||	1:40	1:40	2:40	3	60
Russ	23		2:-	2:-	3:-	1	60
Casey	20	|||	2:15	2:16	3:15	5	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	17	|||	2:35	2:35	3:30	3	55
Michael	24	dog	2:50	2:55	4:15	4	85
Ron	23	||	3:15	3:15	4:15	6	60
Casey	20	||||||	3:35	3:35	4:25	3	50
Russ Nick	48	||	4:-	4:-	5:05	3	65
Jared	16	1	4:25	4:25	5:35	3	70
Ron	25		4:45	4:45	5:45	6	60
Russ	2		5:10	5:16	6:15	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-4:30	✓
Nicole	9:30-7	12:40
Scot	1-2	3:05
PHOTO LAB		
Melissa	8-3	✓
Mandy	10-7	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	12:-
Jared	9-7	12:-
Russ	10-6:30	1:15
Karen	10:30-3:30	—
Michael	10:30-3:30	—
Ron	11:30-7	2:20
Nick	11:30-7	3:15
Craig	9-5:30 Sick	—

FANTASTIC CAVERNS

228

Date September 6, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 83° am. Sunny 91° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2722318	1292164		07757
End	2722546	1292164		7759

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	7		840	850	940	1	50
Ron / Rick	45 3	Group	925	925	930	2	65
Casey	8		950	950	1040	1	50
Scot / Sue	45	Group	1005	1005	1105	0	60
Rick	10	11	1040	1040	1135	3	55
Ron	24	11	1170	1120	1240	6	75
Casey	3		1150	1150	1250	1	60
Rick	5		1230	1230	125	1	55
Ron	17	111	1255	1255	155	2 11	60
Rick	16	111	130	130	230	3 11	60
Karen	17	1	2-	2-	3-	5	60
Michael	4		230	230	340	2	70
Karen	7	1111	345	345	445	3	60
Michael	3		415	415	530	1	75
Karen	11		5-	5-	6-	4	60
Russ	1		530	530	630	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Sue	930-7	225
Scot	1-2	✓
PHOTO LAB		
Katy	8-1	—
Melissa	1-7	

GUIDE	SCHEDULE	LUNCH
Casey	8-1	—
Ron	9-2	—
Rick	9-230	—
Karen	130-7	—
Michael	130-630	—
Russ	5-7	—

FANTASTIC CAVERNS

106

Date September 7th 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 84° am. Sunny 89° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2722546	1292164		7759
End	2722652	1292164		7759

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	5		835	835	935	2	60
Nick	6		910	915	1015	2	60
Ron	6		10-	10-	1100	1	60
Rick	5		1030	1035	1125	2	50
Vic	11	11	11-	1100	1150	2	50
Ron	8		1125	1125	1225	1	60
Rick	7		1210	1210	105	0	55
Randy	7	Dog	1245	1250	150	1	60
Vic	6		120	120	220	1	60
Randy	15	1	155	155	3-	1	65
Vic	6	dog	230	230	330	2	60
Randy	8		310	310	415	0	65
Vic	9	11	350	350	445	3	55
Brandon	6		435	440	540	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 1:00	—
Sue	1:30 - 7:00	—
Logan	8-4	12-
PHOTO LAB		
Amanda	8 - 1	—
Marci	1 - 7	

GUIDE	SCHEDULE	LUNCH
Ron	8 - 1	—
Rick	9 - 2	—
Vic	11 - 5	—
Randy	12 - 7	415
Katy	5 - 7	sick
Brandon	4:30 - 7	—

FANTASTIC CAVERNS

184

Date September 8, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 75° am. Rain 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2722652	1292164		7759
End	2722836	1292164		7759

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	5		830	845	950	0	65
Randy	13		940	940	1045	2	65
Michael	21	1	1010	1020	1130	6	70
Rick	11		1050	1050	1140	4	50
Randy	24	IIII	1120	1120	1220	3	60
Michael	22	1	1150	1150	1250	1	60
Rick	8	II	1210	1210	105	2	55
Randy	12	III	1230	1235	135	1	60
Rick	4		115	115	205	0	50
Vic	8		145	145	245	1	60
Rick	7	1	220	215	305	1	50
Jared	20		3-	3-	4-	2	60
Vic	11		330	330	425	2	55
Jared	9		410	410	510	3	60
Vic	7		5-	5	605	3	65
Jared	2		545	545	645	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-7	—
PHOTO LAB		
Marci	8-1	—
~~Katy~~ Melissa (sick)	1-7	—

GUIDE	SCHEDULE	LUNCH
Michael	8-1 H	—
Randy	9-2	—
~~Ron~~	~~1030-330~~ went home sick	—
Rick	1030-330	—
Vic	130-7	—
Jared	2-7	—

FANTASTIC CAVERNS

220

Date September 9-2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Cloudy 70° am. Rainy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2722836	1292164		7759
End	2723056	1292164		7759

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
VIC	14	11	950	950	1050	3	60
Randy / Craig	38	drop VB	1032	1030	1135	4	65
* VIC	17	11	1110	1106	1205	2	60
Randy	25	11,11	1140	1140	1240	7	60
Craig	14	11	12 -	12 -	110	2	70
Randy	11		1 -	1 -	2 -	2	60
Craig	4	dog	145	145	250	1	65
Jared	17	dog	215	215	315	6	60
Casey	11		250	250	350	1	65
Jared	6		330	330	430	1	60
Randy / Site	41	Dest 3 fm	345	345	445	1	60
Casey	8		415	415	510	0	55
Jared	15	111	5 -	5 -	6 -	6	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-2:30	110
Nicole	12:30 - 7	2 -
Logan (GS-)	8-5	120
PHOTO LAB		
Amanda	8 - 1	-
Katie	1 - 7	-

GUIDE	SCHEDULE	LUNCH
VIC	8-1	-
Randy	9 - 4:30	205
Craig	10 - 3	-
Jared	1:30 - 7	-
Casey	2 - 7	-
Sue	2:30 - 4:30	-

FANTASTIC CAVERNS

309

309

Date September 10-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather rainy 68° am. Sunny 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2723056	1292164		7759
End	2723365	1292164		7767

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	4		840	840	935	2	55
Randy	7		915	915	1015	2	60
Nicole	14	II	955	955	1045	6	50
Randy	14		1025	1025	1130	3	65
Jared	12		1050	1050	1150	2	60
Russ	23	II	1120	1125	1225	5	60
Randy	10	II	1145	1145	1250	0	65
Jared	23		1210	1210	105	1	65
Russ	24	I	1240	1240	140	4	60
Randy	18	III	1–	1–	2–	3+1	60
Jared	20		125	125	225	4	60
Casey	19	II	150	150	250	7	60
Russ	23	III	220	220	325	3	65
Craig	24		240	245	345	3	60
Casey	10		3–	3–	355	2	55
Russ	20	1 PB	335	335	440	4	65
Craig	20	1 dog	355	355	450	3	55
Casey	8		425	425	525	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	9	II	505	505	610	2	65
Casey	7	IIII	640	640	630	3	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1125
Nicole	12:30-7	1245
Jill	(8-5 GS)	✓
PHOTO LAB		
Amanda	8-1	—
Melissa	1-7	—

GUIDE	SCHEDULE	LUNCH
Nicole	8-1	—
Randy	9-2	—
Jared	10:30-3:00	—
Russ	11-4	—
Casey	1:30-7	—
Craig	2-7	—

FANTASTIC CAVERNS

367

360

Date September 11, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2723365	1292164		7767
End	2723725	1292164		7772

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Javed	7		845	845	945	3	60
Casey	11		925	925	1025	6	60
Javed	16	1	950	950	1050	5	60
Casey	21	1	1025	1025	1125	1	60
KATY	15	PL	1050	1050	1150	4	60
Javed	23	1	1110	1110	1215		55
Craig	12	11	1135	1135	1235	6	60
Casey	22	1111	1150	1150	1245	3	55
Javed	20	1111 BOL	1210	1210	100	2	50
Katy	23	111	1225	1225	125	2	60
Craig	19	111	1245	1250	150	3	60
Casey	9		105	100	155	2	50
Javed	11	111	120	120	220	X	60
KATY	10	PL	135	140	240	2	60
Craig	7	11	200	200	3-	1	60
Rick	13		235	235	3-	3	
Katy	25		3-	3-	400	2	60
Craig Nicole	32/8	BOL	320	325	425	10	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	24		335	335	435	3	60
Nicole	25	BOL 1111	435	435	520	3	R
Rick	6		455	5-	550	1	
Nicole	4		540	540	635	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 4:30	
Madi	12:30 - 7:00	
PHOTO LAB		
Melissa	8 - 1:00	
Katie	1 - 7:00	

GUIDE	SCHEDULE	LUNCH
Javed	8 - 1:00	—
Casey	9 - 2:00	—
Katy	10:30 - 3:30	
Craig	11 - 4:00	
Rick	1:30 - 7:00	
Nicole	2:00 - 7:00	

FANTASTIC CAVERNS

171

Date September 12, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 61° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2723725	1292164		7772
End	2723896	1292164		7774

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	4		850	850	950	0	60
Craig	2		900	900	1030	1	60
Casey	10		1010	1015	1105	0	50
Karen	5		1030	1035	1130	1	55
Craig	18		1055	1100	12-	5	60
Casey	2		1125	1125	1225	1	60
Karen	12		12-	12-	1-	2	60
Craig	20	III	1230	1235	140	9	65
Karen	25	PL	115	115	215	6	60
Casey	18	Bus	130	130	230	5	60
Rick	12		145	145	240	5	55
Ron	2		205	205	300	1	55
Karen	2		230	230	320	1	60
Rick	8	dog	315	315	415	3	60
Ron	9		340	340	430	0	50
Rick	18	1	420	425	525	5	60
Brandon	5		5-	5-	6-	1	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Nicole	130-7	—
Gill	8-5 (GS)	✓
PHOTO LAB		
Katie	8-1	—
Marci	1-7	—

GUIDE	SCHEDULE	LUNCH
Casey	8-1	—
Craig	9-2	—
Karen	1030-330	—
Rick	130-7	—
Ron	2-7	—
Brandon	430-7	—

FANTASTIC CAVERNS

105

Date September 13, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 68° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2723896	1292164	/	07774
End	2724002	1292164	/	7778

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	2		910	910	1010	0	60
Ron	7		950	950	1040	2	50
Rick	6		1040	1040	1140	1	60
Craig	7	11	1115	1115	1215	3	60
Ron	16		1140	1140	1245	6	65
Rick	4		1205	1205	1-	2	55
Ron	10		250	250	145	3	55
Rick	11		115	115	210	6	55
Michael	12		2-	2-	320	3	80
Rich	4		230	230	330	1	60
Michael	18	1	305	330	340	1	70
Rich	4		4-	4-	455	2	55
Michael	2		435	445	550	1	55
Russ	2		530	530	635	1	65
Michael	1		610	610	655	0	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Scot	1-2	✓
Sue	130-7	—
Misty	8-5 (GS)	✓
PHOTO LAB		
Melissa	8-1	—
Marci	1-7	—

GUIDE	SCHEDULE	LUNCH
Craig	8-1	—
Ron	9-2	—
Rick	1030-330	—
Michael	2-7	—
Russ	5-7	—

FANTASTIC CAVERNS

140

Date September 14, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 68° am. Sunny 80° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2724002	1292164		7778
End	2724142	1292164		7779

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	9	11	920	920	1020	2	60
Rick	9		1010	1015	1110	1	55
Ron	9		11-	11-	1200	0	60
Rick	18	006	1145	1150	1245	3	55
Ron	10		1205	1210	1255	2	45
Randy	6	1	1230	1230	130	1	60
Vic	12		110	115	220	3	65
Randy	15		145	150	255	2	65
Vic	16	1	230	230	320	2	55
Randy	9	1	3-	3-	4-	0	60
Vic	19		345	350	440	1	50
Randy	4		410	410	525	2	75
Brandon	2		440	440	530	1	50
Casey	2		520	520	620	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-100	—
Sue	130-700	—
Randy	[illegible]	
Brandon	[illegible]	
Casey	[illegible]	
PHOTO LAB		
Mandi	8-100	—
Amanda	1-700	335

GUIDE	SCHEDULE	LUNCH
Ron	8-100	—
Rick	9-200	—
Randy	12-500	—
Brandon	430-700	—
Casey	5-700	—
Vic	1-5	—

FANTASTIC CAVERNS

149

Date September 15th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 69° am. Sunny 83° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2724142	1292164		7779
End	2724291	1292164		7780

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	3		830	835	930	2	55
Randy	3		910	920	1030	0	70
Michael	9	11	10	10	11	3	60
Karen	16	IIIII	1030	1035	1135	1	60
Randy	13	1	1110	1115	1215	3	60
Michael	16		1145	1145	1245	6	60
Karen	9	1	1210	1210	105	1	55
Randy	8		1240	1240	140	1	60
Karen	12	11	110	115	215	0	60
Vic	7		140	140	230	3	50
Karen	9	1	220	225	325	0	60
Jared	19		245	250	350	3	60
Vic	5	11	310	310	405	2	55
Jared	14		430	430	525	1	55
Vic	4		530	530	625	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 100	—
Sue	130 - 700	—
PHOTO LAB		
Mandi	8 - 100	—
Marci	1 - 700	—

GUIDE	SCHEDULE	LUNCH
Michael	8 - 100	—
Randy	9 - 200	—
Karen	1030 - 330	—
Vic	130 - 700	—
Jared	2 - 700	—

FANTASTIC CAVERNS

266

Date September 16-16

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 71° am. Rain 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2724291	1292164	/	7780
End	2724557	1292164	/	7783

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	7		9-	9-	10-	1	60
Karen	25		10-	10-	11-	1	60
Randy Ron	42	Pop Corn	10:15	10:15	11:15	5	60
Casey	17		10:40	10:40	11:40	1	60
Karen	23	1	11:05	11:05	11:10	3	60
Ron	11		11:30	11:30	12:35	4	65
Casey	24	11	12-	12-	12:55	6	55
Karen	7		12:15	12:15	1:15	1	60
Casey	13	1	1-	1-	2-	2	60
Ron	12	1	1:30	1:30	2:30	3	60
Craig	20	11	2-	2-	3-	1	60
Casey	24	11	2:45	2:45	3:30	2	45
Ron	22	1	3:20	3:20	4:20	2	60
Jared	6		3:50	3:50	4:10	0	50
Craig	11	1	4:30	4:30	5:30	0	60
Jared	2		5:10	5:10	6:10	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1:10
Nicki	1-7	3:50
Logan	(8-5) 65	Also Call No Show
PHOTO LAB		
Amanda	8-1	—
Melissa	1-7	3:10

GUIDE	SCHEDULE	LUNCH
Randy	8-12	—
Ron	9-4:30	12:50
Karen	9-1	—
Casey	10-3	—
Craig	1:30-7	3:30
Jared	2-7	—

FANTASTIC CAVERNS

365

Date September 17-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather pt sunny 68° am. Sunny 77° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2724557	1292164	/	7782
End	2724926	1292164	/	7798

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	2		850	850	940	1	50
Casey	11		930	930	1020	2	50
Ron	14	1	10-	10-	1055	5	55
Casey	20	1111	1035	1035	1125	8	50
Ron	23	1111	11 55	1105	1155	4	50
Craig	19	11111	1130	1130	1235	6	65
Casey	24	1111	12-	12-	1-	2	60
Craig	24	11	1235	1245	140	4	55
Casey	25	dog	100	105	2-	3	55
Jared	25	11111	135	135	230	3	55
Craig	25	PB,	205	205	310	6	65
Jared	25	dog 11	240	240	340	3	60
Casey	24	11	3-	3-	4-	2	60
Jared	25	11	345	345	405	7	70
Casey	25	111	415	415	410	3	55
Jared	43	111	450	5-	550	4	50
Casey	14		540	545	540	4	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1215
Nicole	12-7	245
PHOTO LAB		
Katie	8-1	—
Amanda	1-7	330

GUIDE	SCHEDULE	LUNCH
Ron	8-12	—
Casey	9-7	205
Craig	11-3	—
Jared	1:30-7	—

FANTASTIC CAVERNS

285

Date September 18th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 71 am. Cloudy 82 pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2724926	1292164	/	7798
End	2725212	1292164	/	7798

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	6	1	855	855	955	2	60
Craig	6		930	930	1030	1	60
Casey	13	1	955	955	1055	3	60
Craig	12	PL	1040	1040	1135	3	55
Jerod	22	111	1120	1120	1220	6	60
Craig	14	11 DOG	1150	1150	1255	3	65
Casey	14	11	1210	1210	100	2	50
Jared	23	PB DC	1245	1245	135	1	50
Craig	22	11	105	105	205	5	60
Vic	25	1	130	135	230	3	55
Jared	20	1H	150	150	250	3	60
Russ	19	1	225	225	325	1	60
Vic	22	1	250	250	350	2	60
Jared	24	111	305	305	410	6	65
Russ	21	1111	335	340	440	5	60
Vic	9		405	405	505	2	60
Russ	6	1	450	450	520	0	60
Vic	6	DOG	540	540	630	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Siot		✓
Nicole	12-7	✓
PHOTO LAB		
Melissa	8-1	—
Marci	1-7	✓

GUIDE	SCHEDULE	LUNCH
Casey	8-12	—
Craig	9-1	—
Jared	11-3	—
Vic	1:30-7	—
Russ	2-7	—

FANTASTIC CAVERNS

157

Date September 19th, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 78° am. Sunny 84° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2725212	1292164	/	7798
End		1292164	/	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael Lorraine	26 / 5	Bus	8 40	8 45	9 55	5	70
Jared	4		9 10	9 10	10 -	1	50
Karen	7		10 05	10 05	11 10	1	65
Michael	6	1	10 30	10 35	11 35	1	60
Craig	4		10 55	10 55	11 55	1	60
Vic	8		11 15	11 15	12 10	0	55
Jared	12		11 35	11 35	12 35	4	60
Karen	17	3 Dogs	11 55	12 05	1 05	4	60
Vic	20		12 30	12 35	1 30	5	55
Karen	2		1 15	1 15	2 10	1	55
Rick	7		1 35	1 35	2 25	2	50
Vic	3	1	2 -	2 -	2 50	1	50
Randy	9		2 35	2 35	3 35	2	60
Rick	3		3 05	3 05	4 -	1	55
Randy	10		3 40	3 40	4 40	2	60
Rick	2		4 15	4 15	5 10	1	55
Randy	4	11	4 45	4 50	5 50	0	60
Rick	8	11	5 40	5 45	6 40	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8 - 4 30	
PHOTO LAB		
Marci	8 - 1	—
Melissa	1 - 7	

GUIDE	SCHEDULE	LUNCH
Jared	8 - 1 00	—
Craig	8 - 12 00	—
Michael	8 - 12 00	—
Karen	9 - 2 00	—
Vic	11 - 3 00	—
Rick	1 30 - 7 00	
Randy	2 - 7 00	—

FANTASTIC CAVERNS

149

Date 20, Sept. 2010

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather 76° Sunny am. Sunny 88° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2725369	1292164	✓	07801
End	2725518	1292164	✓	7804

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	3		850	850	945	1	55
Vic	6		1020	1020	1100	1	60
Jared	10	1	1030	1030	1125	1	55
Vic	12	IIII	1105	1105	12	3	55
Jared	6	1	1130	1130	1220	3	50
Vic	19	1	1205	1205	1255	5	50
Rick	8		1230	1230	130	4	60
Scott	9	III	1—	1—	2—	0	60
Randy	3		130	130	230	1	60
Ron	21	II	205	205	255	6	50
Randy	8	II	235	235	340	3	65
Ron	18	II	310	310	4—	4	50
Randy	10	1	350	350	455	2	65
Ron	4	II	420	420	505	0	45
Randy	6		505	505	610	0	65
Ron	4		545	545	640	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	12-7	350
PHOTO LAB		
Marci	8-1	—
Melissa	1-7	—

GUIDE	SCHEDULE	LUNCH
Jared	8-12	—
Vic	9-1	—
Rick	11-3	—
Randy	1:30-7	—
Ron	2-7	—

FANTASTIC CAVERNS

184

Date September 21st, 2016

Day Sun. Mon. Tues. (Wed) Thurs. Fri. Sat.

Weather Sunny 77° am. Sunny 88° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2725518	1292164	—	7804
End	2725702	1292164	—	7806

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	4		920	920	1015	1	55
Rick	2		945	945	1045	2	60
Vic	9	III	1025	1025	1120	3	55
Rick	10		1050	1050	1140	4	50
Randy	11		1115	1115	1215	2	60
Vic	9		1130	1130	1230	2	60
Rick	10		12—	12—	1245	2	45
Casey	6	dog	1230	1230	125	3	55
Randy	27	Group C.A.	1—	1—	2—	3	60
Rick	17		115	115	210	7	55
Ron	7		145	145	245	2	60
Casey	10	[illegible]	220	215	310	2	55
Rick / Ron	12/22	bus	3—	305	4—	8	55
Casey	6		4—	4—	450	1	50
Ron	10	dog	430	430	525	3	55
Casey	8		5—	5—	6—	3	60
Ron	4		545	545	645	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 - 10:00	12:10
Sue	10 - 7:00	245
PHOTO LAB		
Amanda	8 - 1:00	—
Marci	1 - 7:00	—

GUIDE	SCHEDULE	LUNCH
Vic	8 - 12:00	—
Rick	9 - 3:00	—
Randy	11 - 3:00	—
Casey	12 - 7:00	—
Ron	1:30 - 7:00	—

FANTASTIC CAVERNS

172

Date Sept. 22 - 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 70° am. Sunny 90° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2725702	1292144	/	7804
End	2725875	1292164	/	7808

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		830	830	930	1	60
Randy	5		905	905	1115	3	70
Rick	5		945	945	1040	2	55
Randy	12	IIIII	1015	1020	1130	4	70
Rick	20		11	11	12 -	3 H	60
Casey	15		1120	1120	1220	1	60
Randy	23		12 -	12 -	1	5	60
Casey	10		1230	1230	1 0	5	60
Randy	19		1 -	105	205	2	60
Ron	3		130	130	230	0	60
Craig	6	PL	2	205	300	2	55
Casey	14	PL	235	235	335	1	60
Craig	6		305	305	405	0	60
Casey	11		345	345	440	2	55
Craig	10	1	415	415	515	2	60
Casey	6	1	510	510	610	0	60
Craig	5		545	545	645	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-1	—
1-7	Scot	1230
Misty	(GS - 8 - 5)	12 -
PHOTO LAB		
Melissa	8-1	—
Amanda	1-7	

GUIDE	SCHEDULE	LUNCH
Rick	8-12	—
Randy	9-2	—
Ron	11-3	—
Casey	11-7	✓
Craig	2-7	—

FANTASTIC CAVERNS

263

Date September 23, 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 78° am. 84° Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2725875	1292164		7808
End	2726140	1292164		7812

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	6		8:50	8:50	9:50	0	60
Ron	11		9:35	9:35	10:35	5	60
Randy	8		10:15	10:15	11:15	1	60
Ron	10	1	10:50	10:50	11:55	5	65
Randy	24		11:20	11:25	12:25	2	60
Casey	23	11	11:40	11:40	12:40	2	60
Ron	23	11	12:10	12:10	1:10	3	60
Randy	23		12:35	12:35	1:35	1	60
Michael	18	111	1:-	1:-	2:05	2	65
Casey	4		1:25	1:25	2:20	1	55
Craig	15		2:-	2:-	2:55	1	55
Michael	21		2:20	2:20	3:30	6	70
Casey	14		2:35	2:35	3:35	2	60
Craig Michael	34	Titan Tour	3:45	3:45	4:50	10	65
Casey	13		4:-	4:-	4:55	4	55
Craig	6	11	5:-	5:-	6:-	2	60
Jared	2	"	5:40	5:40	6:30	0	50
Craig	4		6:-	6:-	7	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8 -	
Nicole	10 - 7	
PHOTO LAB		
Amanda	8 - 1:00	
Melissa	1 - 7:00	

GUIDE	SCHEDULE	LUNCH
Randy	8 - 12:00	—
Ron	9 - 1:00	—
Casey	11 - 5:00	12:55
Michael	1 - 5:00	—
Craig	1:30 - 7:00	—
Jared	2 - 7:00	—

FANTASTIC CAVERNS

481

Date September 24th, 2017

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 78° am. Sunny 85° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2726140	1292164	/	7812
End	2726622	1292164	/	7820

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	6		830	830	930	1	60
Randy	21	1	925	925	1025	4	60
Ron	20	1	1000	1000	1100	5	60
Craig	24		1020	1020	1120	5	60
Randy	21		1045	1045	1145	3	60
Karen	18		1105	1105	1205	4	60
Ron	23	1	1130	1130	1230	4	60
Craig	23	IIIII	1150	1150	1250	5	60
Michael	21		1205	1210	110	4	60
Karen	21	IIII	1230	1200	130	6	60
Craig	22	III	1250	1255	155	5	60
Michael	24	II	120	120	220	3	65
Karen	21	Bus II	140	140	250	4	70
Randy	22	DOG					
Jared	22	1 PB	200	200	300	5	60
Vic	21	IIII	230	230	325	3	55
Michael	24		250	250	4-	3	70
Karen	10		305	305	410	3	65
Craig	25	1	330	330	430	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	23	II	4-	405	505	2	65
Jared	24	III	420	420	515	5	55
Vic Craig	32		5-	5-	6-	8	60
Jared	14		540	540	640	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
Nicole	10-7	
PHOTO LAB		
Melissa	8-12	
Katie	12-7	

GUIDE	SCHEDULE	LUNCH
Ron	8-12	—
Randy	9-3:00	12
Craig	10-5:00	2:15
Karen	11-4:00	—
Michael	12-5:00	—
Jared	1:30-7:00	3:05
Vic	2-7:00	—

FANTASTIC CAVERNS

276

Date 9-25-2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 79° am. Cloudy 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2726622	1292164		7820
End	2726898	1292164		7825

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	3		900	910	950	0	50
Craig	2		930	930	1030	1	60
Casey	9	1	1000	1000	1055	1	55
Rick	14		1035	1035	1135	4	60
Craig	12	1	1055	1055	1155	1	60
Brandon	12	PL	1115	1115	1215	4	60
Jared	22		1130	1135	1235	3	60
Casey	21	1	1150	1150	1250	4	60
Craig	22		1205	1205	105	2	60
Rick	18	111	1220	1220	120	2	60
Brandon	18		1245	1250	155	2	65
Jared	18		105	110	205	4	55
Casey	15	1	130	130	215	4	
Vic	11	1	2	2	3	1	60
Jared	14	1	230	230	325	0	
Casey	20	1	250	250	340	5	50
Rick	20	11	330	330	430	5	60
Vic	23	1	420	420	510	5	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6	1	500	5	555	2	55
Vic	5		545	545	640	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
Madi	12-7	
PHOTO LAB		
Katie	8-1:00	—
Marci	1-7:00	

GUIDE	SCHEDULE		LUNCH
Casey	8-4:00	H	1105
Craig	9-1:00	H	—
Brandon	11-3:00	H	—
Jared	11-3:00	H	—
Vic	1:30-7:00		
Rick	2-7:00		135

FANTASTIC CAVERNS

180

Date September 26, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 66° am. Sunny 67° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2726898	1292164		7825
End	2727078	1292164		7827

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	2		910	910	1010	1	60
Casey	12	Dog	945	950	1040	3	50
Craig	18	11	1050	1050	1150	1	60
Vic	25	Dog	1120	1125	1215	5	50
Casey	9	1	1140	1140	1240	2	60
Craig	18		1210	1210	115	4	65
Vic	9	Dr	1230	1240	140	3	60
Casey	8		100	100	150	2	50
Rick	20	1 PB	135	135	230	3	55
Vic	6		2	2	255	1	55
Randy	13		245	245	345	2	60
Rick	18	1111	320	320	420	4	60
Randy	11		405	405	505	3	60
Rick	11		510	515	610	2	55
Randy			PHC				

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Mach	8-1	—
Nicole	12-7	
PHOTO LAB		
Mandy	8-1	—
Melissa	1-7	

GUIDE	SCHEDULE	LUNCH
Craig	8-12	—
Casey	9-1	—
Vic	11-3	—
Rick	130-7	
Randy	2-7	—

FANTASTIC CAVERNS

183

Date: September 27, 2016

Day: Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather: Sunny 52° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2727078	1292164		7827
End	2727261	1292164		7833

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	6		930	930	1030	1	60
Vic	14		1010	1015	1115	5	60
Casey	6 21	Bus	1035	1035	1135	5	60
Rick	22		1105	1105	1205	7	60
Vic	21		1135	1135	1235	1	60
Rick	12		1210	1220	120	3	60
Sue	10		1255	1255	2-	1	65
Rick Randy	35	11	130	130	230	1	60
Sue	6		245	220	315	1	55
Randy	6		250	250	350	1	60
Rick	10		315	315	420	4	65
Randy	6		350	355	5-	2	65
Rich	6	dog	430	430	525	0	55
Rich	2	11	530	530	620	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Hadi	8-1	—
Sue	1230-7	—
PHOTO LAB		
Marci	8-1	—
Mandy	1-7	320 L

GUIDE	SCHEDULE	LUNCH
Casey	8-12 H	—
Vic	9-1 H	—
Rick	11-3 →	—
Randy	130-7	—
Ron	2-7	SICK

FANTASTIC CAVERNS

132

Date September 28, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 63° am. Sunny 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2727261	1292164	/	7833
End	2727396	1292164	/	7836

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	7		830	830	830	2	60
Vic	7		1000	1000	1100	1	60
Rick	8		1035	1035	1135	2	60
Randy	17		1105	1110	1210	5	60
Rick	14	DOB	1140	1140	1250	4	80
Randy	8		1235	1225	125	2	60
Karen	12		100	100	2 -	4	60
Ron	16	III	130	135	235	3	60
Randy	4	dog	150	150	255	2 H	65
Karen	4		220	220	320	2	60
Ron	7		250	250	405	2	75
Karen	5		345	345	445	1	60
Ron	7		420	420	505	0	45
Casey	8		5 -	5 -	550	0	50
Ron	4		545	545	645	1	60
Casey	4		615	615	705	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 1:00	—
Sue	1:30 - 7:00	—
PHOTO LAB		
Marci	8 - 1:00	—
Kathryn	1 - 7:00	—

GUIDE	SCHEDULE	LUNCH
Vic	8 - 12	—
Rick	9 - 1:00	—
Randy	11 - 3:00	—
Karen	1 - 5:00	—
Ron	1:30 - 7:00	—
Casey	2 - 7:00	—

FANTASTIC CAVERNS

74

Date September 29th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 50° am. Sunny 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2727396	1292164	/	7836
End	2727470	1292164	/	7836

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	6		950	950	1040	2	50
Randy	14		11	1105	1205	4	60
Ron	4	1	1140	1140	1235	1	55
Randy	4		1230	1230	140	0	65
Ron	14	1	1	100	2	4	60
Casey	6		135	135	225	2	50
RON	10	1	210	210	205	4	55
Craig	5		250	250	350	2	60
Casey	4	1	330	330	425	2	55
Craig	2		4	4	505	2	65
Casey	3		435	435	530	1	55
Craig	2		5	505	605	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
She	1:30-7	—
PHOTO LAB		
Amaadi	8-1	—
Murci	1-7	—

GUIDE	SCHEDULE	LUNCH
Rick	8-12	—
Randy	9-1	—
Ron	11-3	—
Casey	1:30-7	—
Craig	2-7	—

FANTASTIC CAVERNS

302

Date September 30-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. pt. sunny 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2727470	1292164		7836
End	2727772	1292164		7836

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	2		930	930	1030	0	60
Casey Michael	109	NCA	10-	1005	11-	6	55
Randy	19		1020	1020	1125	7	65
Ron Karen	39	Brans Co Trs.	1040	1040	12-	13	80
Casey	25		1110	1110	1205	9	55
Michael	15	11	1130	1130	1235	7	65
Karen	23	1111	1150	1205	105	5	60
Casey	15		1230	1230	125	3	55
Casey	18		130	130	230	2	60
Craig	23	11	155	155	250	3	55
Jared	13		215	215	310	4	55
Craig	14		305	305	405	2	60
Jared	13	1	4-	4-	455	2	55
Craig	7		440	440	540	2	60
Jared	7	1	540	540	635	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	12-
Nicole	12-7	245
Misty	(8-5 GS)	1230
PHOTO LAB		
Melissa	8-1	—
Amanda	1-7	320

GUIDE	SCHEDULE	LUNCH
Randy	8-12	—
Ron	9-1	—
Karen	9-1	—
Michael	9-1	—
Casey	9-2:30	—
Craig	1:30-7	405
Jared	2-7	—

FANTASTIC CAVERNS

321

Date October 1-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 50° am. Sunny 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2727772	1292164		7836
End	2728094	1292164		7843

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	7	III	915	915	10	3	45
Craig	25	I	1010	1010	1115	8	65
Russ	8	I	1030	1030	1130	3	60
Casey	18	I	1050	1050	1145	4	55
Ron	23		1110	1110	1215	2	65
Craig	17	I	1130	1130	1230	3	60
Casey	21		1150	1150	1240	1	50
Russ	25	I	1230	1230	130	6	60
Craig	5	II	1255	1255	2	1	65
Jared	16	II	115	115	210	2	55
Ron	24	III	145	145	245	2	60
Michael	25	V	210	210	310	5	60
Jared	14	III	230	230	325	2	55
Russ	24	IIIII	250	250	350	3	60
Ron	17	IIII	320	320	425	X	65
Michael	3		345	345	440	0	55
Russ	21	IIII	415	415	515	7	60
Jared	16	dog	445	445	535	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	8		520	520	625	3	65
Michael	2		545	545	640	1	55
Jared	3		605	605	650	0	45

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1210
Madi	12-7	300
Jill	(8-5 GS)	1230
PHOTO LAB		
Melissa	8-1	—
Amanda	1-7	330

GUIDE	SCHEDULE	LUNCH
Casey	8-1	—
Craig	9-2	—
Russ	10-6:30	140
Ron	11-5	1245
Jared	12:30-7	330
Michael	2-7	—

FANTASTIC CAVERNS

278

Date October 2, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 66° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728094	1292164		7843
End	2728372	1292164		7845

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	2		900	900	955	1	55
Rick	10	1	930	930	1030	3	60
Craig	11	1	1000	1000	1100	4	60
Jared	19	11!	1030	1030	1130	2	60
Rick	17		1050	1050	1150	6	60
Randy	22	1	1115	1120	1220	6	60
Jared	15		1140	1140	1235	3	55
Rick	9	1 200	1200	1200	1255	1	55
Craig	11	1	1230	1230	130	1	60
Rick	25	11	105	100	200	6	60
Randy	22	1	120	120	220	4	60
Jared	19		140	145	240	5	55
Craig	23	11	205	205	305	3	60
Randy	9	11	232	235	335	0	60
Jared	14		310	310	405	3	55
Craig	20	111	340	345	445	3	60
Jared	6	1	445	445	540	1	55
Randy	19	1	530	530	635	4	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	4		605	605	7	1	60

INFO. COUNTER	SCHEDULE	LUNCH
Sif	8-430	1205
Madi	12-7	✓
Jill	8-5	✓
PHOTO LAB		
Kathryn	8-1 02	—
Melissa	1-7 02	✓

GUIDE	SCHEDULE		LUNCH
Craig	8-430	H	✓
Rick	9-200	H	—
Jared	10-7		✓
Randy	11-7 02		✓

FANTASTIC CAVERNS

	HAND ADULT	HAND Child
B	1120674	0017912
	1120698	0017919
	167	

Date October 3, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 60° am. Clear 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728372	1292164		7845
End	2728508	1292164		7847

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	2		9:10	9:10	10:20	1	70
Jared	14		9:40	9:40	10:45	3	65
Michael	11	1	10:15	10:20	11:20		60
Jared	20	~~1~~	11	11	12	3	60
Michael	18	11 Dog	11:50	11:50	12:50	7	60
Randy	24		12:10	12:10	1:15	5	65
Jared	8	1	12:30	12:30	1:25	0	55
Randy	19	11	1:15	1:20	2:25	5	65
Jared	11		1:45	1:45	2:40	0	55
Vic	7		2:10	2:10	3:15	2	65
Randy	6		2:30	2:35	3:30	2	55
Vic	13		3:30	3:30	4:30	3	60
Randy	9	1	4:20	4:20	5:25	1	65
Vic	3	11	5:10	5:10	5:00	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Marci	8-5	
Nicole	12-7	2:30
Jill	8-5 (GS)	
PHOTO LAB		
Wandy	8-1	—
Marci	1-7	

GUIDE	SCHEDULE	LUNCH
Michael	8-1 H	—
Jared	9-2 H	—
Randy	12-7	3:30
Vic	2-7	—
Casey	12-5 (T)	
Rick	12-5 (T)	

FANTASTIC CAVERNS

120

Date October 4 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 59° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728508	1292164	/	7847
End	2728628	1292164	/	7847

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	4		845	845	945	3	60
Randy	4		920	920	1025	1	65
Karen	9		955	955	1055	4	60
Randy	8	dog	1025	1030	1140	2	70
Karen	11	dog	1115	1115	1215	2	60
Randy	11		1150	1150	1250	4	60
Rick	11	1	1220	1225	125	4	60
Randy	10	1	100	105	205	2	60
Rick	12		2 -	2 -	310	1	70
Ron	15	1	245	245	340	4	55
Rick	6		340	340	450	2	70
Ron	6	111	415	415	505	1	50
Rick	10		530	530	625	3	55
Ron	1		610	600	700	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1210
Scott	5-7	130
Misty	(10-5 GS)	1240
PHOTO LAB		
Marci	8-1	—
Melissa	1-7	315

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Randy	9-2	—
Rick	12-7	310
Ron	2-7	—

FANTASTIC CAVERNS

84

Date October 5, 2016

Day Sun. Mon. Tues. (Wed) Thurs. Fri. Sat.

Weather pt. Cloudy 60° am. Cloudy 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728628	1292164		07847
End	2728714	1292164		7847

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	1		9:15	9:20	10:20	1	60
Karen	7		10-	10-	11-	4	60
Randy	4		10:30	10:30	11:30	0	60
KAREN	10		11-	11-	12-	5	60
Randy	10		11:30	11:35	1:35	1	60
Ron	6		12:30	12:35	1:25	1	50
Karen	2		1-	1-	2-	1	60
Ron	14	1111	1:40	1:40	2:40	2	60
Vic	13		2:30	2:35	3:35	5	60
Ron	9	1	3:0	3:0	4:20	2	70
Vic	6	1	3:50	3:50	4:40	0	50
Vic	2		4:50	4:50	5:40	1	50
RON	2		5:45	5:45	6:35	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Mad	8-5	12:30
Sue	5-7	3:0
PHOTO LAB		
Marci	8-1	—
Katie	1-7	3:30

GUIDE	SCHEDULE		LUNCH
Randy	8-1	H	—
Karen	9-2	H	—
Ron	12-7		4:25
Vic	2-7		—

FANTASTIC CAVERNS

188

Date October 6, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 67° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728714	1292164		7847
End	2728903	1292164		7847

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic Ron	40/4	Brill Adv.	9:30	9:30	10:50	15	80
Rick	13		10:00	10:00	11-	5	60
Casey	10		10:30	10:30	11:25	3	65
Vic	8		11:15	11:15	12:20	1	65
Rick	9		11:45	11:45	12:30	3	45
Casey	9	11	12:05	12:05	12:55	2	50
Ron	11		12:30	12:35	1:35	0	60
Rick	10		1:10	1:10	2:10	2	60
Ron Craig	38/10	Church SR	2+	2-	3:15	14	75
Casey	12	1	2:30	2:30	3:30	3	60
Craig	3		3:15	3:30	4:35	2 +1	65
Russ	2		4:15	4:15	5:15	1	60
Casey	9	1 dog	4:45	4:45	5:35	2	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Sue	12-7	3:40
Misty	8-5 (GS)	12:10
PHOTO LAB		
Mandy	8-1	—
Melissa	1-7	3:40

GUIDE	SCHEDULE	LUNCH
Vic	8-1	—
Rick	8:30-3	12:35
Ron	8:30-3	11:30
Casey	9-7	1-
Craig	1:30-5	—
Russ	4-7	—

FANTASTIC CAVERNS

203

Date October 7-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sprinkling 57° am. Sunny 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2728903	1292164		7847
End	2729108	1292164		7857

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	1		845	845	945	1	60
Jared Ron	43	Knox Todd	9-	915	1020	7	65
Michael	4		945	945	1045	0	100
Casey	6		1010	1010	11-	2	50
Jared	19		1030	1050	1150	X	60
Michael	9		1120	1120	1230	1	70
Casey	18		1150	1150	1245	3	55
Craig	7		1235	1235	125	1	60
Jared	8		1250	1250	150	3	60
Casey	21	11	130	135	225	1	50
Craig	9		2-	2-	3-	3	60
Karen	12	1	245	245	345	2	60
Casey	22	IIII	330	330	425	2	55
Karen	5	III	4-	4-	5	3	60
Craig	11		430	430	530	1	60
Karen	8		540	540	640	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1210
Nicole	12-7	1155
Misty	(8-5 GS)	1230
PHOTO LAB		
Amanda	8-1	—
Marci	1-7	
(Nicole T 8-12)		—

GUIDE	SCHEDULE	LUNCH
Ron	8-10:30	—
Casey	8-4:30	1250
Jared	8-4:30	1155
Michael	9-2	—
Craig	12-7	335
Karen	2-7	—

FANTASTIC CAVERNS

332

Date October 8 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 46° am. Sunny 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2729108	1292164		7857
End	2729440	1292164		7862

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey Russ	28/2	Christ. tvs.	8 30	8 30	9 25	5	55
Ron Nicole	37/3	Christ. pres.	8 50	8 50	9 55	9	65
Craig	5		9 20	9 20	10 15	1	55
Casey	6	dog	9 50	9 50	10 50	2	60
Russ	10		10 20	10 20	11 20	2	60
Ron	15		10 45	10 45	11 45	4	60
Craig	9	1	11 10	11 10	12 10	2	60
Karen	12	111	11 30	11 30	12 35	3	65
Russ	3		12 -	12 -	1 -	1	60
Jared	16	111111	12 20	12 20	1 20	3	60
Karen	11		12 45	12 50	1 50	5	60
Casey Craig	20/12	Gunnison 11 tvs	1 10	1 10	2 05	6	55
Jared	25	11	1 40	1 40	2 40	6	60
Karen	19	111	2 -	2 -	3 05	7	65
Michael	22	111	2 20	2 20	3 25	3	65
Russ	14		2 40	2 40	3 40	2	60
Craig	12	11	3 -	3 -	4 10	3	70
Jared	19		3 30	3 30	4 30	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	20	111111	4 05	4 05	5 05	3	60
Michael	13	1	4 45	4 45	4 50	1	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	11 50
Nicole	12-7	1 -
Jill	(8-5 GS)	12 30
PHOTO LAB		
Marci	8-1	—
Melissa	1-7	2 35

GUIDE	SCHEDULE	LUNCH
Ron	8-12	—
Casey	8-2:30	11 15
Nicole	8-12	—
Russ	8-6:30	1 10
Craig	9-4:30	12 20
Karen	11-3	—
Jared	12-7	2 55
Michael	2-7	—

FANTASTIC CAVERNS

347

Date October 9th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 63° am. Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2729440	1292164	—	7862
End	2729789	1292164	—	7862

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	2		900	900	1000	0	60
Rick	2		925	925	1025	0	60
Randy	15		1010	1010	1110	1	60
Craig	22	11/06	1030	1010	1110	1	60
Rick	20		1050	1035	1130	5	55
Randy	21	11	1115	1055	1155	5	60
Craig	22	11	1140	1115	1215	1	60
Rick	23	11	1155	1155	1250	7	60
Jared	23	11	1210	1210	110	4	65
Randy	25	11	1225	1225	125	2	60
Craig	18		1245	1245	145	3	60
Casey	19	111	105	105	200	6	55
Rick	18		130	130	230	4	60
Jared	24	1	155	155	250	2	55
Craig	23	11	225	230	330	3	60
Randy	10		305	305	405	3	60
Rick	19	1	330	335	435	6	60
Casey	16	111	405	405	500	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	15	1	430	430	530	3	60
Jared	4		510	510	600	1	50
Casey	7		545	545	645	2	60

INFO. COUNTER	SCHEDULE	LUNCH
Scot	—	
Nicole	12-700	30
PHOTO LAB		
Katie	8-100	—
Marci	1-700	

GUIDE	SCHEDULE		LUNCH
Craig	8-330	H	150
Rick	9-430	H	100
Randy	10-530	H	135
Jared	12-700		255
Casey	1-700		—

FANTASTIC CAVERNS

262

Date October 10, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Part Cloudy 54° am. Sunny 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2729789	1292164		7862
End	2730053	1292164		7871

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	13	11	9-	9:00	10:05	3	65
Jared	11	111	9:50	9:50	9:55	2	65
Karen	22		10:25	10:25	11:30	3	65
Jared	26	1	11-	11-	11:55	7	55
Karen	26	1:59 111	11:30	11:30	12:35	3	65
Jared	23	1	11:55	12-	1-	3	60
Randy	23	up 204	12:10	12:10	1:25	4	75
Rick	12		12:40	12:40	1:40	1	60
Jared	17		1:10	1:10	2:05	4	55
Randy	11		1:35	1:35	2:40	4	65
Rick	12	11	2:10	2:10	3:10	2	60
Randy	23	1	2:45	2:50	2:55	10	65
Rick	18		3:20	3:20	4:15	4	55
Randy	15	1	4-	4:10	5:10	2	65
Rick	8	1	5-	5-	6:00	3	60
Randy	2		5:45	5:45	6:45	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Hadi	8-1	—
Nicole	12-7	
Jill	10-5 (GS)	
PHOTO LAB		
Mandy	8-1	—
Melissa	1-7	

GUIDE	SCHEDULE	LUNCH
Karen	8-1	—
Jared	9-2	—
Randy	12-7	
Rick	12-7	4:15

FANTASTIC CAVERNS

194

Date October 11, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 64° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2730053	1292164		7871
End	2730252	1292164		7871

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Vic	4		830	830	930	0	60
Mandy	11		930	930	1040	1	70
Vic	6		1010	1010	1110	3	60
Mandy	11		1040	1045	1145	2	60
Vic	18	III	1120	1125	1225	5	60
Mandy	24	III	12	12	105	2	65
Nick	14		1230	1230	125	3	55
Mandy	23	Dog II	105	110	210	0	60
Rick	12		135	135	230	1	55
Javed	17		210	210	310	1	60
Rick	10	II	245	250	340	1	50
Javed	15	1	330	330	425	0	55
Rick	23	Dog II	405	405	455	2	50
Javed	10	1	510	510	6	2	50
Rick	1		545	545	635	1	50
Javed	3		600	610	7	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nadi	8-1	—
Sue	12-7	2 30
Misty	10-5 (GS)	135
PHOTO LAB		
Melissa	8-1	—
Marci	1-7	—

GUIDE	SCHEDULE	LUNCH
Vic	8-1 H	—
Mandy	9-2	—
Nick	12-7	5 —
Javed	2-7	—

FANTASTIC CAVERNS

181

Date October 12th 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Rain 68° am. Rain 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2230252	1292164		7871
End	2730433	1292164		7873

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	2		830	832	932	1	60
Rick	3		905	905	1005	0	60
Michael	5	1	10	1000	1105	1	65
Rick	15	1	1032	1035	1135	3	60
Michael	17	11	1110	1120	1220	6	60
Rick	8		1150	1150	1240	2	50
Ron	22		1230	1230	125	7	55
Michael	22		1250	1250	150	8	60
Rick	16		110	110	200	2	50
Ron	6		135	135	225	1	50
Casey	18	1	155	200	255	4	55
Michael	9	11	225	225	325	2	60
Ron	1	11	250	255	345	1	50
Casey	12		330	330	425	6	55
Russ	9	11	400	400	5	1	60
Ron	6		5	5	555	0	55
Russ	7		545	545	640	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-5 OR	12
Sue	5-7 OR	—
Sue	(10-5 GS)	315
PHOTO LAB		
Amanda	8-Five	—
Katie	1-7	—
Nicole	8-1	—

GUIDE	SCHEDULE	LUNCH
Michael	8-1	—
Rick	9-2	—
Casey	11-4	—
Ron	12-7	345
Russ	4-7	—

FANTASTIC CAVERNS

154

Date October 13th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 46° am. Cloudy 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2730433	1292164		7873
End	2730587	1292164		7873

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	5		840	840	940	3	60
Ron	11		920	920	1010	3	50
Rick	8		1010	1010	1110	4	60
Ron	8		1050	1050	1150	1	60
Casey	10		1120	1120	1220	4	60
Rick	12		1145	1145	1140	4	55
Ron	13	1	1215	1215	115	3	60
Casey	12	11	1250	1250	145	3	55
Ron	19	111	125	125	225	2	60
Casey	18	1	205	205	250	0	45
Craig	13	11	245	250	350	2	60
Casey	15	1	325	325	420	5	55
Craig	5		425	425	520	2	55
Craig	4		530	530	630	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1:00	—
Sue	12-7:00	325
Misty	GS 8-5	12—
PHOTO LAB		
Amanda	8-1:00	—
Marci	1-7:00	—

GUIDE	SCHEDULE	LUNCH
Rick	8-1:00	—
Ron	9-2:00	—
Casey	11-7:00	425
Craig	2-7:00	—

FANTASTIC CAVERNS

379

Date Oct-14-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 52° am. Cloudy 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2730587	1292164		7873
End	2730968	1292164		7877

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron.	5	1	9-	9-	955	1	55
Casey.	6	dog	930	935	1030	3	55
Vic Mike.	44	Robb	10-	950	1055	2	65
Ron.	14		1015	1015	1120	4	65
Jared. Craig.	48	Free	1030	1035	1130	3	55
Casey.	7		1050	1050	1150	1	60
Mike Vic.	49	Free	1105	1105	1205	4	60
Ron.	21	11	1130	1130	1210	6	70
Jared.	23	111	1150	1150	1245	5	55
Michael.	13		1210	1210	110	3	60
Craig.	18		1235	1235	140	5	65
Jared.	6	dog	1-	1-	150	1	50
Ron.	25	11111	1-20	1-20	220	2	55
Craig.	24	dog	2-	2-	305	4	65
Ron.	24	1	230	230	335	4	65
Karen	22	111	300	300	400	2	60
Craig.	9		335	335	430	1	55
Karen.	13	11111	405	405	5-	4	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig.	14	dog	505	505	605	2	60
Karen.	2	1	540	540	630	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1130
Nicole	11-9	1:45
Misty	(8-5-GS)	12-
PHOTO LAB		
Melissa	8-1	—
Amanda	1-7	3-

GUIDE	SCHEDULE		LUNCH
Ron	8-3:30		1250
Casey	9-4:30		12-
Vic	9-1	H	—
Michael	9-1	H	—
Craig	10-7		12-
Jared	10-2	H	—
Karen	2-7		—

FANTASTIC CAVERNS

368

Date October 15 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 60° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2730963	1292164		7877
End	2731340	1292164		7885

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	18	11	910	910	10	5	50
Craig	8	1109	950	950	1050	2	60
Russ	25	1	1025	1025	1125	4	60
Casey	23	1	1050	1050	1150	3	60
Michael	23		1115	1115	1215	2	60
Craig	24	11 dog	1140	1140	1240	7	60
Russ	23		12	12	1	3	60
Jared	16	1	1220	1220	120	4	60
Michael	8	1 dog	1240	1240	145	2	65
Russ	23	1111	105	105	210	3	65
Jared	21		135	135	225	2	60
Craig	24		2	2	3	8	60
Michael	16	11	220	220	320	1	60
Russ	22		250	250	355	5	65
Jared	21	dog 1111	305	305	426	1	60
Craig	19	11	345	345	450	4	65
Russ	25	1111	405	405	510	6	65
Michael	18	111	430	430	530	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	9		510	515	605	1	
Jared	2		540	540	635	1	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	12-
Nicole	11-7	2-
PHOTO LAB		
Mary	8-1	—
Amanda	1-7	245

GUIDE	SCHEDULE	LUNCH
Casey	8-3:30	12-
Craig	9-4:30	1-
Russ	10-6:30	215
Michael	11-7	340
Jared	12-7	235

FANTASTIC CAVERNS

384

Date October 16, 2016

Day (Sun) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 68° am Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2731340	1292164		7235
End	2731724	1292164		07888

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	4		9	905	1005	2	60
Rick	21	11	10	10	11	1	60
Ross	25	11	1035	1040	1140	7	60
Craig	15		11	11	12	0	60
Vic	24		1125	1125	1220	3	55
Jared Rick	48		1145	1140	1	21	75
Ross	24	IIIII	1225	1205	105	3	60
Craig	24		1225	1225	135	2	70
Vic	23	IIII 2dog	1250	1255	155	2	60
Jared Rick	40	IIII	115	115	215	3	8
Casey	16		145	150	250	2	60
Ross	10		215	215	315	1	60
Jared	24	1	240	245	345	3	60
Ross	23	1	320	320	420	5	65
Jared Rick	38	IIIII	345	345	440	4	60
Ross	16	dog	430	430	530	4	60
Jared	13		5	5	6	2	60
Rick	3		550	550	630	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	8-4:30	1220
Madi	12-7	
PHOTO LAB		
Katy	8-1	—
Marci	1-7	

GUIDE	SCHEDULE		LUNCH
Casey	8-1		—
Craig	9-2	H	—
Rick	10-7		
Vic	11-4	H	—
Ross	10:30-6		115
Jared	11:30-7		

FANTASTIC CAVERNS

268

Date October 17, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 86° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2731724	1292164		07888
End	2731992	1292164		07888

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	12		830	830	935	5	65
Jared	5		925	925	1025	1	60
Craig	13	Dog	10	10	1055	3	55
Jared	13		1030	1030	1130	2	60
Rick	25	11	11	11	1155	3	55
Craig	11		1125	1125	1225	3	60
Jared	25	1	12	12	1	8	60
Rick	19		1230	1230	135	2	65
Jared	12	1	105	105	205	0	60
Rick	25	1	135	140	230	6	50
Jared	22	11	210	210	310	2	60
Rick	20	Dog 11	240	240	340	5	60
Jared	4	1	315	315	415	3	60
Nicole	37	Bus					
Rick	14	1	345	350	445	2	55
Casey	7		415	420	575	0	55
Rick	2		500	500	600	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Nicole	11-7	
PHOTO LAB		
Marci	8-1	—
Melissa	1-7	

GUIDE	SCHEDULE		LUNCH
Craig	8-1	H	—
Jared	9-2	H	—
Rick	11-7		
Casey	2-7		—

FANTASTIC CAVERNS

125

Date October 18, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 71° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2731992	1292164		07888
End	2732117	1292164		07888

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	2		910	910	1005	1	55
Karen	2		940	940	1035	1	55
Michael	16	1	1020	1020	1115	4	55
Scot	15	III	1105	1110	1210	3	60
Michael	3		1130	1135	1230	1	55
Rick	8		1210	1210	1-	3	50
Jared	10	1	1210	1240	140	3	60
Michael	4		1-	1-	2[illegible]	2	60
Rick	10		140	140	230	4	50
Jared	17		215	215	410	4	55
Rick	11	11	245	245	340	0	55
Jared	10		330	330	420	2	50
Rick	9	11	415	415	505	3	50
Jared	8		5-	5-	6-	3	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Sue	12-7	3-
Misty	GS (10-5)	130
PHOTO LAB		
Melissa	8-1	—
Marci	1-7	—

GUIDE	SCHEDULE	LUNCH
Karen	8-1040 Sick	—
Michael	9-2	—
Jared	12-7	145
Rick	12-7	345

FANTASTIC CAVERNS

271

Date October 19th 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy am. Rain 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2732117	1292164		7888
End	2732371	1292164	✓	7888

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick Ron.	33	Bus	835	835	935	10	60
Casey +	5		910	910	1010	2	60
Michael.	10		1005	1005	1105	X	60
Rick.	19	1	1030	1030	1130	2	60
Michael.	19		1110	1115	1220	6	65
Rick.	23	11	1140	1140	1240	6	60
Randy.	20		1210	1210	116	4	65
Michael	24	111	1250	1250	155	3	65
Randy.	21	111	120	120	220	2	60
Casey.	24	1213	2-	2-	3-	6	60
Randy.	13	111	230	230	330	2	60
Casey.	21	11	315	315	300	2	60
Randy.	14	1	4-	4-	505	2	65
Casey.	18	1	5-	5-	555	1	55
Randy.	3		540	540	625	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Siot		
Madi	8-1	
Nicole	12-7	
PHOTO LAB		
Mandi	8-1:00	
Katie	1-7:00	

GUIDE	SCHEDULE	LUNCH
Ron	8-12 H	—
Rick	8-1:00	—
Casey	8-7:00	12:50
Michael	9-2:00	—
Randy	12-7:00	335

FANTASTIC CAVERNS

395

Date October 20, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 57° am. Cloudy 61° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2732391	1292164		7888
End	2732786	1292164		7888

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Karen	5		8 35	8 35	9 30	2	55
Casey	1		9 10	9 10	10 00	0	50
Jared Randy	59	Mt Ver	9 30	9 30	10 30	0	60
Ron Karen	59	Mt Ver	9 45	9 45	10 45	3	60
Michael	5		10 00	10 05	11 15		75
Jared	18	1	10 35	10 45	11 45	2	60
Ron	22	1 11	11 10	11 10	12 –	2	50
Randy	9		11 30	11 30	12 30	3	60
Jared	18	11	12 –	12 –	12 55	1	55
Ron	16	1	12 30	12 30	1 25	4	55
Jared	17	11	1 –	1 –	2 –	4	60
Casey	22	dogs	1 30	1 30	2 30	1	60
Randy	14		2 –	2 –	3 05	2	65
Jared	25	11	2 35	2 30	3 30	3	60
Casey	27	1	2 50	2 50	3 45	6	55
Randy	17	1	3 25	3 30	4 30	3	60
Russ	24	1 11	4 00	4 05	5 05	8	60
Randy	13		4 30	4 35	5 45	1	70

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	23		5 –	5	6 –	3	60

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 – 1 00	–
Sue	12 – 7 00	3 10
Misty	(10 – 5 GS)	2 35
PHOTO LAB		
Melissa	8 – 1	–
Mandy	1 – 7	3 40

GUIDE	SCHEDULE	LUNCH
Casey	8 30 – 6	11 50
Randy	9 – 7	12 50
Karen	8 – 12	–
Michael	8 – 12	–
Rick	8 – 1	–
Jared	9 – 2 (3:30)	–
Ron	9 – 2	–
Russ	4 – 7	–

FANTASTIC CAVERNS

484

Date 10-21-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 40° am. Clear 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2732786	1292144		7888
End	2733270	1292164		7890

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	8		850	850	950	3	60
Michael	5	dog	930	930	1020	0	60
Jared Ron	52	Navy	945	945	11	16	75
Casey	16	dog	1015	1015	1115	4	60
Randy Michael	25 14	Sign	1045	1045	1155	7	65
Jared	21	PB	1105	1105	12	1	55
Ron	25	1	1125	1125	1220	4	55
Casey	22		1140	1140	1235	5	55
Michael	20		1205	1205	115	3	70
Randy	24	III	1230	1230	130	6	60
Casey	25	IIII	1250	1250	150	9	60
Ron	24	1	115	115	215	5	60
Michael	24		140	140	245	4	65
Randy	25		210	210	315	8	65
Ron	25	1	240	240	340	3	60
Randy	25	IIII	315	320	425	4	65
Ron Sue	48	1	345	345	450	11	65
Randy	24	1	425	435	535		13

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	25	III	5	505	610	4	65
Randy	8		540	545	640	2	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1215
Nicole	12-7	335
Misty	(8-5 GS)	12:30
PHOTO LAB		
Marci	8-1	—
Mandy	1-7	3

GUIDE	SCHEDULE		LUNCH
Casey	8-7		—
Jared	8-1		—
Michael	9-3		—
Craig	9:30-7	no show	—
Ron	9:30-7		1245
Randy	10-7		140

FANTASTIC CAVERNS

466

Date October 22 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 40° am. Sunny 73° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2733270	1292164		7890
End	2733737	1292164		7898

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	4		9:30	9:30	10:30	0	60
Michael	22		10-	10-	11:05	4	65
Casey	25	///	10:30	10:30	11:25	3	55
Randy	18	dog 115	10:50	10:50	11:50	1	60
Michael	22	dog 11	11:20	11:20	12:25	1	65
Casey	25	////	11:45	11:45	1:35	6	50
Randy	26		12:05	12:05	1-	1	55
Michael	24	/////	12:30	12:30	1:35	5	65
Casey	21	11 PB	12:50	12:50	1:45	2	55
Sue	25	PB	1:10	1:10	2:10	4	60
Michael	25	1 PB dog	1:35	1:40	2:40	4	60
Randy	25	//////	1:55	1:55	3:05	5	70
Ron	25	1	2:15	2:15	3:15	5	60
Sue	24	1	2:30	2:30	2:25	3	55
Michael	23	///	2:50	2:50	4-	3	70
Casey	24	/// DOG	3:10	3:10	4:15	8	65
Randy	20	DOG & PL	3:30	3:30	4:35	2	65
Ron	24		3:55	3:55	4:55	5	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	18	11	4:20	4:20	5:20	5	55
Ron / Sue	26/12	soccer //////	5:10	5:15	6:15	2	60
Casey	7		5:45	5:45	6:40	0	55

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	11:55
Nicole	12-7	3:00
Misty	(GS - 8-5)	12:10
PHOTO LAB		
Marci	8-1	—
Melissa	1-7	3:30

GUIDE	SCHEDULE		LUNCH
Randy	8-4:30		1:10
Michael	9-2	H	—
Casey	10:30-7		2:15
~~Craig~~	~~12-5~~	(Sick)	—
Ron	2-7		—

FANTASTIC CAVERNS

432

Date October 23rd 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 70° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2733737	1292164	/	7898
End	2734172	1292164	/	7903

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5	1	845	845	940	1	55
Craig	2		915	915	1015	2	60
Casey	8		945	945	1045	2	60
Rick	9						
Craig	34	Bus	1015	1020	1125	4	65
Casey	25		1045	1045	1140	4	55
Rick							
Craig	48	11 Bus	1115	1130	1230	3	60
Nicole	20	1 Bus	12	1205	1155	5	50
Casey	24	11	1230	1230	130	6	60
Marci	24	1 Dog	1250	1250	150	6	60
Rick	26	11111	110	110	205	4	55
Craig	24	111	130	130	235	4	65
Casey Sue	19	1111111	2	2	255	10	55
Rick	24	111 PB	225	225	325	6	60
Craig	24	1111 Dog	250	250	355	4	65
Casey	15	Dog 111	320	320	420	3	60
Rick	25	111	345	345	440	4	55
Craig	23	1	415	415	520	1	65
Rick	23		5	5	550	3	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nicole	5		540	540	530	1	50

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-12	1:25
Madi	12-7	1:15
Marci	8-5 GS	✓
PHOTO LAB		
Katie	Quit	—
Melissa	11-7	3:15

GUIDE	SCHEDULE		LUNCH
Casey	8-430	H	1145
Craig	9-530		12:30
Rick	930-700		12:30
Nicole	932-700		1 —
Sue	1-4		—

FANTASTIC CAVERNS

165

Date 10-24-2016

Day Sun. (Mon) Tues. Wed. Thurs. Fri. Sat.

Weather 50° sunny am. 73° Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2734172	1292164		7903
End	2734339	1292164		7903

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	6		9:-	9:-	9:55	0	55
Michael	6		10:-	10:-	11:05	2	65
Craig	20		10:30	10:30	11:35	6	65
Michael	17		11:15	11:20	12:30	2	70
Craig	10		11:45	11:45	12:50	2	65
Rick	8		12:10	12:10	1:-	3	50
Michael	24	11	12:40	12:40	1:50	3	70
Rick	24	PB DOG PB	1:15	1:15	2:20	9	65
Casey	24		2:-	2:05	2:55	1	50
Rick	11		2:35	2:35	3:30	1	55
Casey	6		3:15	3:15	4:05	1	50
Rick	9		4:10	4:10	5:10	2	60
Casey	2		5:10	5:10	6:05	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Nicole	12-7	✓
Misty	8-2 (GS)	✓
PHOTO LAB		
Mandy	8-1	—
Melissa	1-7	✓

GUIDE	SCHEDULE	LUNCH
Craig	8-1	—
Michael	9-2	—
Rick	12-7	330 ✓
Casey	12-7	—

FANTASTIC CAVERNS

153

Date October 25, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 68° am. Sunny 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2734339	1292164		7903
End	2734492	1292164		7904

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Michael	4		9:15	9:15	10:15	1	60
Ron	23	1	950	955	1050	8	55
Rick	13		1030	1030	1125	2	55
Ron	2	1	11	1105	1205	1	60
Rick	1		1130	1130	1225	1	55
Randy	3		1210	1210	115	2	65
Casey	22	Dogs 1	1240	1240	140	7	60
Rick	23	KCPD	1	1	2	8	60
Randy	12	1	125	125	225	2	60
Casey	5		2	2	300	1	60
Rick	19	1	235	235	330	6	55
Casey	10		305	305	4	1	55
Randy	6		335	335	445	1	70
Rick	2		405	405	455	1	50
Russ	5		440	440	545	2	65
Randy	2		5	5	555	1	55
Russ	2		545	550	650	2	60
Randy	2		605	610	705	0	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Modi	8-1	—
Sue	12-7	245
Misty	10-5 (GS)	205
PHOTO LAB		
Mandy	8-1	—
Melissa	1-7	325

GUIDE	SCHEDULE	LUNCH
Ron	8-1	—
Michael	9-4	Sick
Casey	11-4	—
Rick	915 ~~12~~-5	2
Randy	12-7	235
Russ	4-7	—

FANTASTIC CAVERNS

186

Date October 26th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 62° am. Cloudy 69° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2734492	1292164		7904
End	2734679	1292164		7906

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron Jered:	43	Bus	835	835	10-	5	85
Nicole:	8	1	900	900	1005	1	60
Ron Jered:	25	Bus	1010	1010	11-	3	50
Rick:	18		1050	1050	1145	1	55
Ron:	7		1120	1120	1215	3	55
Rick:	13	11	12-	12-	1255	3	55
Randy:	17	11	1250	1250	150	5	65
Rick:	8		130	130	120	0	50
Randy:	16		220	220	330	3	70
Rick:	10		305	310	410	2	60
Randy:	4		4-	4-	5-	2	60
Rick:	8		5-	5-	550	0	50
Randy:	2		535	535	630	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi:	8-1	—
Nicole	12-7	1230
Sue	10-5 (GS)	2:05
PHOTO LAB		
Mandy	8-1	—
Marci:	1-7	✓

GUIDE	SCHEDULE	LUNCH
Javed	8-1	—
Ron	8-1	—
Nicole	9-12	—
Rick	11-7	225
Randy	12-7	330

FANTASTIC CAVERNS

255

Date October 27, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather fog 61° am. Sunny 71° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2734679	1292164		7906
End	2734934	1292164		7908

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	9		920	920	1015	0	55
Craig	2		950	950	1050	1	60
Casey	4		1015	1010	1105	2	55
Rick Michael	62	ELCAN SP	1025	1025	1130	7	65
Rich	5	1	1040	1040	1140	1	60
Craig Sue	43	ELCAN SP	11 -	1100	1200	4	60
Casey	6		1125	1125	1225	1	60
Ron	4		12 -	12 -	1145	2	45
Rick	15		1215	1215	115	1	60
Craig	16	11	1245	1245	150	2	65
Ron	8	dog	105	105	2 -	2	55
Casey	9	1111	140	140	230	0	50
Craig	1		2 -	2 -	305	0	65
Casey	25	111	245	245	340	1	55
Craig	8		325	325	425	2	60
Russ	16	dog	415	415	520	1	65
Casey	2	dog	5 -	5 -	550	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8 - 100	—
Sue	12 - 700	110
Misty	10 - 5 GS	145
PHOTO LAB		
Melissa	8 - 1	—
Marci	1 - 7	—

GUIDE	SCHEDULE	LUNCH
Rick	8 - 100	—
Michael	9 - 100	—
Casey	930 - 700	1230
Craig	930 - 300	1215
Russ	4 - 700	—
Sue	10 - 1200	—
Ron	9 - 200	—

FANTASTIC CAVERNS

133

Date October 28 - 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 60° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2734934	1292164		7908
End	2735067	1292164		7908

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		930	930	1025	1	55
Randy	11		1015	1015	1115	5	60
Casey	21	111	1050	1055	1145	1	50
Randy	25		1205	1205	105	7	60
Casey	11		1240	1240	140	2	60
Michael	8		115	115	220	2	65
Casey	21	111	145	150	245	4	55
Randy	12	11	240	240	140	2	60
Casey	16	1	315	315	4 -	2	45
Michael	6		430	435	550		

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1210
Madi	12-7	340
Misty	(GS - 8-5)	1230
PHOTO LAB		
Mandy	8-1	—
Mavi	1-7	—

GUIDE	SCHEDULE	LUNCH
Casey	8-7	1150
Randy	9-5	115
Craig	10-7	
Michael	12:45 - 7	245

FANTASTIC CAVERNS

237

Date October 29 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 60° am. Sunny 78° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735067	1292164		7968
End	2735304	1292164		7908

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron	5	1	9-	9-	10-	2	60
Casey	25	11	940	940	1040	6	60
Ron	21	111	1005	1010	1110	2	60
Russ	18	dog 11	1030	1030	1130	5	60
Casey	5	1	1050	1050	1150	1	60
Michael	20	dog	1115	1115	1225	5	70
Ron	24	PB 111	1140	1140	1246	6	65
Russ	13	11	12-	12-	1-	5	60
Casey	21	111	1230	1230	130	3	60
Russ	18	1	105	105	210	4	45
Ron	2		130	130	225	1	55
Michael	6	11	150	150	255	1	65
Casey	19		220	220	320	4	65
Russ	13	1	3-	3	405	5	65
Michael	10	1	350	350	455	2	65
Casey	10	1	435	435	530	3	50
Russ	4		510	510	615	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-4:30	1215
Nicole	12-7	225
Misty	(GS - 8-5)	1230
PHOTO LAB		
Marci	8-1	—
Amanda	1-7	3

GUIDE	SCHEDULE	LUNCH
Ron	8-2130	1255
Casey	9-7	12-
Russ	10:30-7	210
Michael	11-5	1-

FANTASTIC CAVERNS

215

Date October 30th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 66° am. Cloudy 60° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735304	1292164	/	7908
End	2735521	1292164	/	7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		8:50	8:50	9:40	1	50
Craig	2		9:30	9:30	10:30	0	60
Rick	11		10:15	10:15	11:15	2	60
Craig	8		10:45	10:45	11:40	1	55
Russ	22		11:05	11:00	12:00	2	60
Rick	18	1	11:20	11:25	12:20	4	55
Craig	22		11:50	11:50	12:50	3	60
Ross	8		12:10	12:10	1:10	3	60
Rick	18	1 Dog	12:35	12:35	1:30	4	55
Craig	20		1	1	2:00	1	60
Ross	25	III	1:30	1:30	2:40	5	60
Rick	16	II	2:05	2:05	3	4	55
Casey	10	III	2:45	2:45	3:35	3	50
Ross	18		3:15	3:15	4:20	3	65
Rick	10		3:50	3:55	4:50	2	55
Ross	7		4:35	4:35	5:35	3	60
Rick	2		5:30	5:30	6:20	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Nicole	12 - 7:00	2
Casey	1 - 5:00	12:15
Scott		
PHOTO LAB		
Amanda	8 - 1:00	
Marci	1 - 7:00	

GUIDE	SCHEDULE	LUNCH
Casey	8 - 1:00	—
Craig	9 - 2:00	—
Rick	9 - 7:00	2:05
Russ	10:30 - 7:00	2:45

FANTASTIC CAVERNS

71

Date October 31, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Fog 60° am. Cloudy 82° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735521	1292164		7924
End	2735592	1292164		7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Craig	13	dog 17	10:15	10:15	11:10	3	55
Jared	2		10:45	10:45	11:30	Ø	45
Craig	8	11	11:45	11:45	12:40	0	55
Jared	2		12:15	12:15	1:05	0	50
Rick	13		12:50	12:50	1:45	1	55
Jared	6		1:15	1:15	2:05	0	50
Rick	8	dog	1:55	1:55	2:55	2	60
Casey	6	dog	2:30	2:35	3:30	3	55
Rick	6		3:20	3:20	4:10	1	50
Casey	2		3:50	3:50	4:50	1	60
Rick	6		4:35	4:35	5:35	3	60
			5:10				
			5:40				

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Madi	8-1	—
Nicole	12-7	
Misty	8-2 (GS)	
PHOTO LAB		
Mandy	8-1	—
Marci	1-7	—

GUIDE	SCHEDULE		LUNCH
Craig	8-1		—
Jared	9-2		—
Rick	12-7		250
Casey	2-7		—

FANTASTIC CAVERNS

195

Date November 1, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 72° am. Sunny 81° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735592	1292164	/	7924
End	2735787	1292164	/	7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick Jared	55	W Crack	945	945	1040	0	55
Ron Craig	54	W Crack	1000	1000	1100	0	60
Randy	10		1025	1025	1130	5	55
Jared	4		11	11-	1155	1	55
Craig	11		1120	1120	1215	2	55
Rick	17		1210	1210	105	4	55
Craig	8		1240	1240	142	1	60
Jared	6		115	120	210	0	50
Rick	15		250	250	350	5	60
Jared	6	1 Dr	220	220	310	1	50
Rick	9		305	305	355	3	60
Jared	2		340	340	430	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Mandy	8-500	SICK
Marci	10-500	

GUIDE	SCHEDULE	LUNCH
Jared	8-430	
Rick	9-500	
Randy	8-12	–
Ron	9-1	–
Craig	930-130	–
Marci	10-2	–

FANTASTIC CAVERNS

57

Date November 2, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 68° am. Cloudy 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735787	1292164		7924
End	2735844	1292164		7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	2		945	945	1035	0	50
Jared	7	1	1035	1035	1135	2	40
Casey	8	1	1110	1110	1205	3	55
Jared	7	1	1155	1200	100	2	60
Jared	14		145	150	250	2	60
Jared	5		255	255	345	3	50
Jared	6		345	345	440	2	35
Casey	8		415	415	515	2	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	
PHOTO LAB		
Mandi	8-5:00	

GUIDE	SCHEDULE	LUNCH
Jared	8-4:30	110
Casey	9-5:00	1210

FANTASTIC CAVERNS

195

Date November 3rd, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Cloudy 66° am. Mist 68° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2735844	1292164	/	7924
End	2736039	1292164	/	7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Randy	2		900	900	1000	1	60
Marci	2		935	935	1030	1	60
Rick & Suey	52	Wilson Circle	950	950	1045	0	55
Craig	8		1005	1005	1110	2	65
Casey Randy	53	Wilson Circle	1020	1020	1120	0	60
Marci	10		1045	1045	1140	3	55
Rick	8	1	1105	1105	1205	2	50
Craig	9	1	1130	1130	1235	3	65
Casey	4	1	1210	1210	110	2	60
Marci	12		1235	1255	165	1	60
Casey	6		130	130	225	3	55
Marci	9		205	205	305	3	60
Casey	2		255	255	350	1	55
Marci	11	1	330	335	435	2	60
Casey	5	1	410	410	510	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-1	1145
PHOTO LAB		
Markly	8-500	1230

GUIDE	SCHEDULE		LUNCH
Casey	8-430		1130
Marci	9-500		1150
Rick	8-1200		—
Randy	8-1200		—
Craig	9-100		—
Sue	930-130		—

FANTASTIC CAVERNS

184

Date Nov. 4 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Foggy 60° am. Sunny 66° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2736039	1292164		7924
End	2736223	1292164		7924

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	6		8 55	8 55	9 45	0	50
Marci Craig	67	Cowd EL	10 -	10 -	11 -	1	60
Nicole	15	dogs	10 20	10 20	11 15	2	55
Craig	20		11 40	11 40	12 45	10	65
Casey	19	111	12 30	12 30	1 20	2	50
Nicole	10		1 10	1 10	2 -	3	50
Casey	18	1 dog	1 50	1 50	2 35	2	45
Nicole	12		2 30	2 30	3 20	1	50
Casey	13	dog	3 -	3 -	3 55	3	55
Nicole	4		4 -	4 -	5 50	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	11 25
PHOTO LAB		
Madi	8-5	11 25

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	11 -
Nicole	9-5	11 50
Craig	9-1	—
Marci	9-1	—

FANTASTIC CAVERNS

296

Date November 5 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. (Sat.)

Weather Sunny 50° am. Sunny 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2731223	1292164		7924
End	2736520	1292164		7927

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		830	830	920	0	50
Ron	7		915	915	10-	2	45
Randy Michael	28/7	Bibing	930	930	1035	7	65
Jared Nicole	10	FEA 1	1015	1015	1110	2	55
Casey	25	11	1040	1040	1130	7	50
Ron	17	11	11-	11-	1150	8	50
Michael	11		1120	1120	1130	2	70
Jared	21		12-	12-	1255	5	55
Randy	17	1	1230	1230	130	3	65
Michael	8		1-	1-	2-	1	60
Casey	18		130	130	225	4	55
Randy	15	1111	2-	2-	305	6	65
Casey	13	1	230	230	325	4	55
Nicole	25	1	310	310	4-	6	50
Casey	18	111	345	345	440	4	55
Nicole	3		410	410	455	0	45

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Jim	8-5	1115
Misty	(GS 8-5)	1230
PHOTO LAB		
Mari	8-5	1160

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	1135
Nicole	9-5	105
Jared	9-1	—
Michael	9-2	—
Ron	9-2:30	—
Randy	9-3:30	1105

FANTASTIC CAVERNS

290

Date November 6 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 55° am. Sunny 64° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2736520	1292164	✓	7927
End	2736810	1292164	✓	7927

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	10	DOV	830	830	930	4	60
Jared	6		905	905	955	2	50
Rick	5		930	930	825	1	55
Jared	9		1000	1000	1050	3	50
Rick	16	DOV	1030	1030	1130	5	60
Jared	13	11	11	1100	1200	3	60
Nicole Marci	52	Bus	1120	1120	1220	5	60
Rick	22	11	1130	1135	1235	3	60
Jared	23		1205	1205	1-	5	55
Marci	20	111 DOV	1230	1235	135	2	60
Jared	24	1	1[illegible]5	105	205	6	60
Marci	14		130	135	230	3	55
Rick	24		210	210	310	7	60
Jared	21		240	240	340	3	60
Rick	24	111	320	320	420	6	60
Jared	7	11	350	350	445	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		145
Misty	8-500	1230
PHOTO LAB		
Madi	8-500	120

GUIDE	SCHEDULE	LUNCH
Rick	8-430	1250
Jared	9-500	
Nicole	10-200	—
Marci	1030-230	—

FANTASTIC CAVERNS

80

Date November 7 - 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Rain 54° am. Mist 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2736810	1292164		7927
End	2736890	1292164		7927

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Nick	4	1	9-	9-	10:00	1	60
Jared	10	Dog	9:50	9:55	10:55	4	60
Rick	4		10:30	10:30	11:30	2	60
Jared	12		10:55	11:00	12:00		60
Nick	8		11:30	11:35	12:30	2	55
Jared	10		12:25	12:25	1:20	2	55
Rick	4		1:00	1:05	2:05	2	60
Rick	20	1	2:35	2:35	3:25	3	55
Rick	8		3:30	3:30	4:30	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	✓
PHOTO LAB		
Madi	8-5	✓

GUIDE	SCHEDULE		LUNCH
Nick	8-4:30		✓
Jared	9-5		✓

FANTASTIC CAVERNS

168

Date November 8, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Mist 55° am. Cloudy 59° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2736890	1292164		7927
End	2737058	1292164		7930

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	2		845	845	945	1	60
Craig Ron	52	Bus	915	915	1015	11	60
Rick Randy	45	Bus	930	935	1035	15	60
Jared	14	III	1000	10	1100	2	60
Craig	6	II	1030	1035	1135	X	60
Ron	10	HH	1100	1100	12	4	60
Randy	6		1130	1135	1240	1	65
Craig	4		1200	1205	100	1	55
Rick	12		100	100	200	3	60
Jared	4		130	130	230	2	60
Rick	6		200	200	300	3	60
Jared	4		230	230	330	1	60
Rick	2		300	305	350	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	
PHOTO LAB		
Mandy	8-5	✓

GUIDE	SCHEDULE		LUNCH
Casey	8-1		—
Ron	8-1		—
Jared	8-430		✓
Mandy	830-130		—
Craig	830-130		—
Rick	9-5		✓

FANTASTIC CAVERNS

139

Date November 9th 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 48° am. Sunny 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2737058	1292164	/	7930
End	2737200	1292164	/	7930

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		840	840	930	0	50
Rick Marci	31/9	Bunz Tour	1025	1025	1130	11	65
Jared	8		1105	1105	1155	2	50
Marci	8		1145	1145	1245	3	60
Jared	11	dog	1230	1230	120	4	50
Marci	6		105	105	205	0	60
Rick	11	dog	200	200	300	2	60
Marci Nicole	41/2	Bus	215	215	315	0	60
Rick	8		305	305	355	3	50
Jared	4		340	340	430	0	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Madi	8-5:00	1145

GUIDE	SCHEDULE	LUNCH
Rick	8-430	1145
Nicole	9-5:00	
Ron	10-3:00 sick	—
Marci	10-3:00	—
Jared	10-3:00	—

FANTASTIC CAVERNS

73

Date November 10th, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny am. pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2737200	1292164	/	7930
End	2737273	1292164	/	7932

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	10		900	905	1000	5	55
Craig	4		930	930	1030	2	60
Craig	7		1045	1045	1145	2	60
Casey	16	11	1125	1125	1220	2	55
Craig	5		12	1205	105	1	60
Casey	11		1250	1250	141	3	55
Craig	7		145	150	255	0	65
Craig	12		250	255	400	1	65

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	✓
PHOTO LAB		
Madi	8-500	

GUIDE	SCHEDULE		LUNCH
Casey	8-430		✓
Craig	9-500		✓

FANTASTIC CAVERNS

186

Date November 11-2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather Sunny 45° am. Sunny 62° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2737273	1292164	/	7932
End	2737459	1292164	/	7932

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	4		840	840	935	2	55
Nicole	11		930	930	1020	2	50
Casey	4		10-	10-	1050	0	50
Nicole	9	11	1035	1035	1120	1	45
RON	17	1	1130	1130	1225	5	55
Casey	24	11	12-	12-	1255	4	55
RON	13	11	1235	1235	130	4	55
Casey	20	11	110	110	2-	1	50
RON	20		155	155	250	5	55
Casey	14		240	240	335	1	55
Ron	20	11	3-	3-	4-	6	00
Casey	20	00	345	345	435	4	50
Nicole	8		405	405	455	3	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1130
PHOTO LAB		
Madi	8-5	1220

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	1055
Nicole	9-5	145
Ron	11-4	—

FANTASTIC CAVERNS

266

Date November 12 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 38° am. Sunny 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2737459	1292164	/	7932
End	2737725	1292164	/	7938

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5		830	830	920	2	50
Rick	9	1	910	910	1010	2	60
Casey	10	1 11	950	955	1040	4	45
Ron	6	1 11	1025	1025	1115	1	50
Rick	14	1 11 11	11 -	11 -	1145	2	45
Ron	24	11	1130	1130	1230	5	60
Craig	20	Nagel	1145	1145	1255	5	70
Javed	25	1 11	1215	1215	105	4	50
Ron	25	dogs	1235	1245	140	4	55
Craig	24	[illegible]	115	115	215	1	60
Javed	24	Slaugh Fan	130	130	225	5	55
Casey	20	1	145	145	245	10	60
Javed	17	1 dog	235	235	330	3	55
Casey	24	11	310	310	405	7	55
Javed	14	1 PB	340	340	435	4	55
Casey	2		410	410	5 -	0	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1150
Nicole	8-5 GS	1205
PHOTO LAB		
Mandy	8-5	1240

GUIDE	SCHEDULE	LUNCH
Casey	8-4:30	11 -
Javed	12 - 5	—
Rick	9-12	—
Ron	10-2	—
Craig	11-3	—

FANTASTIC CAVERNS

375

Date November 13th 2017

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 40° am. Sunny 61° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2737725	1292164		7938
End	2738133	1292164		7938

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	13/2	Bus	9:10	9:10	10-	4	50
Jared / Sue	28	Bilbrey	9:25	9:25	10:20	7	55
Casey	20	1	10:05	10:05	10:55	4	50
Rick	25	IIIII	10:35	10:35	11:30	2	55
Jared	24	11	11:10	11:10	12:10	6	60
Casey	25	11	11:40	11:41	12:35	1	50
Rick	24	1	12:30	12:30	1:20	4	50
Jared	23	111	12:55	12:55	1:50	7	55
Sue / Casey	33/14	Bruson 1	1:15	1:15	2-	3	45
Rick	23	1	1:40	1:40	1:35	4	55
Sue	15	1	2:20	2:20	3:15	2	55
Jared / Nicole	51	Bus	2:45	2:45	3:50	4	65
Rick	23	1	3:10	3:10	4-	3	50
Sue	22	11	3:30	3:30	4:31	7	60
Jared	9	1	4-	4-	5:00		60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	8-5	-
Misty	8-5 (GS)	1:15
PHOTO LAB		
Marci	8-5	12:25

GUIDE	SCHEDULE		LUNCH
Rick	8-4:30		11:40
Casey	8-2:30		—
Sue	8-2:30		11-
Nicole	9-3:30		11:50
Jared	9-5:00		12:20

FANTASTIC CAVERNS

129

Date November 14 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 57° am. Sunny 70° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738133	1292164	/	7938
End	2738262	1292164	/	7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		830	830	925	1	55
Jared	10		935	935	1035	1	60
Rick	4	11	1045	1015	1110	2	55
Jared	10	Dok	1100	1105	1205	3	60
Rick	16	Dok	1145	1150	1250	3	60
Ron	3		1210	1210	110	2	60
Jared	13		1245	1245	145	2	60
Craig	14		110	115	215	2	60
Ron	6		145	150	250	4	60
Rick	23	Bus	205	205	305	5	60
Jared	12	Dok	230	235	335	0	60
Craig	4		305	305	405	2	60
Rick	6		330	335	435	0	60
Jared	5		400	400	500	4	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Marci	8-500	

GUIDE	SCHEDULE		LUNCH
Rick	8-430		
Jared	9-500		✓
Ron	12-400		—
Craig	1-500		—

FANTASTIC CAVERNS

203

Date November 15, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. Sunny 72° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738262	1242164	/	7942
End	2738466	1292164	/	7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Ron Craig.	51	Bus	925	925	1035	13	70
Jared.	23	Bus	940	950	1045	17	55
Rick Casey.	50	Bus	1005	1010	1110	12	60
Jared.	11	11	1045	1045	1145	2	60
Craig.	8		1115	1115	1215	0	60
Ron.	4		1145	1145	1250	1	65
Jared.	13	11	1220	1220	120	1	60
Rick.	13		100	100	200	2	60
Jared.	7		130	130	225	0	55
Rick.	7		215	220	320	3	60
Jared.	2		245	250	350	1	
Rick.	6		325	325	415	0	50
Jared.	6		410	410	510	2	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		✓
PHOTO LAB		
Marci	8-5	✓

GUIDE	SCHEDULE	LUNCH
Jared	8-430	✓
Rick	9-500	✓
Casey	8-12	—
Ron	9-1	—
Craig	9-1	—

FANTASTIC CAVERNS

54

Date November 16th, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Sunny 61° am. Sunny 77° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738466	1292164		7942
End	2738523	1292164		7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5		850	855	945	0	50
Rick	5		940	945	1040	2	55
Rick	6	IIII	1100	1105	1150	2	45
Casey	8		1215	1220	110	0	50
Rick	8		1250	100	200	2	60
Casey	7		145	145	245	2	60
Rick	9	1	220	220	315	3	55
Casey	6		250	255	355	0	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Melissa	8-5	

GUIDE	SCHEDULE		LUNCH
Casey	8-500		
Rick	9-500		

FANTASTIC CAVERNS

79

Date November 17, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 58° am. Sunny 79° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738523	1292164		7942
End	2738602	1292164		7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey.	4		920	920	1020	1	60
Rick.	2		945	945	940	1	55
Mandi.	2		1015	1015	1115	0	60
Casey.	2		1040	1035	1130	0	55
Jared.	22	Bus	1050	1050	1140	1	50
Rick.	6		1115	1120	1210	2	50
Jared.	2		1145	1145	1235	1	50
Jared.	3		1245	1245	145	1	60
Casey.	13	1	110	120	220	3	60
Rick.	13		200	200	300	5	60
Casey.	6		230	230	325	2	55
Rick.	2		305	310	405	0	55
Casey.	2		350	350	445	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Mandi		

GUIDE	SCHEDULE		LUNCH
Casey	8-5		
Rick	9-5		
Jared	10-2		—
Mandi	9:30-1:30		—

FANTASTIC CAVERNS

133

Date November 18-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 48° am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738602	1292164		7942
End	2738736	1292164		7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	12	1	830	830	925	2	55
Javed	2	11	925	925	1015	0	50
Casey	7		955	955	1045	2	50
Craig Mara	58	Hubble	1010	1010	1115	0	65
Javed	12		1030	1030	1130	1	60
Casey	5		1115	1115	12-	1	45
Craig	5		1210	1215	1235	2	70
Javed	11	1	1245	1245	140	3	55
Casey	3		120	120	220	1	60
Javed	5		2-	2-	250	1	50
Casey	10	11	240	240	335	5	55
Javed	1		310	310	4-	0	50
Casey	3	dog	345	345	435	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1125
PHOTO LAB		
Melissa	8-5	1205

GUIDE	SCHEDULE	LUNCH
Casey	8-5	1205
Javed	9-5	1145
Mara	9:30 - 1:30	—
Craig	10-2	—

FANTASTIC CAVERNS

161

Date November 19 - 2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 30° am. Sunny 43° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738736	1292164	/	7942
End	2738897	1292164	/	7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	9		840	840	935	2	55
Jared	3	dog	910	915	1010	1	55
Casey	7	11	950	950	1045	3	55
Nicole	13		1015	1015	1105	2	50
Jared	7	111	1055	1055	1145	1	50
Casey	14	11111	1125	1125	1220	2	55
Jared	19	111	1205	1205	1-	4	55
Casey	24	1111	1235	1235	135	7	60
Jared	17	dog	110	110	205	2	55
Nicole	11	1	145	145	235	3	50
Casey	18	11	215	215	310	1	55
Jared	17		250	250	345	3	55
* Casey	2		345	345	445	0	30

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

* at request of guests.

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1115
Misty	8-5	1130
PHOTO LAB		
Melissa	8-5	1215

GUIDE	SCHEDULE	LUNCH
Casey	8-5	145
Jared	9-5	110
Nicole	10-5	1-

FANTASTIC CAVERNS

211

Date November 20th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 44° am. Sunny 54° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2738897	1292164	/	7942
End	2739108	1292164	/	7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Marci	4		830	830	925	2	55
Nicole	2		910	910	1000	0	50
Marci	4	DOUS	940	940	1040	1	60
Nicole	17		1010	1010	1105	3	55
Marci	11		1050	1055	1155	4	60
Rick	20		1125	1130	1225	4	55
Nicole Marci	39	11	1210	1210	1	9	50
Craig	24	11	1230	1235	130	6	55
Rick	12		115	115	215	3	60
Craig	24	1111	145	145	246	4	60
Rick	20	4	230	230	330	5	60
Craig	23		305	305	410	1	60
Rick	11		340	340	435	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Melissa	1-5	1120

GUIDE	SCHEDULE		LUNCH
Marci	8-12		—
Nicole	9-500		205
Rick	11-400		—
Craig	12-5		—

FANTASTIC CAVERNS

194

Date November 21, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 50° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2739108	1292164	/	7942
End	2739302	1292164		7942

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	7		9:40	9:40	10:40	1	60
Jared	10		10:05	10:05	11-	9	55
Nicole	40	pgs					
Craig	17	DOG	10:20	10:25	11:25	6	60
Rick	13	III	10:50	10:50	11:50	0	60
Jared	13	I	11:15	11:15	11:10	2	55
Craig	8		11:50	11:50	12:50	2	60
Rick	12	I	12:25	12:25	1:25	0	60
Craig	17		12:55	1:00	2:00	6	60
Jared	6	II	1:25	1:25	2:35	1	60
Rick	4		1:55	1:55	2:55	2	60
Jared	25	III	1:25	1:35	2:35	5	60
Rick	17	II	3:00	3:05	3:55	2	50
Jared	9	IIII	3:40	3:45	4:40	1	55
Rick	1		4:10	4:10		0	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		✓
PHOTO LAB		
Mandy	8-5:00	✓

GUIDE	SCHEDULE	LUNCH
Rick	8-5	✓
Jared	9-5	✓
Craig	9:30 - 1:30	–
Nicole	9 - 1:00	

FANTASTIC CAVERNS

220

Date November 22, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Cloudy 54° am. Rain 55° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2739302	1292164		7942
End	2739523	1292164	✓	7949

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	2		915	915	1005	1	50
Rick	8	III	950	950	1050	3	60
Jared	8		1020	1020	1120	1	60
Rick	21	1 Dog	1100	1100	1200	5	60
Jared	22	1 Kpl	1130	1130	1225	4	55
Rick	20	III	1215	1215	110	3	55
Jared	23		100	100	200	3	60
Rick	24	II	130	130	230	8	60
Jared	17		205	205	300	1	55
Rick	25	IIII	235	235	330	3	55
Jared	25	I	3	305	405	2	60
Rick	16	III	330	335	430	1	55
Jared	10	III	410	410			

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Mandy	8-5	

GUIDE	SCHEDULE		LUNCH
Rick	8-5		
Jarod	9-5		✓

FANTASTIC CAVERNS

224

Date November 23, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sat.

Weather Cloudy 54° am. Misty 52° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2739523	1292164	/	7949
End	2739747	1292164	/	7949

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	3	1	8 30	8 30	8 25	2	55
Craig Jerod	31	Bus	9 45	9 45	10 45	6	60
Rick	25	11	10 10	10 15	11 15	7	60
Jerod	16	111	10 55	10 55	11 55	2	60
Craig	10		11 15	11 15	12 15	1	60
Rick	21		11 45	11 45	12 55	4	70
Jared	19	1	12 15	12 15	1 10	3	55
Craig	24	111	12 45	12 50	1 50	0	60
Jared	19		1 15	1 15	2 15	2	60
Rick	14		1 45	1 55	2 50	3	55
Craig	17	1 PL	2 20	2 30	3 30	2	60
Jared	15	1	2 50	3 00	4 00	2	60
Rick	4		3 25	3 25	4 20	1	55
Craig	6		4 15	4 15	5 15	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		

PHOTO LAB		
Mardy		

GUIDE	SCHEDULE		LUNCH
Marci	8-5		Sick
Rick	8-5		
Jerod	9-		
Craig	9-5		

FANTASTIC CAVERNS

455

Date November 25-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Sunny 40° am. Cloudy 42° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2739747	1292104	/	7944
End	2740202	1292104	/	7951

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Javed	12	111	920	920	1015	3	55
Casey	25	dog 1pt	950	950	1050	3	60
Nicole	24	dog 11	1010	1010	11—	5	50
Javed	24	1	1035	1035	1130	2	55
Rich	24	111	11—	11—	1155	5	55
Casey	24	Kissel	1120	1120	1110	1	50
Javed / Nicole	43	11	1140	1145	1240	10	55
Rick	25	dog 111	1210	1210	155	3	55
Javed / Nicole	51	111111	1245	1245	140	6	55
Casey	24	11	105	105	2—	4	55
Rick	24	1111	130	130	220	3	50
Javed / Nicole	49	dog 11	150	150	235	8	45
Casey	24	111	215	215	310	2	55
Rick	25	dog 1	240	240	340	6	60
Javed	25	11	300	3—	355	6	55
Nicole	22		315	315	405	5	50
Rick	5		345	345	440	1	55
Javed	4		415	415	505	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	11:05
Misty	(GS - 8-5)	11:10
PHOTO LAB		
Melissa	8-330 (left early sick)	

GUIDE	SCHEDULE		LUNCH
Casey	8-5		1215
Javed	9-5		
Nicole	10-5		245
~~Mari~~	~~10-5~~	Sick	
Rich	1030-5		105

FANTASTIC CAVERNS

440

Date November 24-16

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Fog 30° am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740202	1292164		7951
End	2740642	1292164		7960

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5		9-	9-	950	1	50
Jared	12	III	930	930	1020	2	50
Russ	8		950	950	1045	1	55
Nicole	7	II	1010	1010	1055	1	45
Casey	20	1	1045	1045	1145	8 L	60
Russ	24	1	1115	1115	1210	3	55
Jared Nicole	49	IIIII	1145	1145	1235	12	50
Russ	25	1	1220	1220	115	5	55
Casey	24	1	1235	1235	130	6	55
Jared Nicole	47	IIIIIIII	1-	1-	155	10	55
Russ	25		125	125	225	6 L	60
Casey	25	III	145	145	240	5	55
Jared	25	IIII	2-	2-	3-	4	60
Nicole	25	IIII	220	220	310	1	50
Casey	25		245	245	340	3	55
Russ	24	II	305	305	405	2	60
Jared Nicole	49	II	320	320	415	3	55
Casey	15	II	345	350	445	3	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Russ	6		415	415	520	3	65

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	11-
Misty	(8-5 GS.)	11 20
PHOTO LAB		
Mari	9 30 -5	
Melissa	Sick	

GUIDE	SCHEDULE		LUNCH
Casey	8-5		1150
Jared	9-5		1050
Russ.	9:30-5		230
Nicole	10-5		
~~Casey~~	~~10-3~~	Sick	

FANTASTIC CAVERNS

200

Date November 27th 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Fog 47° am. Cloudy 49° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740642	1292164	7	07669
End	2740842	1292164		7961

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	2		830	830	930	0	60
Nicole	2	1	910	910	10	0	50
Russ	19	11	1015	1015	1115	3	60
Rick	19	11 009 111	1055	1055	1155	4	60
Russ	24	111	1120	1220	115	5	55
Nicole	27		1140	1140	1240	4	60
Rick	25	1	1205	1210	100	3	50
Russ	18	111	1230	1230	130	6	60
Rick	16	11	100	100	200	3	60
Nicole	25	11	130	130	230	1	60
Russ	7		200	205	3	1	55
Rick	8	1	235	235	330	2	55
Russ	2		310	310	405	1	55
Rick	6		345	345	440	1	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		✓
PHOTO LAB		
Casey	8-1	—
Doug		

GUIDE	SCHEDULE		LUNCH
Rick	8-500		2
Nicole	9-500		1
Russ	930-500		130

FANTASTIC CAVERNS

45

Date November 28, 2016

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 54° am. Sunny 57° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740842	1292164	/	7961
End	2740888	1292164	/	7961

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared	3	1	10:10	10:10	11:00	0	50
Marci	14	dog	10:40	10:45	11:40	2	55
Jared	5		11:20	11:25	12:25	0	60
Marci	8		12:15	12:20	1:15	0	55
Jared	4	1	2:00	2:00	2:50	1	50
Jared	7		3:10	3:10	4:00	0	50
Marci	5		3:45	3:50	4:45	2	55

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
PHOTO LAB		

GUIDE	SCHEDULE		LUNCH

FANTASTIC CAVERNS

53

Date November 29th, 2016

Day Sun. Mon. (Tues.) Wed. Thurs. Fri. Sat.

Weather Sunny 56° am. Sunny 63° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740888	1292164	/	07961
End	2740941	1292164	/	07961

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5		900	9—	955	1	55
Rick	4		940	940	1040	1	60
Rick	2		1100	1100	1200	1	60
Casey	5	1	1140	1140	1235	1	55
Rick	11	1	1220	1220	115	3	55
Rick	2		110	115	205	1	55
Casey	16	1	155	155	255	3	60
Rick	6		245	245	345	3	
Casey	2		330	330	430	1	

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot	—	

PHOTO LAB		
Mardi	8-5	

GUIDE	SCHEDULE		LUNCH
Casey	8-5		
Rick	9-5		

FANTASTIC CAVERNS

46

Date November 30, 2016

Day Sun. Mon. Tues. (Wed.) Thurs. Fri. Sa

Weather Sunny 39° am. Sunny pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740941	1292164		7961
End	2740995	1292164		7961

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	2		10:00	10:00	10:50	0	50
Rick	2		10:50	10:50	11:30	1	
Casey	7		11:30	11:30	12:20	-0-	50
Rick	2		12:30	12:35	1:20	/ *	45
Rick	8	1	1:40	1:40	2:10	-0-	30
Casey	2		2:10	2:10	3:10	-0-	30
Rick	2		2:50	2:50	3:25	-0-	35
Casey	2	1	3:15	3:15	3:45	-0-	30
Rick	11	11	3:45	3:45	4:15	-0-	30
Casey	8	1	4:10	4:15	5:45	-0-	30

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

* Per guest request, no picture taken

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Mandy		

GUIDE	SCHEDULE		LUNCH
Casey	8-5:00		
Rick	9-5:00		

FANTASTIC CAVERNS

27

Date December 1, 2016

Day Sun. Mon. Tues. Wed. (Thurs.) Fri. Sat.

Weather Sunny 38° am. Sunny 50° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2740995	1292164	/	07964
End	2741022	1292164	/	07965

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Marci	4		10:10	10:10	11:04	1	60
Casey	5		10:50	11:00	12:00	2	60
Marci	4		12:10	12:20	1:20	1	60
Casey	6	11	1:15	1:15	2:15	1	60
Marci	6		2:00	2:00	3:00	2	60
Casey	2		3:30	3:30	4:30	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		
PHOTO LAB		
Melissa	8-5:00	

GUIDE	SCHEDULE	LUNCH
Casey	8-5:00	
Marci	9-5:00	

FANTASTIC CAVERNS

113

Date Dec. 2 · 2016

Day Sun. Mon. Tues. Wed. Thurs. (Fri.) Sat.

Weather 38° sunny am. sunny 53° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2741022	1292164	/	7963
End	2741135	1292164	/	7966

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey	5	dog	925	925	1025	1	60
Mandy / Nicole	4/3	Danny	10 –	10	1155	B	65
Casey	8		1030	1035	1140	3	65
Nicole	16	11111	1130	1135	1215	2	40
Casey	7		1220	1220	120	1	60
Mandy	3		1255	1255	2–	1	65
Nicole	5	1	130	130	220	1	50
Casey	15	1	210	210	3–	1	50
Nicole	0	DNR	240	240	335	X	55
Casey	2	11	310	310	4–	1	50

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	11:30
PHOTO LAB		
Mandy	8-5	11:50

GUIDE	SCHEDULE	LUNCH
Casey	8-5	1145
Nicole	9-5	1220
Mandy	9-2	—
Craig	10-3 (No call No show)	— *

FANTASTIC CAVERNS

110

Date December 3-2016

Day Sun. Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Cloudy 40° am. Cloudy 44° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2741135	1292164		7966
End	2741246	1292164		7966

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Casey.	7	HH	950	950	1040	0	50
Marci.	24	HH	1040	1045	1140	3	55
Casey.	13	11	1115	1115	1215	4	60
Marci.	13	Dog	12	12	1255	3	55
Nicole.	2		1230	1230	120	1	50
Casey.	16		120	120	220	3	60
Marci.	18	1	145	145	245	3 H	60
Nicole.	9	dog	245	245	335	0	50
Casey.	9		345	345	445	3	60
Nicole.	2		410	410	450	1	40

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Sue	8-5	1055
Mandy	GS-8-5	1130
PHOTO LAB		
Melissa	8-5	1200

GUIDE	SCHEDULE	LUNCH
Casey	8-5	12.20
Nicole	9-5	120
Marci	10-3	—

FANTASTIC CAVERNS

127

Date December 4th, 2016

Day (Sun.) Mon. Tues. Wed. Thurs. Fri. Sat.

Weather Mist 42° am. 45° Cloudy pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	274/246	1292164		7966
End	274/373	1292164		7966

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Rick	4		9:10	9:10	10:05	2	55
Jared	4	Dec	10:05	10:05	10:55	0	50
Rick	22		11:05	11:10	12:20	4	70
Jared	12	11	11:55	11:55	12:55	3	60
Rick	24	111	12:50	12:50	1:50	6	60
Jared	15		1:25	1:25	2:25	4	60
Rick	22	1	2:05	2:05	3:05	5	60
Jared	11	1	2:35	2:35	3:30	1	55
Rick	6		3:10	3:10	4:00	0	50
Jared	4		3:35	3:35	4:30	2	55
Rick	4		4:10	4:10	5:10	2	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scot		✓
Misty (GS)		11:30
PHOTO LAB		
Melissa	8-5:00	1

GUIDE	SCHEDULE	LUNCH
Rick	8-5:00	12:25
Jared	9-5:00	12:55
Nicole	10-2	—

FANTASTIC CAVERNS

52

Date December 5th, 2014

Day Sun. (Mon.) Tues. Wed. Thurs. Fri. Sat.

Weather Fog, Sunny 30° am. Sunny 45° pm.

	#1 TICKET	#2 TICKET	GIFT CERT.	SEASON PASS
Begin	2741373	1292164	/	7966
End	2741425	1292164	/	7966

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO	
Jared.	2		915	915	1015	0	60
Rick.	4	1	1005	1005	1005	1	60
Jared.	2	1	1040	1040	1135	1	55
Rick.	2	1	1110	1120	1220	1	60
Jared.	4		1130	1155	1245	2	60
Rick.	16		1-	105	205	2	60
Jared.	7		150	200	255	0	55
Rick.	8	1	220	230	310	1	50
Jared.	3	1	300	300	400	1	60
Rick.	4	1	335	340	440	1	60

GUIDE	# OF PEOPLE	UNDER 6	SCHED.	IN	OUT	PHOTO

INFO. COUNTER	SCHEDULE	LUNCH
Scott		✓
PHOTO LAB		
Mandy	8-5	1230

GUIDE	SCHEDULE	LUNCH
Rick	8-5	1230
Jared	9-5	1250

Missouri Department of Health and Senior Services
P.O. Box 570, Jefferson City, MO 65102-0570 Phone: 573-751-6400 FAX: 573-751-6010
RELAY MISSOURI for Hearing and Speech Impaired 1-800-735-2966 VOICE 1-800-735-2466

Peter Lyskowski
Director

Jeremiah W. (Jay) Nixon
Governor

December 21, 2016

John E. Price
Carnahan, Evans, Cantwell & Brown, P.C.
2805 S. Ingram Mill Road
P.O. Box 10009
Springfield, MO 65808

RE: Fantastic Caverns Employee Notification of TCE Exposures

Dear Mr. Price:

The Missouri Department of Health and Senior Services (MDHSS) recently received a copy of the enclosed report prepared by Ozark Underground Laboratory (OUL), *Fantastic Caverns Information for Employees on TCE in Cave Air,* dated September 1, 2016, that was reportedly presented to employees of your client, Fantastic Caverns, on October 13, 2016. While MDHSS appreciates that Fantastic Caverns is sharing information with employees, the information provided in this report is very troubling because it misinforms the employees of trichloroethylene (TCE) exposure concerns and potential health risks. The U.S. Environmental Protection Agency (EPA) also expressed similar concerns about the information provided to Fantastic Cavern's employees in a recent letter (enclosed) to the Missouri Department of Natural Resources (MDNR). MDNR forwarded that letter to us and indicated that they share EPA's concerns. Therefore, please consider this letter a request by our combined agencies that employees of Fantastic Caverns be immediately provided accurate health information on TCE exposure.

Of specific concern in the OUL report is the comparison of the cave air TCE levels to the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) and the conclusion that, since the levels detected in cave air are below this OSHA level, there is no health risk to employees. While OSHA does in fact regulate workplace health and safety, OSHA PELs apply to commercial/industrial operations where the subject chemicals are in active use or production. Since the source of TCE in air within Fantastic Caverns is from environmental contamination and not from the use or production of TCE at the facility, OSHA standards are not applicable for the cave. MDNR previously provided information to the cave owner by email on September 2, 2016 regarding the inappropriateness of use of OSHA PELs at this site, and that information sheet is enclosed again with this letter for reference. In addition to the information provided in this enclosure, it is also worthy to note that OSHA too recognizes that many PELs "are outdated and inadequate for ensuring protection of worker health." (www.osha.gov/dsg/annotated-pels)

EPA uses current science to calculate health protective standards for chemical exposure to protect individuals, including workers, at sites with environmental contamination. An EPA Region VII memo titled *Action Levels for Trichloroethylene in Air* (November 02, 2016) provides the recommended action

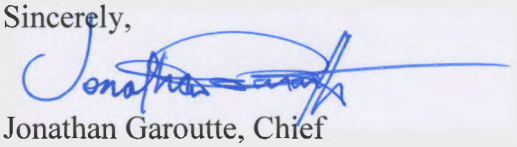
levels for TCE in air as well as information on characterizing and addressing human health risk from less than life-time exposures. The memo is included as an enclosure.

Air samples from the cave collected as long ago as 2004 and as recently as this year have shown intermittent elevations of TCE significantly above the current EPA level. Both MDHSS and MDNR previously recommended that employees of Fantastic Caverns be informed that TCE has been detected in cave air above levels of health concern and that the employees be provided with applicable health information on TCE exposure. The agencies followed up on several occasions (September 2, 19, and October 6, 2016) by providing the enclosed employee fact sheet to assist with informing employees. It is imperative that employees are adequately informed of the TCE exposure concern and the potential health risks. Therefore, employees must be provided with the information in the enclosed Fantastic Caverns Employee Fact Sheet (developed by MDHSS and MDNR) and the TCE fact sheet (developed by the federal Agency for Toxic Substances and Disease Registry). Because of the potential risk to human health from elevated TCE exposures, please provide MDHSS with documentation that owners and employees at Fantastic Caverns have received this important information regarding health risks from exposure to TCE.

Furthermore, the workers should be made aware that MDHSS is available to answer health-related questions as needed. MDHSS is available upon request to meet in person, provide a presentation, and address any health concerns that Fantastic Caverns' owners or employees may have.

If you have any questions or concerns regarding these issues, please feel free to contact me at (573) 751-6102. Additionally, if you have any questions for MDNR, please contact Dennis Stinson at (573) 751-1388.

Sincerely,



Jonathan Garoutte, Chief
Bureau of Environmental Epidemiology

JG:DW:MDH
cc: Dennis Stinson, MDNR
Steve Sturgess, MDNR
Mary Peterson, EPA
Spencer Williams, ATSDR

Enclosures

FANTASTIC CAVERNS

Staff Meeting-*TCE in cave air*

October 13th 2016	signature
Kirk Hansen	
Scot Franson	
Kevin Pratt	
Madison Campbell	
Marci Riedle	
Jill Joy	
Susan Pagel	
Scarlet Casey	
Rick Butler	
Nicole Boucher	
Jared Bruegman	
Walter Rice	
Martin Garrison	
Charles Warner	
Richard Brake	
Victor Hyatt	
Ronald Baas	
Karen Solomon	
Amanda Hardin	
Melissa Schmitz	
Hunter Slack	
Katherine Altic	
Michael Moore	
Misty Lane	
Russell Stephenson	
Craig Miller	

Fantastic Caverns
Information for Employees on TCE in Cave Air

Tom Aley, Missouri Registered Geologist #0989
Senior Hydrogeologist and President
Ozark Underground Laboratory
September 1, 2016

Purpose

Very small concentrations of the chemical trichloroethylene (TCE) can sometimes be detected in the air of Fantastic Caverns. Management of the Caverns asked the Ozark Underground Laboratory to prepare written information for employees so that they can be informed about the issue. That is the purpose of this brief report.

TCE has, so far as we can determine, never been used in the cave or at any point on the cave property where it might enter the cave. It enters the cave either through air or water. It is a volatile compound and can move from water into air or from air into water. The TCE in the cave air is attributable to spillage, disposal, or the underground movement of this compound within the 12.72 square mile recharge area for the cave.

At concentrations much higher than those encountered in Fantastic Caverns TCE is identified by the government as a carcinogen (cancer-causing agent). Some very limited studies have suggested that low concentrations of TCE in air might present some risk of health consequences. TCE in either air or water could possibly adversely impact cave features.

Background

Trichloroethylene (TCE) was heavily used as a solvent from the early 1920s through the 1970s, but after the 1970s it became less popular due to environmental concerns (Bakke et al. 2007). TCE is recognized as an occupational carcinogen in water and air. Some studies have suggested an association between TCE exposure in older women and heart defects in their babies but study results are questionable because of the small numbers of cases, insufficient exposure characterization, chemical co-exposures, and other methodological deficiencies (Chiu et al. 2013). One of the likely, but unassessed, co-exposures is to Zofran. This drug was not approved by the FDA for treatment of morning sickness, but has been given to about a million women a year for this condition (DrugWatch, accessed 9/1/16). There is a class action suit against the maker of this drug claiming that, among several effects, it produces heart defects in babies born to mothers who took the drug during pregnancy (DrugWatch, accessed 9/1/16).

Exposure to TCE in workplace air is regulated by OSHA. The limit in air is 100 parts per million (ppm) of TCE time-weighted average over an 8 hour work period. This level is defined (as per ATSDR 2007) as "concentration for a normal 8-hour workday and 40-hour work week

[that is] set at a level at which nearly all workers may be repeatedly exposed without adverse effects." The 100 ppm concentration is equal to 537,000 micrograms of TCE per cubic meter of air. There is no other established federal standard although the US Environmental Protection Agency (EPA) has a current target concentration in air impacted by Superfund sites of 6 micrograms of TCE per cubic meter of air. No, this is not a typo. Yes, the legal limit established by OSHA is over 90,000 times greater than the EPA target. There is no scientific reason that TCE derived from a Superfund site should be 90,000 times more harmful than TCE from other sources. The appropriateness and reasonableness of this target is not supported by credible data and is strongly challenged (Coffin et al. undated). Also, there is no Superfund site in the recharge area for Fantastic Caverns.

Bakke et al. (2007) report that the mean TCE concentration in workplace air at sites where TCE is used is 38.2 ppm (208,954 micrograms per cubic meter). This value is based on all industries and decades, but most measurements are from the 1950s, 1970s, and 1980s. An estimate by National Institute for Occupational Safety and Health (NIOSH) in 1973 was that 200,000 workers were potentially exposed to TCE. In 1978 the number was revised downward to 100,000 fulltime exposures with up to 3.5 million more workers exposed to continuous low levels or to brief exposures to various levels of TCE (Sittig 1985). I have found no studies suggesting that children of workers who had exposures to TCE many thousands of times greater than the EPA target concentration were born with an elevated frequency of deformed hearts. Perhaps such studies exist; if they do not their absence suggests that obvious investigations have been omitted in EPA's rush to establish minute target concentrations.

Current production of TCE in the US exceeds a million pounds per year. It can be purchased without any permit or training and is easily available on the internet. Its many uses have included:

- As a dry cleaning liquid.
- Metal degreasing and in cleaning electronic parts. This is the largest single use.
- Dissolving fats, greases, and waxes. It has sometimes been used in cleaning sewers and septic systems of fat and grease. It undoubtedly works wonders on clogged sewers or grease traps at cafés!!
- Cleaning auto parts, and especially for cleaning carburetors and brakes.
- For removing caffeine from coffee and other oils from spices.
- As a refrigerant and heat exchange liquid.
- As a fumigant.
- In medicine as an anesthetic where it was often administered during child birth.

Because of the many different uses of TCE at multiple sites the compound is widely dispersed in both air and water. Verschueren (1983) reports that TCE is found in municipal sewer air at 10 to 100 parts per million (ppm). This equals a concentration range in sewer air of 54,700 to 547,000 micrograms per cubic meter of air. The TCE in sewer air is derived from disposal of the compound into drains as a liquid. Within the sewers some of the TCE volatilizes and is then present in both the air and the water of the sewers. TCE can move from water into

air or from air into water and, as a result, in karst areas can be transported underground by either (or both) air and water. The concentration of TCE in municipal sewer air today is probably smaller than reported by Verschueren (1983), yet sewers (and especially older ones) are notorious for leaking sewage (and thus TCE) into groundwater in karst areas. There are tens of miles of private and public sewers in the 12.71 square mile recharge area for Fantastic Caverns. The sewers are in addition to the dozens of point sources in the recharge area where TCE has been dumped or spilled into the karst groundwater system.

There are three factors that explain the long-term persistence of TCE in the subsurface. First, TCE is not very soluble in water. To dissolve one pound of TCE in water you would need 1,280 pounds of water and good mixing. Second, TCE is 1.46 times denser than water. Where water is detained in cavities in limestone the undissolved TCE sinks to the bottom of the detaining pools and is not flushed out by stormflows or by becoming rapidly dissolved in the passing water. Third, and this is especially true in Missouri karst areas, hazardous waste sites with TCE are frequently inadequately managed. It is common to find that TCE removal from the subsurface has been incomplete and that off-site migration control has been grossly ineffective.

TCE at Fantastic Caverns

Potential Sources

First, there is no indication that TCE has ever been used inside Fantastic Caverns. Any TCE in the cave's air or water is from off-site sources.

The area that contributes water to Fantastic Caverns (called the Fantastic/Big Williams Spring Recharge Area) was delineated by Aley and Thomson (2002) based on all tracing done up to that date by all entities including MDNR and Springfield City Utilities. The data base included 210 traces from 1898 to 2002 in Greene County. The recharge area encompasses 12.71 square miles.

There are many potential source areas for TCE in this large recharge area. One site that has received substantial attention as a TCE source in Greene County is the former Litton wastewater lagoon. It was located in a sinkhole east of the Springfield Regional Airport. MDNR introduced dye into this sinkhole on January 19, 1989 (Aley and Thomson 2002). Dye from this introduction was NOT detected at either Big Williams or Fantastic Caverns Springs. Instead, the dye from this introduction was detected at Ritter Springs West. The dye introduction for the MDNR trace was east of the recharge area divide between Ritter Springs and the Fantastic/Big Williams Springs Complex as drawn by Aley and Thomson (2002).

The former Litton plant is located west of the Litton wastewater lagoon and is within the delineated Fantastic/Big Williams Spring Complex. It is possible that there may be TCE in groundwater in this area, but as of the time of the Aley and Thomson (2002) study there had been no groundwater tracing from this plant site to any hydrologically associated springs. There has been a dye trace conducted from a sinkhole at the airport that is about 1,800 feet

northwest of the former Litton lagoon. Dye from that trace discharged at the Fantastic Caverns/Big Williams Spring Complex.

The former Litton facility is about 17,000 feet from Fantastic Caverns. I am not aware of any data to support attributing TCE in Fantastic Caverns to the former Litton plant. Given the large recharge area for Fantastic Caverns and past and current land use in the area there are many potential sources for the TCE detected in the cave. The former Litton lagoon is not among them.

TCE Measurements

Monitoring for TCE has been conducted in Fantastic Caverns by MDNR. This has occurred on five dates with a total of 10 measurements. The values are shown below.

Season	Number of Measurements	Range of Values (micrograms/cubic meter)	Mean (micrograms/cubic meter)
Winter	5	<5.3 to 53	11
Spring	3	0.94 to 150	51
Summer	2	61 to 88	75
Fall	0		
Annual	10	0.94 to 150	35

Note: In calculating means values, those shown as less than were assumed to be zero.

Based on the measurements that have been made I conclude that:

- The OSHA limit for TCE in workplace air is 547,000 micrograms per cubic meter. This is over 15,000 times higher than the mean value measured in Fantastic Caverns.
- The highest value measured in the cave was 150 micrograms per cubic meter. The OSHA limit is over 3,600 times higher than this measurement.
- The OSHA limit is for an 8 hour time-weighted average. If a person spends four hours per day in the cave the OSHA limit would be over 30,000 times higher than the actual employee exposure based on the mean measured value and it would be about 7,300 times higher than the actual employee exposure at the largest concentration measured.
- Because of airflow patterns, the portions of the cave likely to have the highest TCE concentrations are the locations measured. Average TCE concentrations in the cave are likely to be about half of the measured concentrations. As a result, employee exposures to the air in Fantastic Caverns are minute.
- The MDNR monitoring has shown that Fantastic Caverns is fully in compliance with the OSHA limits for TCE in workplace air. No more monitoring is needed or is appropriate.

Impacts to the Cave

An air contaminant such as TCE has the potential to impact the nature and extent of calcite speleothems (cave formations). The technical literature, for example Hill and Forti

(1997), is basically speculative on this topic. Regardless of this, TCE in the cave air is undesirable but will undoubtedly persist for many years. Its impact on cave organisms at the concentrations likely found in the cave stream is also unknown.

One privately-owned show cave has recently installed an elaborate forced air ventilation system and other features to reduce TCE concentrations in cave air to levels below the EPA target level of 6 micrograms per cubic meter of air. This will almost certainly cause environmental damage to the cave; the severity of the damage to the cave and to the show cave business has not been determined. This other show cave is known to be connected to a distant Superfund site and in this way it differs from Fantastic Caverns. The EPA has done no environmental assessment of the impact of this dramatic alteration to the natural microclimate of this other show cave.

References

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Waters, E.M.; H.B. Gerstner; and J.E. Huff. 1977. Trichloroethylene. I. An overview. Jour Toxicology and Environmental Health Vol. 2:3, pp. 671-707.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

DEC 0 9 2016

Steve Sturgess
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr Sturgess:

Thank you for providing a copy of the Fantastic Caverns Information for Employees on TCE in Cave Air, authored by Tom Aley, dated September 1, that was provided to employees by Fantastic Caverns at a facility meeting on October 13, 2016 (TCE Fact Sheet). The U.S. Environmental Protection Agency considers it an important step that the employees of Fantastic Caverns have information about the measured levels of TCE at the caverns. However, the EPA believes there is information in the TCE Fact Sheet that may mislead employees about the risks of exposure to TCE in air. Specifically, the EPA action level is based on the most current scientific studies that were not available when the Occupational Safety and Health Administration established the Permissible Exposure Levels for TCE. As noted on OSHA's website (www.osha.gov/dsg/annotated-pels) many PELs "are outdated and inadequate for ensuring protection of worker health." The TCE Fact Sheet also incorrectly dismisses the need to study or address the TCE contamination to ensure the health of employees and guest tourists.

The TCE risk-based action level for a typical industrial/commercial scenario with an 8 hour workday is 6 $\mu g/m^3$ (EPA, 2016). This level is based on the TCE chronic reference concentration of 2 $\mu g/m^3$ and an assumption that a single exposure to TCE at any time during an approximate three-week period in early pregnancy could result in one or more types of cardiac malformations. Thus, the critical exposure period of concern used to evaluate the potential for heart defects and derive the TCE action level is one day. Chronic exposure to TCE may affect the central nervous system, kidneys, liver, immune system, and/or male reproductive system, and poses cancer risks. An exceedance of the TCE action level indicates a potential imminent threat to human health. The EPA applies this analysis to sites with environmental contamination, and the OSHA standard referred to in the employee fact sheet is not a risk-based level that the EPA would apply to this situation.

The employees of Fantastic Caverns should be made aware how the EPA calculates the risks from exposure to TCE, and how the EPA uses the most current scientific information to protect workers and others at sites with environmental contamination. The EPA is available to discuss with MDNR and MDHSS options for enhancing communication with employees at Fantastic Caverns to ensure they receive correct information regarding potential health risks from exposure to TCE.

If you have any questions, please call me at (913) 551-7882.

Sincerely,

Mary P. Peterson, Director
Superfund Division

Printed on Recycled Paper

OSHA TCE LEVELS

The OSHA PEL for TCE is 100 ppm, which equates to 537,423 $\mu g/m^3$.

While OSHA does in fact regulate workplace health and safety, OSHA workplace air standards are applicable to commercial/industrial operations where the subject chemicals are in active use or production. Since the source of TCE in air within Fantastic Caverns is from environmental contamination and not from the use or production of TCE, OSHA standards are not applicable in this instance.

Where potential worker exposures are due to contamination of the environment and not from work practices, risk-based levels protective of both cancer and non-cancer effects (including sensitive individuals) are applicable to both assessing potential exposures and developing risk-based remediation levels.

The key distinctions between OSHA standards and risk-based levels include the underlying assumptions about the context of workplace exposures, the characteristics of the workers being protected, and the level of protection afforded to workers.

OSHA standards specifically apply to workplaces where workers are exposed to hazardous chemicals used in or generated as a result of routine work activities. These workers are assumed to be aware of the chemicals to which they are exposed and can obtain information on them through Right-to-Know laws. OSHA standards assume not only that workers are knowingly exposed to specific chemicals in the workplace, but that they also receive additional protection and training to mitigate exposures. OSHA requires workers to be trained to control or prevent exceedances of its exposure standards (including the use of personal protective equipment to help prevent excessive exposures), and also requires periodic worker health monitoring to ensure that excessive exposures are not occurring. In addition, OSHA standards were developed assuming a healthy adult worker and were not necessarily developed to be protective for sensitive individuals, who may have preexisting health conditions, etc.

Although, MDHSS is not specifically questioning the protectiveness of the OSHA levels, we would like to point out that these levels have not been updated in decades and are not based on current science and toxicity data. Scientific evidence shows TCE is more toxic than previously thought and, thus, there have been recent updates to toxicity values used in assessing exposure and developing risk-based remediation levels. Currently, there are several orders of magnitude difference between OSHA standards and current risk-based levels for TCE.

For additional information or questions, you may contact Michelle Hartman of Missouri Department of Health and Senior Services at 573-751-6102.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

NOV 0 2 2016

MEMORANDUM

SUBJECT: EPA Region 7 Action Levels for Trichloroethylene in Air

FROM: Mike Beringer, Chief
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Environmental Sciences & Technology Division

TO: Branch Chiefs
Waste Enforcement and Materials Management Branch
and Waste Remediation & Permitting Branch
Air and Waste Management Division

Branch Chiefs
Superfund Division

The purpose of this memorandum is to update the U.S. Environmental Protection Agency Region 7 RCRA and Superfund programs on the recommended action levels for trichloroethylene (TCE) in air, and provide information on characterizing and addressing human health risks from less-than-lifetime exposures. The action level for a residential scenario is 2 $\mu g/m^3$, and the action level for an industrial/commercial scenario with an 8-hr workday is 6 $\mu g/m^3$. Equations to allow derivation of action levels for alternative scenarios, such as a 10-hr workday, are presented. As described in this attachment, it is assumed that an exposure to TCE at any time during an approximate three-week period in early pregnancy could result in one or more types of cardiac malformations. Thus, the critical exposure period of concern used to evaluate the potential for heart defects and derive action levels for TCE is one day. An exceedance of the TCE action level indicates a potential imminent threat to human health. Region 7 should expedite early or interim action(s) to eliminate, reduce, and/or control the hazards posed by the site as quickly as possible. If you or your staff have any questions or need further assistance, please contact Kelly Schumacher (x7963).

EPA Region 7 Action Levels for Trichloroethylene in Air.	
Exposure Scenario	*Action Level*
Residential (24 hours/day)	**2 $\mu g/m^3$**
Industrial/Commercial (8 hours/day)[1]	**6 $\mu g/m^3$**

[1] Site-specific action levels should be derived when the workday differs from 8 hours/day.

Attachment

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EPA Region 7 Action Levels for Trichloroethylene in Air

Introduction

In 2011, the latest human health toxicity values for trichloroethylene were published by the United States Environmental Protection Agency's Integrated Risk Information System program (EPA, 2011a). As discussed in this document, these new values are partly based on developmental health effects that result from less-than-lifetime exposures. In contrast, the toxicity values typically used to evaluate potential health risks and derive action levels at Superfund and RCRA sites are based on health effects associated with long-term, or chronic exposures. Further, the equations and exposure parameters used typically reflect all or a significant portion of a person's lifetime. Once the current TCE values were released, the protectiveness of using traditional approaches to assess and address TCE exposures was questioned. The purpose of this memorandum is to update the EPA Region 7 RCRA and Superfund programs on the recommended action levels for TCE in air and provide information on characterizing and addressing human health risks from less-than-lifetime exposures. To support these objectives, the window of susceptibility for the developmental toxicity associated with TCE is examined, the critical exposure period of concern is identified, and the appropriate exposure parameters and equations are elucidated.

Toxicity Assessment

The EPA's final toxicological review by the IRIS program incorporates comments by the U.S. National Academy of Sciences (National Research Council, 2006), two U.S. EPA Science Advisory Boards (EPA, 2002 and 2011b), the Executive Office of the President (Office of Management and Budget, 2009 and 2011), the U.S. Department of Defense (DOD, 2009a, 2009b and 2011), the National Aeronautics and Space Administration (NASA, 2009 and 2011), internal Agency reviewers, and the public, among others. The Halogenated Solvents Industry Alliance, Inc., which represents the interests of TCE manufacturers and producers, submitted a Request for Correction of the TCE IRIS assessment (HSIA, 2013), which was denied by the EPA's Acting Assistant Administrator (EPA, 2015). The HSIA then submitted a Request for Reconsideration (HSIA, 2015), which was also denied by the EPA (EPA, 2016a). The EPA found the Requests "directly contrary to the SAB's conclusions and recommendations, such that to accept HSIA's RFC/RFR would require EPA to reject SAB's advice" (EPA, 2016a).

The EPA's Office of Land and Emergency Management recognizes an IRIS assessment as the official Agency scientific position regarding the toxicity of a chemical based on the data available at the time of the review (EPA, 2003). As such, IRIS is generally the preferred source of human health toxicity values used to evaluate risks at Superfund and RCRA hazardous waste sites. In accordance with Directive 9285.7-53 (EPA, 2003), the 2011 IRIS TCE toxicity values will be used to evaluate risks and derive action levels by the Region 7 RCRA and Superfund programs until the 2011 values are either revised or rescinded.

Non-Carcinogenic Health Effects

In general, the EPA assumes that a dose or exposure level exists below which adverse non-carcinogenic health effects will not occur (EPA, 1989). Below this threshold, it is believed that exposure to a chemical is tolerated without adverse effects. Adverse health effects occur only when physiologic protective mechanisms are overcome by exposure to doses or concentrations above the threshold. For chronic toxicity values, the first adverse effect (or its known precursor) that occurs to the most sensitive species as the dose rate of an agent increases, regardless of the exposure duration, is designated the

critical endpoint. The dose or exposure at which the critical endpoint is observed is the point of departure. Uncertainty factors, ranging from 1 to 3,000, reflecting limitations of the data used are applied to the point of departure to derive the inhalation reference concentration. The RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime (EPA, 1989).

The 2011 Scientific Advisory Board panel recommended that, "The two endpoints for immune effects from Keil *et al.* (2009) and the cardiac malformations from Johnson *et al.* (2003) should be considered the principal studies supporting the RfC" (EPA, 2011b). The panel considered the immune effects and cardiac malformations co-critical endpoints (EPA, 2011b). In accordance with the SAB panel recommendations, the IRIS program based the TCE chronic reference concentration of 2 $\mu g/m^3$ on these two co-critical endpoints, each of which can support the RfC independently: autoimmune disease following chronic exposure in adults (0.00033 ppm, or 1.8 $\mu g/m^3$) and heart defects following exposure during early pregnancy (0.00037 ppm, or 2.0 $\mu g/m^3$). The RfC is also supported by nephrotoxicity (kidney effects) following chronic exposure in adults (0.00056 ppm, or 3.0 $\mu g/m^3$). Following publication of these values, the developmental cardiac effects were further addressed by the IRIS program in "TCE Developmental Cardiac Toxicity Assessment Update" (EPA, 2014a) and by scientists in the EPA's Office of Research and Development in the peer-reviewed literature (Makris *et al.*, 2016).

Chronic exposure to TCE poses a potential human health hazard to the central nervous system, kidneys, liver, immune system, and male reproductive system. As mentioned above, immunotoxicity in adults is considered a co-critical endpoint, at a slightly lower concentration than that associated with cardiac defects. Overall, the IRIS program concluded that "the human and animal studies of TCE and immune-related effects provide strong evidence for a role of TCE in autoimmune disease and in a specific type of generalized hypersensitivity syndrome" (EPA, 2011a). Kidney toxicity was considered a supporting endpoint, with high confidence found in multiple lines of evidence in both human and animal studies.

Short-term exposures to TCE during pregnancy are associated with many forms of developmental toxicity, including spontaneous abortions, decreased growth, developmental neurotoxicity, developmental immunotoxicity, and birth defects. However, the critical developmental endpoint is cardiac malformations. The primary types of heart defects observed with TCE exposures include atrial and ventricular septal defects, which are holes in the wall (septa) between the top two chambers (atria) or bottom two chambers (ventricles) of the heart, and pulmonary and aortic valve stenoses, which are thickened or fused heart valves that do not properly open and/or close and may leak blood. The critical window of susceptibility for these types of defects is an approximate three week period (i.e., valvuloseptal morphogenesis, or the period in which major cardiac morphogenic events such as heart valve formation occur) approximately four to seven weeks after conception, early in the first trimester of human pregnancy (Dhanantwari *et al.*, 2009). The type and severity of the resulting cardiac malformation or malformations depends on the timing and level of exposure to TCE within this approximate three week period. Exposures that clear the body before this period do not impact the heart valves and septa, because they have not yet begun to form. In humans, TCE and most of its metabolites are eliminated within a week of exposure (EPA, 2011a).

Carcinogenic Effects

The EPA evaluates carcinogenicity in two parts (EPA, 2005a). First, the Agency evaluates all available scientific information and assigns a weight-of-evidence classification based on a compound's potential to cause cancer in humans. In the absence of sufficient data regarding the mode of action or if the

weight-of-evidence supports a mutagenic mode of action, the EPA generally assumes that any exposure to a chemical will increase an individual's risk of developing cancer. Under this default approach, there is no threshold below which the probability of developing cancer is zero. Second, a toxicity value is derived to define the quantitative relationship between dose or concentration and carcinogenic response. For inhalation exposures using the default approach, this value is known as the inhalation unit risk. The IUR is a generally plausible upper-bound estimate of the increased probability of developing cancer following a lifetime of exposure. This value is used to estimate the increased risk of developing cancer from inhalation of potentially carcinogenic chemicals.

Following the EPA's Guidelines for Carcinogen Risk Assessment (EPA, 2005a), the IRIS program has evaluated the carcinogenic potential of TCE and has classified it as "carcinogenic to humans" by all routes of exposure. This conclusion is based on convincing evidence of a causal association between TCE exposure in humans and kidney cancer, strong evidence of non-Hodgkin's lymphoma, and more limited evidence of liver and biliary tract cancer. The inhalation unit risk for TCE, based on these combined cancer types, is 4.1E-06 $(\mu g/m^3)^{-1}$. Sufficient evidence supports a mutagenic mode of action for TCE-induced kidney tumors in humans, but modes of actions have not been established for the other TCE-induced cancer types. The portion of the TCE IUR specific for kidney tumors is 1.0E-06 $(\mu g/m^3)^{-1}$, while the IUR for non-Hodgkin's lymphoma plus liver and biliary tract cancers is 3.1E-06 $(\mu g/m^3)^{-1}$.

Risk Characterization

The EPA's RCRA and Superfund programs characterize potential human health risks using standardized equations that combine toxicity values with exposure parameters because risk is a function of both hazard and exposure. Typically, the EPA's standard default exposure parameters for chronic scenarios, published in OSWER Directive 9200.1-120 (EPA, 2014b), are used. However, exposure assessments must take into account the time scale related to the specific biological response (NRC, 1991). This means that exposure parameters selected to evaluate risks and/or develop levels of concern for a given chemical and scenario should correspond as closely as possible with the exposure period used to develop the toxicity value. For example, time-weighted average exposures over a lifetime have little relevance for a developmental toxin if the adverse effects could only occur following exposure during a particular stage of development (EPA, 1992).

Non-Cancer Hazard Quotients for Cardiac Defects

The toxicity values considered protective for a lifetime of exposure to TCE are partly based on non-cancer health effects resulting from less-than-lifetime exposures. As previously stated, one of the two co-critical endpoints that serves as the basis for the TCE RfC is cardiac defects. This effect can only occur when the fetus is exposed during the period of heart development. Therefore, the EPA's standard default exposure parameters for chronic exposures are invalid for estimating hazard quotients representing the potential for cardiac defects associated with TCE exposures and for deriving TCE levels of concern that are protective of developmental endpoints. To select appropriate less-than-lifetime exposure parameters that may be used to characterize these hazards and derive levels of concern, the critical exposure period of concern for TCE-related heart malformations must first be identified.

"[F]or developmental toxic effects, a primary assumption is that a single exposure at a critical time in development may produce an adverse developmental effect, i.e., repeated exposure is not a necessary prerequisite for developmental toxicity to be manifested" (EPA, 1991). The EPA's Risk Assessment Guidance for Superfund Part A (EPA, 1989) directs the use of a day or a single exposure incident to assess the potential risks of adverse developmental effects. Following this guidance, it is assumed that a

single exposure to TCE at any time during the approximate three week period of valvuloseptal morphogenesis could result in one or more of the types of heart malformations described previously. Thus, the critical exposure period of concern used to evaluate the potential for cardiac defects is one day. A 24-hour exposure period has been used by the EPA to evaluate acute hazards associated with TCE in the final, peer-reviewed TSCA Work Plan Chemical Risk Assessment (EPA, 2014c).

The EPA's Risk Assessment Guidance for Superfund Part F, Supplemental Guidance for Inhalation Risk Assessment (EPA, 2009) specifies that the exposure concentration (EC) that should be used to evaluate risks and derive levels of concern for acute endpoints is equivalent to the concentration detected in air (CA), as shown in Equation 1.

$$EC\left(\frac{\mu g}{m^3}\right) = CA\left(\frac{\mu g}{m^3}\right) \tag{1}$$

For a residential scenario, in which exposure to TCE inside a home is assumed to occur throughout the entire exposure period of concern, Equation 1 is appropriate. However, for other types of scenarios (e.g., industrial, commercial, recreational), exposures to TCE only occur for a portion of any given 24-hour period. Moreover, exposures to different concentrations of TCE may occur within a single day at some sites. To account for these multiple exposures, Equation 1 can be modified, resulting in a time-weighted average exposure concentration. The 24-hour TWA exposure concentration can be calculated using Equation 2.

$$EC_{24} = \sum_{i=1}^{n}(CA_i \cdot ET_i) / AT_{24} \tag{2}$$

where: EC_{24} ($\mu g/m^3$) = time-weighted average exposure concentration over 24 hours;
CA_i ($\mu g/m^3$) = TCE concentration in air in microenvironment (ME) i;
ET_i (hours) = exposure time spent in ME i;
AT_{24} (hours) = averaging time for the exposure period of concern (24 hours)

In a residential scenario, there is a single microenvironment, the residence, with an exposure time of 24 hours. Thus, the Residential EC_{24} will equal CA_{res}, as shown in Equation 3. To reduce uncertainty in residential scenarios, CA_{res} should be based on air samples collected for an entire 24-hour exposure period. Generally, stationary 24-hour indoor air sample results are used.

$$Residential\ EC_{24} = \frac{(CA_{res} \cdot 24\ hrs)}{24\ hrs} = CA_{res} \tag{3}$$

In a typical industrial or commercial scenario, there are two microenvironments. One is the workplace, and the other is away from the workplace. The Industrial/Commercial EC_{24} can be calculated using Equation 4, below. Although the standard value for ET_{work} is an 8-hour workday, this variable should reflect site-specific conditions. For example, employees at a given site may work longer shifts, such as 10 or 12 hours, and they may or may not take their lunch breaks on site. CA_{work} should be based on air samples collected for the entire exposure time, ET_{work}, during the portion of the day that workers are present. This is to prevent potential underestimates of TCE concentrations if diurnal variations occur at a site, although such variability does not exist at all sites. Generally, stationary 8-hour or 10-hour indoor air samples are appropriate. ET_{away} should equal the remainder of the 24-hour period spent away from the workplace. CA_{away} is generally assumed to equal zero, unless site-specific data suggest otherwise.

$$Industrial/Commercial\ EC_{24} = \frac{(CA_{work} \cdot ET_{work}) + (CA_{away} \cdot ET_{away})}{24\ hrs} \tag{4}$$

If multiple or variable microenvironments are present at a site, it is possible to use Equation 2 to generate a 24-hour TWA exposure concentration. However, consideration should be given to the use of portable sampling equipment to more accurately measure true exposure concentrations to the receptor(s) of concern over the entire exposure time, as opposed to stationary sampling equipment positioned in multiple areas where exposure occurs.

Non-cancer hazard quotients for heart defects can be derived using Equation 5, where HQ_{24} is the developmental hazard quotient; EC_{24} is the 24-hr time-weighted average exposure concentration calculated using Equations 2, 3, or 4; and the RfC is 2 $\mu g/m^3$. As shown in Equation 5, a hazard quotient is the ratio of the exposure to the non-cancer toxicity value. Thus, an HQ greater than 1 means that the exposure is greater than the RfC and exceeds a level of concern for that particular non-cancer health effect.

$$HQ_{24} = \frac{EC_{24}}{RfC} \tag{5}$$

Equation 5 can be combined with Equation 3 or 4 to calculate the developmental hazard quotients (HQ_{24}) for a residential or industrial/commercial receptor, as follows.

$$Residential\ HQ_{24} = \frac{CA_{res}}{2\,\frac{\mu g}{m^3}} \tag{6}$$

$$Industrial/Commercial\ HQ_{24} = \frac{(CA_{work} \cdot ET_{work}) + (CA_{away} \cdot ET_{away})}{24\ hrs \cdot 2\,\frac{\mu g}{m^3}} \tag{7}$$

Non-Cancer Hazard Quotients for Chronic Health Effects

Autoimmune disease, a co-critical endpoint upon which the TCE RfC is based, and kidney toxicity, the supporting endpoint, are both health effects associated with chronic or long-term exposures. Equation 8 is the standardized equation used to evaluate non-cancer hazard quotients for chronic health effects; the exposure parameters are defined in Table 1. If seasonal or temporal fluctuations in TCE concentrations potentially exist, consideration should be given as to whether sufficient data are available to generate an average concentration for use as the CA term. If the dataset is limited, it may be more health-protective to use the highest concentration detected.

$$HQ_{chronic} = \frac{CA\left(\frac{\mu g}{m^3}\right) \cdot ET\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF\left(\frac{days}{year}\right) \cdot ED(years)}{AT_{nc,chronic}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)} \tag{8}$$

The above equation can be presented in terms of residential or industrial/commercial exposure scenarios, as shown below. Note that it is only appropriate to calculate non-cancer hazard quotients for chronic health effects for those receptors with long-term exposures.

$$Residential\ HQ_{chronic} = \frac{CA_{res}\left(\frac{\mu g}{m^3}\right) \cdot ET_{res}\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF_{res}\left(\frac{days}{year}\right) \cdot ED_{child}(years)}{AT_{nc,chronic,child}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)} \tag{9}$$

$$Industrial/Commercial\ HQ_{chronic} = \frac{CA_{work}\left(\frac{\mu g}{m^3}\right) \cdot ET_{work}\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF_{work}\left(\frac{days}{year}\right) \cdot ED_{work}(years)}{AT_{nc,chronic,work}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)} \tag{10}$$

Cancer Risks

TCE is classified "carcinogenic to humans," based on kidney cancer, non-Hodgkin's lymphoma, and liver and biliary tract cancer. Equation 11 is the standardized equation used to evaluate excess individual lifetime cancer risks; the exposure parameters are defined in Table 1. If temporal fluctuations in TCE concentrations potentially exist, consideration should be given as to whether sufficient data are available to generate an average concentration for use as the CA term. If the dataset is limited, it may be more health-protective to use the highest concentration detected.

$$CR = \frac{CA\left(\frac{\mu g}{m^3}\right)\cdot ET\left(\frac{hrs}{day}\right)\cdot\left(\frac{1\,day}{24\,hrs}\right)\cdot EF\left(\frac{days}{year}\right)\cdot ED(years)\cdot IUR\left(\frac{\mu g}{m^3}\right)^{-1}}{AT_{cancer}(days)} \tag{11}$$

The above equation can be presented in terms of residential or industrial/commercial exposure scenarios, as shown below. Because a mutagenic mode of action has been established for kidney tumors associated with TCE, it is necessary to apply age-dependent adjustment factors when deriving risks for this cancer type in children (EPA, 2005b). ADAFs are not applied when deriving risks for non-Hodgkin's lymphoma or liver and biliary tract cancers associated with TCE exposures because they have not been determined to operate via a mutagenic mode of action. Because only adults are evaluated in an industrial/commercial exposure scenario and no adjustments for mutagenicity are made for adults (i.e., $ADAF_{adult} = 1$), ADAFs are not included in Equation 13.

$$Residential\ CR = \left(\frac{CA_{res}\left(\frac{\mu g}{m^3}\right)\cdot ET_{res}\left(\frac{hrs}{day}\right)\cdot\left(\frac{1\,day}{24\,hrs}\right)\cdot EF_{res}\left(\frac{days}{year}\right)}{AT_{cancer}(days)}\right)\cdot\left[\left(ED_{0-2}(years)\cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1}\cdot ADAF_{0-2}\right)+\left(ED_{2-16}(years)\cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1}\cdot ADAF_{2-16}\right)+\left(ED_{16-26}(years)\cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1}\cdot ADAF_{adult}\right)+\left(ED_{res}(years)\cdot IUR_{N\&L}\left(\frac{\mu g}{m^3}\right)^{-1}\right)\right] \tag{12}$$

$$Industrial/Commercial\ CR = \frac{CA_{work}\left(\frac{\mu g}{m^3}\right)\cdot ET_{work}\left(\frac{hrs}{day}\right)\cdot\left(\frac{1\,day}{24\,hrs}\right)\cdot EF_{work}\left(\frac{days}{year}\right)\cdot ED_{work}(years)\cdot IUR\left(\frac{\mu g}{m^3}\right)^{-1}}{AT_{cancer}(days)} \tag{13}$$

The definitions, values, and references for the exposure parameters and toxicity values used in this document are provided in Table 1. For the chronic scenarios, the EPA's standard default exposure parameters (EPA, 2014b) are used to best represent reasonable maximum exposure scenarios, which are the highest exposures reasonably expected to occur at a site (EPA, 1989). These values are based on the 2011 Exposure Factors Handbook (EPA, 2011c). Although the default exposure time for an indoor worker is 8 hours/day, it is preferable to identify a site-specific worker exposure time.

Table 1. Exposure Parameters and Toxicity Values.

Parameter	Definition	Units	Value	Reference
$ADAF_{0-2}$	Age-dependent adjustment factor – ages 0 to 2 years	-	10	EPA, 2005b
$ADAF_{2-16}$	Age-dependent adjustment factor – ages 2 to 16 years	-	3	EPA, 2005b
$ADAF_{adult}$	Age-dependent adjustment factor – ages 16 years and older	-	1	EPA, 2005b
AT_{24}	Averaging time – developmental effects	hours	24	-
AT_{cancer}	Averaging time – cancer	days	25,550	EPA, 2014b

Table 1. Exposure Parameters and Toxicity Values.				
Parameter	**Definition**	**Units**	**Value**	**Reference**
$AT_{nc,chronic,\ child}$	Averaging time – chronic non-cancer health effects, resident child	days	2,190	EPA, 2014b
$AT_{nc,chronic,\ work}$	Averaging time – chronic non-cancer health effects, indoor worker	days	9,125	EPA, 2014b
CA	Concentration of TCE in air	$\mu g/m^3$	Measured	-
CA_{res}	Concentration of TCE in air of the residence	$\mu g/m^3$	Measured	-
CA_{work}	Concentration of TCE in air of the workplace	$\mu g/m^3$	Measured	-
$ED_{0\text{-}2}$	Exposure duration – ages 0 to 2 years	years	2	EPA, 2005b
$ED_{2\text{-}16}$	Exposure duration – ages 2 to 16 years	years	14	EPA, 2005b
$ED_{16\text{-}26}$	Exposure duration – ages 16 to 26 years	years	10	EPA, 2005b
ED_{child}	Exposure duration – resident (child, ages 0 to 6 years)	years	6	EPA, 2014b
ED_{res}	Exposure duration – resident (child + adult, ages 0 to 26 years)	years	26	EPA, 2014b
ED_{work}	Exposure duration – indoor worker	years	25	EPA, 2014b
EF_{res}	Exposure frequency – resident	days/yr	350	EPA, 2014b
EF_{work}	Exposure frequency – indoor worker	days/yr	250	EPA, 2014b
ET_{away}	Exposure time – time spent away from work by an indoor worker (24 hrs/day minus ET_{work})	hrs/day	16 or site-specific	-
ET_{res}	Exposure time – time spent at home by a resident	hrs/day	24	EPA, 2014b
ET_{work}	Exposure time – time spent at work by an indoor worker	hrs/day	8 or site-specific	EPA, 2014b or site-specific
IUR	TCE inhalation unit risk - total	$(\mu g/m^3)^{-1}$	4.1E-06	EPA, 2011a
IUR_{kid}	TCE inhalation unit risk – kidney cancer	$(\mu g/m^3)^{-1}$	1.0E-06	EPA, 2011a
$IUR_{N\&L}$	TCE inhalation unit risk – non-Hodgkin's lymphoma and liver and biliary tract cancers	$(\mu g/m^3)^{-1}$	3.1E-06	EPA, 2011a
RfC	TCE reference concentration	$\mu g/m^3$	2	EPA, 2011a
THQ	Target hazard quotient	-	1	-
TR	Target cancer risk	-	1E-04	Upper-end of Target Cancer Risk Range

Action Levels

Level of Concern for Developmental Effects

Equations 2 and 5 can be manipulated to solve for the level of concern for developmental health effects, using a target non-cancer hazard quotient of 1, as follows. Note that the only exposure parameter that can vary in this calculation is the exposure time. The TCE levels of concern for developmental effects based on standard exposure times are provided in Table 2. For a 24-hour residential scenario, the developmental LOC equals 2 $\mu g/m^3$. For a typical 8-hour industrial/commercial scenario, the developmental LOC equals 6 $\mu g/m^3$. Site-specific developmental LOCs may be derived using alternate exposure times; for example, a 10-hour exposure time results in a developmental LOC of 4.8 $\mu g/m^3$.

$$TCE\ LOC_{developmental}\left(\frac{\mu g}{m^3}\right) = \frac{THQ \cdot AT_{24}(hrs) \cdot RfC\left(\frac{\mu g}{m^3}\right)}{ET\left(\frac{hrs}{day}\right)} \tag{14}$$

$$TCE\ Residential\ LOC_{developmental}\left(\frac{\mu g}{m^3}\right) = \frac{1 \cdot 24\ hrs \cdot 2\ \frac{\mu g}{m^3}}{24\ hrs} \tag{15}$$

$$TCE\ Industrial/Commercial\ LOC_{developmental}\left(\frac{\mu g}{m^3}\right) = \frac{1 \cdot 24\ hrs \cdot 2\ \frac{\mu g}{m^3}}{ET_{work}\left(\frac{hrs}{day}\right)} \tag{16}$$

Level of Concern for Chronic Non-Cancer Health Effects

Equation 8 can be manipulated to solve for the level of concern for chronic, non-cancer health effects, using a target non-cancer hazard quotient of 1 and the exposure parameters presented in Table 1, as follows. For a residential scenario, this LOC equals 2.1 μg/m^3, which is the value listed as the non-cancer residential air Regional Screening Level for TCE, based on an HQ of 1 (EPA, 2016b). For an industrial/commercial scenario, the chronic LOC equals 8.8 μg/m^3, which is the value listed as the non-cancer worker air RSL for TCE, based on an HQ of 1. Site-specific chronic LOCs may be derived using alternate exposure times or other parameters.

$$TCE\ LOC_{chronic}\left(\frac{\mu g}{m^3}\right) = \frac{THQ \cdot AT_{nc,chronic}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)}{ET\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF\left(\frac{days}{year}\right) \cdot ED(years)} \tag{17}$$

$$TCE\ Residential\ LOC_{chronic}\left(\frac{\mu g}{m^3}\right) = \frac{THQ \cdot AT_{nc,chronic,child}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)}{ET_{res}\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF_{res}\left(\frac{days}{year}\right) \cdot ED_{child}(years)} \tag{18}$$

$$TCE\ Industrial/Commercial\ LOC_{chronic}\left(\frac{\mu g}{m^3}\right) = \frac{THQ \cdot AT_{nc,chronic,work}(days) \cdot RfC\left(\frac{\mu g}{m^3}\right)}{ET_{work}\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF_{work}\left(\frac{days}{year}\right) \cdot ED_{work}(years)} \tag{19}$$

Level of Concern for Cancer Risks

Equations 11, 12, and 13 can be manipulated to solve for the level of concern for cancer risks, using a target excess cancer risk (TR) of 1E-04, which is the upper bound of the EPA's target cancer risk range, and the exposure parameters presented in Table 1, as follows. For a residential scenario, this LOC equals 48 μg/m^3, and for an industrial/commercial scenario, the cancer LOC equals 300 μg/m^3.

$$TCE\ LOC_{cancer}\left(\frac{\mu g}{m^3}\right) = \frac{TR \cdot AT_{cancer}(days)}{ET\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF\left(\frac{days}{year}\right) \cdot ED(years) \cdot IUR\left(\frac{\mu g}{m^3}\right)^{-1}} \tag{20}$$

$$TCE\ Residential\ LOC_{cancer}\left(\frac{\mu g}{m^3}\right) = \frac{TR \cdot AT_{cancer}(days)}{ET\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF\left(\frac{days}{year}\right) \cdot \left[\begin{array}{c}\left(ED_{0-2}(years) \cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1} \cdot ADAF_{0-2}\right) + \left(ED_{2-16}(years) \cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1} \cdot ADAF_{2-16}\right) + \\ \left(ED_{16-26}(years) \cdot IUR_{kid}\left(\frac{\mu g}{m^3}\right)^{-1} \cdot ADAF_{16-26}\right) + \left(ED_{res}(years) \cdot IUR_{N\&L}\left(\frac{\mu g}{m^3}\right)^{-1}\right)\end{array}\right]} \tag{21}$$

$$TCE\ Industrial/Comm.\ LOC_{cancer}\left(\frac{\mu g}{m^3}\right) = \frac{TR \cdot AT_{cancer}(days)}{ET_{work}\left(\frac{hrs}{day}\right) \cdot \left(\frac{1\ day}{24\ hrs}\right) \cdot EF_{work}\left(\frac{days}{year}\right) \cdot ED_{work}(years) \cdot IUR\left(\frac{\mu g}{m^3}\right)^{-1}} \tag{22}$$

As shown below in Table 2, the levels of concern for developmental health effects are lower than the LOCs for chronic health effects and cancer, for both residential and occupational scenarios, when based on target hazard quotients of 1 or target cancer risks of 1E-04. These are the levels of risk that, when exceeded, warrant action under the National Contingency Plan. Basing the Region 7 TCE action levels

on the developmental LOCs is protective for all potential forms of adverse health effects associated with TCE. Thus, the action level for a residential scenario is 2 μg/m^3, and the action level for a typical industrial/commercial scenario with an 8-hr workday is 6 μg/m^3. As previously mentioned, the developmental LOC, and thus the action level, is highly dependent on the exposure time. Therefore, for non-residential exposure scenarios, careful consideration should be given to the value selected as the exposure time.

Table 2. Levels of Health Concern for Trichloroethylene (μg/m^3), THQ = 1 and TR = 1E-04.	
Residents (24-hr Exposure Scenario)	
Developmental Non-Cancer LOC:	*2*
Chronic Non-Cancer LOC:	*2.1*
Cancer LOC:	*48*
Region 7 Residential TCE Action Level:	**2**
Industrial/Commercial Workers (8-hr Exposure Scenario)	
Developmental Non-Cancer LOC:	*6*
Chronic Non-Cancer LOC:	*8.8*
Cancer LOC:	*300*
Region 7 Industrial/Commercial TCE Action Level:	**6**

Risk Management Considerations

If the TCE action level is exceeded, this indicates a potential imminent threat to human health, and early or interim action(s) should be taken to eliminate, reduce, and/or control the hazards posed by the site (EPA, 2014d). At Superfund sites, coordination between the remedial and removal programs should immediately commence as early as the receipt of preliminary sampling results indicative of a potential human health concern (EPA, 2016c). Potential receptors should be informed of the results and potential risks to human health. Standard Region 7 practice is to communicate this information via data transmittal letters submitted to property owners and employers, but when TCE action levels are exceeded, tenants, residents, employees and others who may be exposed should also be informed. Although the action levels derived in this document are applicable to women in the first trimester of pregnancy, note that the levels protective of autoimmune disease and kidney toxicity in all individuals are not significantly different, at 2.1 and 8.8 μg/m^3, for residents and workers, respectively. Depending on the concentrations detected, immediate site actions could include relocation, restricting the time residents or workers remain in areas exceeding action levels, opening basement or lower level windows for ventilation (using a fan), sealing cracks in the slab, sealing sump pits, sealing cinder block or stone walls, and/or using air filtration systems. Vapor mitigation systems or adjustments to HVAC systems may be used to minimize exposures on a more long-term basis. Post-remedy testing and continued operation and maintenance is necessary to ensure protection of human health until the source of TCE in soil and/or groundwater is ultimately addressed.

Other EPA Regions and states have derived tiered action levels prescribing the types and urgency of various responses, as described below.

- Although Region 7 consistently uses a THQ of 1 as the basis for both removal and remedial Superfund actions, other Regions have used a THQ of 3 as a science policy approach to prioritize actions that may warrant the use of removal authority, with ultimate cleanup goals based on a THQ of 1. Since non-cancer toxicity values have historically been based on effects resulting from chronic exposure, this practice assumes that the most highly contaminated sites will be remediated first, but all sites will be remediated before exposures have occurred for a sufficiently long duration (e.g., 25 years as a worker or 26 years as a resident) to pose significant health risks.

This assumption is not protective of the short-term health effects associated with TCE, in which the critical window of susceptibility is an approximate three week period and a single exposure during this critical time may result in cardiac malformations.

- Tiered action levels could also be derived by reducing the uncertainty factor applied to the RfC from 10 to 1. The existing UF of 10 is applied for uncertainty regarding differences in pharmacodynamics between animals and humans and between the general population and sensitive subpopulation. Other than the toxicokinetic variability characterized by the physiologically-based pharmacokinetic model, EPA (2011a) indicates that there are inadequate chemical-specific data to quantify the degree of differential susceptibility due to factors such as genetic polymorphisms, race/ethnicity, preexisting health status, lifestyle factors, and nutritional status. The UF of 10 was included in the extensive peer-review process described in this document, and Region 7 does not have justification to alter this value.
- Similarly, the selection of a 1% excess risk as the benchmark response and a human equivalent concentration for a toxicokinetically sensitive individual at the 99th percentile were both extensively reviewed, and Region 7 does not have justification to alter these criteria.

Although Region 7 has not developed tiered levels because this approach may not be protective of human health, higher concentrations of TCE are associated with greater health risks. Actions should be implemented as quickly as is practicable to minimize risks of developmental toxicity. This document reinforces that Region 7 should expedite actions to protect human health whenever the TCE air concentration exceeds 2 $\mu g/m^3$ in a residential scenario or 6 $\mu g/m^3$ for an 8-hour worker scenario.

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FANTASTIC CAVERNS
GREENE COUNTY
EMPLOYEE FACT SHEET - TCE EXPOSURES 2016

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

BACKGROUND

- Trichloroethylene (TCE), a chemical historically used as a solvent to clean metal parts and which readily evaporates into air, has been found in the air within Fantastic Caverns. This sampling was conducted as part of an environmental investigation to determine if air inside caves visited by the public is affected by nearby sites where releases of contaminants are known to have occurred.
- The Missouri Department of Natural Resources (MoDNR) collected air samples from inside the cave in April and July 2016. TCE was detected in July above health-based levels of concern.
- The TCE in Fantastic Caverns is believed to be related to a former manufacturing facility located in Springfield, three miles south-south east of the cave. It is believed that TCE from this site has moved through soil and groundwater and eventually evaporated into the cave's air.

FUTURE SAMPLING ACTIVITIES

- Many sampling events over time are necessary to determine the variability in TCE levels due to seasonal variation in temperature, barometric pressure and air flow.
- MoDNR is discussing with the cave owner about conducting air sampling in the cave over time to evaluate TCE levels and to collect the necessary data for health officials to evaluate potential risk to employees and to determine appropriate response actions.

HEALTH INFORMATION

- In general, exposure to a chemical does not necessarily mean health effects will occur. The effect of exposure to any chemical depends on several things, including the concentration and toxicity of the chemical, the length of the exposure, and personal factors such individual health and sensitivity.
- The effect of concern from short-term exposure is the potential for fetal heart defects to occur in developing fetuses of pregnant workers, if exposure occurs during fetal heart development in the first trimester of pregnancy (weeks six through nine of gestation). Given this, there is also a concern for women of child-bearing age in general, since fetal heart development may occur during a time when a woman may not know she is pregnant.
- Workers with long-term exposure to TCE in cave air may be at increased risk of other harmful effects and possible increased cancer risks, if exposure occurs over extended periods of time. Long-term TCE exposure is associated with harmful effects to the immune system, nervous system, kidney, liver, and male reproductive system and is also associated with increased cancer risk for liver, kidney and non-Hodgkin's lymphoma.

CONTACT INFORMATION

- For health-related questions regarding TCE exposure, please contact Michelle Hartman with MDHSS at 573-751-6102.
- For information on the cave investigation, please contact Wane Roberts with MoDNR at 573-751-4187.

Trichloroethylene - ToxFAQs™

CAS # 79-01-6

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is used as a solvent for cleaning metal parts. Exposure to very high concentrations of trichloroethylene can cause dizziness, headaches, sleepiness, incoordination, confusion, nausea, unconsciousness, and even death. The Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC) classify trichloroethylene as a human carcinogen. Trichloroethylene has been found in at least 1,045 of the 1,699 National Priorities List sites identified by the EPA.

What is trichloroethylene?

Trichloroethylene is a colorless, volatile liquid. Liquid trichloroethylene evaporates quickly into the air. It is nonflammable and has a sweet odor.

The two major uses of trichloroethylene are as a solvent to remove grease from metal parts and as a chemical that is used to make other chemicals, especially the refrigerant, HFC-134a. Trichloroethylene was once used as an anesthetic for surgery.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene can be released to air, water, and soil at places where it is produced or used.
- Trichloroethylene is broken down quickly in air.
- Trichloroethylene breaks down very slowly in soil and water and is removed mostly through evaporation to air.
- It is expected to remain in groundwater for long time since it is not able to evaporate.
- Trichloroethylene does not build up significantly in plants or animals.

How might I be exposed to trichloroethylene?

- Breathing trichloroethylene in contaminated air.
- Drinking contaminated water.
- Workers at facilities using this substance for metal degreasing are exposed to higher levels of trichloroethylene.
- If you live near such a facility or near a hazardous waste site containing trichloroethylene, you may also have higher exposure to this substance.

How can trichloroethylene affect my health?

Exposure to moderate amounts of trichloroethylene may cause headaches, dizziness, and sleepiness; large amounts may cause coma and even death. Eating or breathing high levels of trichloro¬ethylene may damage some of the nerves in the face. Exposure to high levels can also result in changes in the rhythm of the heartbeat, liver damage, and evidence of kidney damage. Skin contact with concentrated solutions of trichloroethylene can cause skin rashes.

There is some evidence exposure to trichloroethylene in the work place may cause scleroderma (a systemic autoimmune disease) in some people. Some men occupationally-exposed to trichloroethylene and other chemicals showed decreases in sex drive, sperm quality, and reproductive hormone levels.

How likely is trichloroethylene to cause cancer?

There is strong evidence that trichloroethylene can cause kidney cancer in people and some evidence for trichloroethylene-induced liver cancer and malignant lymphoma. Lifetime exposure to trichloroethylene resulted in increased liver cancer in mice and increased kidney cancer and testicular cancer in rats.

The IARC and the EPA determined that there is convincing evidence that trichloroethylene exposure can cause kidney cancer. The National Toxicology Program (NTP) is recommending a change in cancer classification to "known human carcinogen" http://ntp.niehs.nih.gov/ntp/roc/monographs/finaltce_508.pdf.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Health Human Sciences

ATSDR

CS256651A

Trichloroethylene

CAS # 79-01-6

How can trichloroethylene affect children?

It is not known whether children are more susceptible than adults to the effects of trichloroethylene.

Some human studies indicate that trichloroethylene may cause developmental effects such as spontaneous abortion, congenital heart defects, central nervous system defects, and small birth weight. However, these people were exposed to other chemicals as well.

In some animal studies, exposure to trichloroethylene during development caused decreases in body weight, increases in heart defects, changes to the developing nervous system, and effects on the immune system.

How can families reduce the risk of exposure to trichloroethylene?

- Avoid drinking water from sources that are known to be contaminated with trichloroethylene. Use bottled water if you have concerns about the presence of chemicals in your tap water. You may also contact local drinking water authorities and follow their advice.
- Discourage your children from putting objects in their mouths. Make sure that they wash their hands frequently and before eating.
- Prevent children from playing in dirt or eating dirt if you live near a waste site that has trichloroethylene.
- Trichloroethylene is used in many industrial products. Follow instructions on product labels to minimize exposure to trichloroethylene.

Is there a medical test to show whether I've been exposed to trichloroethylene?

Trichloroethylene and its breakdown products (metabolites) can be measured in blood and urine. However, the detection of trichloroethylene or its metabolites cannot predict the kind of health effects that might develop from that exposure. Because trichloroethylene and its metabolites leave the body fairly rapidly, the tests need to be conducted within days after exposure.

Has the federal government made recommendations to protect human health?

The EPA set a maximum contaminant goal (MCL) of 0.005 milligrams per liter (mg/L; 5 ppb) as a national primary drinking standard for trichloroethylene.

The Occupational Safety and Health Administration (OSHA) set a permissible exposure limit (PEL) of 100 ppm for trichloroethylene in air averaged over an 8-hour work day, an acceptable ceiling concentration of 200 ppm provided the 8 hour PEL is not exceeded, and an acceptable maximum peak of 300 ppm for a maximum duration of 5 minutes in any 2 hours.

The National Institute for Occupational Safety and Health (NIOSH) considers trichloroethylene to be a potential occupational carcinogen and established a recommended exposure limit (REL) of 2 ppm (as a 60-minute ceiling) during its use as an anesthetic agent and 25 ppm (as a 10-hour TWA) during all other exposures.

References

This ToxFAQs™ information is taken from the 2014 Toxicological Profile for Trichloroethylene (Draft for Public Comment) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Ion the web: www.atsdr.cdc.gov/toxFAQs.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

From: Guariglia, Dale <daguariglia@bclplaw.com>
Sent: Wednesday, August 14, 2019 3:25 PM
To: Stacey, Scott <Scott.Stacey@dnr.mo.gov>
Cc: jprice@cecb.com
Subject: RE: Northrop Grumman/Fantastic Caverns

Scott,

John Price and I wanted to notify you that our respective clients, Fantastic Caverns and Northrop Grumman, have reached agreement on both an Access Agreement and a Cost Reimbursement Agreement. The agreements have already been executed by Northrop Grumman and will be sent via overnight mail tomorrow to Fantastic Caverns for signature. We are aware you had requested copies of the agreements once executed. However, the agreements are between private parties and contain settlement terms the parties consider confidential. Moreover, if we were to provide the agreements to MDNR, they may become public documents subject to Sunshine Act requests. As a result, Fantastic Caverns and Northrop Grumman are not inclined to provide copies of the agreements to MDNR. If you would like to discuss this further, we would be happy to schedule a call.

Thanks,

Dale

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
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OFFICE OF THE
REGIONAL ADMINISTRATOR

APR 03 2018

The Honorable Roy Blunt
United States Senator
1123 Wilkes Boulevard, Suite 320
Columbia, Missouri 65201

Attention: Daniel Harre

Dear Senator Blunt:

Thank you for your inquiry of March 19, 2018, to the U.S. Environmental Protection Agency, Region 7, on behalf of your constituent Mr. Doug Campbell who wrote on behalf of Fantastic Caverns in Springfield. Mr. Campbell is concerned with why the Occupational Safety and Health Administration's workplace standard for trichloroethylene is different from the EPA's health-based values for TCE in indoor air.

Below is a short summary of the EPA's role in addressing TCE exposures, the current scientific basis for TCE exposure values, and the review process the EPA used in adopting guidance for TCE air exposures.

EPA's Health-Based Value for TCE

The EPA health-based benchmark for workers exposed to TCE in air is 6 $\mu g/m^3$. This value is based on the "Toxicological Review of Trichloroethylene" that was published by the EPA Integrated Risk Information System program in 2011. This document is a comprehensive evaluation of the toxicological information available at that time. The EPA's Office of Land and Emergency Management recognizes an IRIS assessment as the official Agency scientific position regarding the toxicity of a chemical based on the data available at the time of the review. OLEM issued in 2003 a formal Directive stating that IRIS is generally the preferred source of human health toxicity values used to evaluate health risks at Superfund sites. This approach was re-affirmed in an August 2014 memorandum from the Superfund program. Thus, the data and approach used to derive 6 $\mu g/m^3$ is consistent with the EPA guidance and long-standing practice.

The "Toxicological Review of Trichloroethylene" underwent extensive internal and external review. The final toxicological review incorporates comments by the National Academy of Sciences, two EPA Science Advisory Boards, the Office of Management and Budget, the Department of Defense, the National Aeronautics and Space Administration, internal EPA reviewers, and the public, among others. The Agency for Toxic Substances and Disease Registry has adopted the EPA's IRIS values in determining its Minimal Risk Levels for breathing TCE in air. The science and approach used to arrive at the 6 $\mu g/m^3$ value is well established.

OSHA's Permissible Exposure Limits (PELs)

Most of OSHA's permissible exposure limits were issued shortly after the Occupational Safety and Health Act was adopted in 1970 and have not been updated since then. Their official website states

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"OSHA recognizes that many of its permissible exposure limits (PELs) are outdated and inadequate for protection of worker health.... Industrial experience, new developments in technology, and scientific data clearly indicate that in many instances these adopted limits are not sufficiently protective of worker health" (https://www.osha.gov/dsg/annotated-pels/).

OSHA notes that many large industrial organizations have supplemented existing OSHA PELs with their own guidelines and recommends that employers consider using alternative occupational exposure limits. Although OSHA PELs are meant to be protective of worker health, they do not take into account the entire range of people who may be exposed including sensitive individuals, which the EPA's health-based values do.

EPA's Role and Authority

The EPA and OSHA each have distinct statutory responsibilities through the timely and effective implementation of a number of federal laws and implementing regulations. The EPA's role is to protect human health in the case of environmental releases of contaminants.

The source of TCE in air at Fantastic Caverns was determined to be the former Litton Systems site. Releases of TCE at the Litton Systems site migrated into the environmental subsurface and groundwater many years ago and ultimately into the air within Fantastic Caverns. The EPA's health-based benchmarks are applicable for the environmental contamination at Fantastic Caverns.

Summary and Conclusion

Based on the most current science and long-standing policy, the EPA believes 6 $\mu g/m^3$ TCE in air is the appropriate health-based benchmark for ensuring worker safety at Fantastic Caverns. The TCE found in indoor air at Fantastic Caverns was not created by the business operations at the cave, and the OSHA standards are not applicable to TCE exposures from an environmental release.

Again, thank you for your inquiry. If we can be of any further assistance, please feel free to contact me at 913-551-7006, or your staff may call LaTonya Sanders, Congressional Liaison, at 913-551-7555.

Sincerely,

James B. Gulliford

U.S. ENVIRONMENTAL PROTECTION AGENCY

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY

REGIONS VI, VII, VIII

CONFIDENTIAL

Final A.O. 9-29-93

DRAFT
SITE INSPECTION PRIORITIZATION REPORT
FOR THE
LITTON SYSTEMS, INC., ADVANCED CIRCUITY DIVISION
SPRINGFIELD, MISSOURI
CERCLIS NO. MOD007152903

EPA CONTRACT NO. 68-W8-0122
EPA WORK ASSIGNMENT NO. 53-7JZZ
EPA REGION VII

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SEPTEMBER 1993

TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	SITE BACKGROUND	1
3.0	HAZARD RANKING SYSTEM SCORING	3
3.1	Source/Waste Characteristics	3
3.2	Groundwater Pathway	4
3.3	Surface Water Pathway	5
3.4	Soil Exposure Pathway	6
3.5	Air Pathway	6
4.0	DATA GAPS	7
5.0	CONCLUSIONS	7
REFERENCES		8

LIST OF FIGURES

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Proposed Recovery and Deep Monitoring Well Locations
Figure 4	Four-Mile Radius Map

LIST OF TABLES

Table 1	Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR on March 24, 1981
Table 2	Selected Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR on May 20, 1981
Table 3	Selected Sample Analysis Results of Groundwater, Surface Water, Sediment, and Surface Soil Samples Collected by MDNR on January 27, 1988
Table 4	Selected Sample Analysis Results of Soil Samples Collected by SCS Engineers in January 1991
Table 5	Selected Sample Analysis Results of Groundwater Samples Collected by SCS Engineers January 1991

LIST OF APPENDICES

Appendix A	PREscore Scoresheets
Appendix B	Referenced Documents

Final A.O. 9-29-93

DRAFT

SITE INSPECTION PRIORITIZATION REPORT
LITTON SYSTEMS, INC., ADVANCED CIRCUITRY DIVISION SITE
SPRINGFIELD, MISSOURI
CERCLIS No. MOD007152903

1.0 INTRODUCTION

Jacobs Engineering Group, Inc. (Jacobs) was tasked by the U.S. Environmental Protection Agency (EPA) to evaluate the Litton Systems, Inc., Advanced Circuitry Division (Litton) site (CERCLIS No. MOD007152903) as a potential candidate for an Expanded Site Inspection (ESI) using the Site Inspection Prioritization (SIP) guidelines. The evaluation included a review of EPA and state file material, and a review of target information. Hazard Ranking System (HRS) scoring was performed using the PA Scoresheet methodology and the PREscore methodology (Appendix A).

The site score assigned using the PA Scoresheet methodology was greater than 28.5; therefore, the PREscore methodology was subsequently used to more accurately score the site. A waste characteristics score of 100 was assigned based on two sources: a two-acre tract of land upon which wastewater was irrigated and a 71,250-cubic foot wastewater disposal pond which contained 12 million gallons of wastewater. The individual pathway scores were as follows: groundwater, 91.33; surface water, 0; soil exposure, 3.37; and air, 5.28. The total site score for the Litton site was 45.77 (Appendix A).

2.0 SITE BACKGROUND

The Litton site is in the northwestern portion of the City of Springfield at 4811 West Kearney Street, Greene County, Missouri (Figure 1) (Reference 1). The site is located in the southeast quarter of the southwest quarter of Section 6, Township 29 North, Range 22 West, and the geographical coordinates of the site are 37°14'43.48" North latitude and 93°22'32.97" West longitude (References 2 and 3). The site, which is approximately 50 acres in size, is currently owned by Litton Precision Products, Inc. and Litton Industries, Inc. who purchased the site in three different parcels between 1963 and 1964 from the Industrial Development Corporation, the City of Springfield, and Mr. and Mrs. Roscoe Prescott. Until the time of purchase, the site property was either vacant or utilized for agricultural purposes (Reference 1). Litton has manufactured printed circuit boards on-site since approximately 1963. The printed circuit boards are plated with copper, nickel, pyrophosphate, rhodium, gold and tin. Plating wastewater generated on-site was disposed in various pits, ponds, lagoons, and sinkholes in and around the site property (Reference 4). Estimates of the quantity of plating wastewater generated vary from 200,000 gallons per day (gpd) to 34,000 gpd after waste reduction methods were implemented (Reference 1). An estimated total of 193,800,000 gallons of plating wastewater may have been disposed on-site. The site is currently active.

In 1972, Litton received an operating permit from the Missouri Clean Water Commission (Reference 1). Plating wastewater was originally disposed by irrigation onto a small portion of the site and discharged to an on-site sinkhole. Shortly after the site began operating, storage and settling ponds were constructed for plating wastewater to be discharged through a series of terraces into a pit (Reference 5). The Missouri Department of Natural Resources (MDNR) issued Litton a National Pollutant Discharge Elimination System (NPDES) permit in December 1974. The NPDES permit expired on January 17, 1975 when Litton received the MDNR's approval to construct and operate a new discharge system in which plating wastewater was discharged into a newly constructed lagoon and land-applied to a two-acre portion of the site. After the new discharge system was constructed, use of the storage and settling ponds was discontinued (References 1 and 5). Accumulated sludges were removed from the ponds and disposed at an approved facility. A sludge pit and an acid disposal pit were also cleaned up in the late 1970s (Reference 5).

The MDNR first conducted an inspection of the Litton site on September 25, 1979. MDNR discovered that plating wastewater, which was discharged to the lagoon system, was overflowing and releasing wastes into a nearby sinkhole (Reference 6). The following September, the MDNR issued Litton a Consent Order requiring the discharge of plating wastewater to cease (Reference 1). On March 24, 1981 the MDNR conducted a sampling investigation of the Litton site and collected six water samples. Four samples of standing water (Sample Nos. 81-9621, 81-9622, 81-9623 and 81-9624) were collected respectively from three on-site ponds designated as Ponds A, B, and C, and a sanitary lagoon. Two groundwater samples (Sample Nos. 81-9619 and 81-9620) were collected from two monitoring wells, located on-site (Reference 7). No information was available in the file material regarding the installation of these monitoring wells. The samples were analyzed for volatile organic compounds (VOC). Several VOCs were detected at high concentrations in all of the samples (Reference 7). The analytical results are provided in Table 1.

The MDNR conducted another sampling investigation at the Litton site on May 20, 1981 in order to determine the source of the VOCs detected in the March 24, 1981 sampling investigation and to evaluate the effect of the VOCs on local groundwater. Two groundwater samples (Sample Nos. 81-6237 and 81-6238) were collected from the on-site monitoring wells, and ten surface water samples were also collected. Sample No. 81-6227 was collected from Fulbright Spring as a background sample. Sample No. 81-6228 was collected from an unnamed spring. Sample Nos. 81-6229 and 81-6230 were collected from Ritter Spring West. Sample Nos. 81-6231 and 81-6232 were collected from Fantastic Caverns Spring, and Sample Nos. 81-6235 and 81-6236 were collected from Lagoon C and Lagoon A, respectively. The samples collected were analyzed for VOCs. High concentrations of several VOCs were detected in all of the samples except for Sample Nos. 81-6227, 81-6228, and 81-6229. VOCs were not detected in these samples (Reference 8). The analytical results are provided in Table 2.

On March 26, 1982, the MDNR issued an Emergency Directive to Litton requiring them to cease and correct the imminent hazard caused by the sludges and wastewater in Pond A (Reference 9). Pond A was closed later in 1982. On November 10, 1982, the EPA approved Litton's closure report for Pond A, and Resource Conservation and Recovery Act (RCRA) closure was granted. That same year the accumulated sludges in the lagoon constructed in 1975 were removed and disposed at an approved facility. The lagoon was dozed in after the sludges were removed (Reference 1). The file material indicated that a pretreatment system was installed around this time which reduced the quantity of plating wastes generated at the site (Reference 5). Litton was connected to the Springfield municipal sewer system in 1982 (Reference 1).

The MDNR conducted another sampling investigation of the Litton site on January 27, 1988. Three composite surface soil samples were collected from the site property (Sample Nos. 88-0198, 88-0220, and 88-0221). Sample No. 88-0221 was designated as a background sample. One surface water sample and one sediment sample were collected from Ritter Spring West (Sample Nos. 88-0186 and 88-0187, respectively). Three groundwater samples were collected from nearby private residential wells (Sample Nos. 88-0196, 88-0222, and 88-0223). All of the samples were analyzed for VOCs and metals. In addition, the water samples were analyzed for base/neutral/acid extractables (BNA). The analytical results are provided in Table 3. High concentrations of metals were detected in all of the soil samples except for the background sample. Total lead was detected in Sample No. 88-0198 at 290 mg/kg, which exceeds the Missouri Department of Health's (MDOH) recommended safe soil level of 238 mg/kg. Two VOCs were also detected at high concentrations in two of the soil samples. Moderate levels of metals were detected in the water samples, and a few VOCs were detected in the water samples at high concentrations. Sample Nos. 88-0186 and 88-0222 contained 69 µg/L and 44 µg/L of trichloroethylene (TCE), respectively. These concentrations are above the MDOH safe drinking water level of 5 µg/L and EPA's drinking water standards maximum contamination level of 0.005 mg/L. Sample No. 88-0196 contained 24 µg/L methylene chloride which exceeded the MDOH recommended safe drinking water level of 1.9 µg/L (Reference 4). On November 15, 1988 the MDNR resampled the private residential well in which 44 µg/L of TCE was detected. No VOCs were detected in the well at the time of the resampling (Reference 4).

The MDNR completed a Cleanup Assessment for the Litton site on December 14, 1989 based upon the results of the January 27, 1988 sampling investigation. Although the total lead content in the site soils was high, it did not fail the Toxicity Extraction Procedure (TEP) test and it could not be characterized as a RCRA hazardous waste because it could not be identified as a constituent generated from a listed waste. In addition, the exact source of TCE contamination found in Ritter Spring West is inconclusive because several industries in the area utilize TCE. Therefore, the MDNR determined that conditions at the Litton site did not currently warrant its listing on the Missouri Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites (The Registry) (Reference 11).

Litton hired SCS Engineers to conduct a sampling investigation of the Litton site between January 21 and 26, 1991. SCS Engineers installed seven monitoring wells and collected 14 groundwater samples (one from each of the newly installed monitoring wells and one from each of seven pre-existing monitoring wells). All of the wells installed by SCS Engineers were completed in the Springfield Plateau Aquifer and ranged in depths from 11.5 feet to 23.5 feet. No information was available in the file material indicating the date of installation or depths of the seven pre-existing monitoring wells. The sample numbers of the groundwater samples were assigned based upon the monitoring well identification numbers (i.e., Sample Nos. MW1 through MW14). The location of the monitoring wells are designated in Figure 3. Nine surface soil samples were also collected (Sample Nos. B-B1-5.5, B-B1-10, B-B2-6, B-B3-5, B-B3-10, B-B3-15, B-B4-5, B-B4-7, and B-B4-10). The samples were analyzed for metals, VOCs, and BNAs. The analytical results of the soil samples are provided in Table 4, and the analytical results of the groundwater samples are provided in Table 5. The soil samples contained low concentrations of metals and low concentrations of several VOCs. The groundwater samples contained low concentrations of metals and high concentrations of various VOCs (Reference 12).

On August 3, 1993, the MDNR and Litton entered into a Consent Agreement with the following stipulations: Litton will investigate, develop, design, and implement a remedial and monitoring program; the MDNR will utilize a site-specific cleanup assessment provided by the MDOH to determine appropriate cleanup levels for the site; and if the remedial actions do not result in a satisfactory cleanup level, the MDNR will pursue listing of the Litton site on The Registry (Reference 13).

3.0 HAZARD RANKING SYSTEM SCORING

The Litton Systems, Inc., Advanced Circuitry Division site scored 45.77 using the PREscore methodology (Appendix A). All of the pathways were scored as follows: groundwater, 91.33; surface water, 0; soil exposure, 3.37; and air, 5.28 (Appendix A).

3.1 Source/Waste Characteristics

Based on information from the MDNR, several pits, ponds, and lagoons were utilized on-site for storage and discharge of plating wastewater. The file information is unclear on the exact number of surface impoundments utilized during the site's operational history; however, it appears that a total of three pits, three ponds, and three lagoons were utilized at the site. A two-acre area of the site was utilized for irrigation of plating wastewater. Two sources were utilized to calculate the waste characteristics score: Pond A and the two-acre irrigation plot. The file material contained information on the size and holding capacity only for Pond A; therefore, Pond A was the only surface impoundment utilized in calculating the waste characteristics score. Pond A was 71,250 cubic yards in size and contained a maximum of 12,000,000 gallons of plating wastewater. The area of the irrigation plot (two acres) was divided by 0.0062 (the multiple source land treatment divisor) and a value of 322.58 was assigned. The volume of Pond A (71,250 cubic yards) was divided by 2.5 (the multiple source surface impoundment divisor) to get a value of 28,500. Since the sum of 322.58 and 28,500 was greater than 10,000, the maximum waste characteristics score of 100 was assigned. Even though Pond A underwent RCRA closure in November 1982, it can be used as a HRS waste source because MDNR conducted two sampling investigations prior to its closure.

3.2 Groundwater Pathway

The Litton site is located within an internally drained area characterized by karst geology. Much of the precipitation that falls in the area enters sinkholes which funnel water to spring outlets. A significant amount of precipitation percolates through the permeable residual soils to the top of the pinnacled bedrock. These laterally discontinuous perched water zones provide base flow to area springs by slowly releasing groundwater to solution-enlarged conduits. A smaller amount of precipitation bypasses the karst drainage system to recharge the regional Mississippian Aquifer (Reference 1).

Near surface bedrock formations include the Burlington/Keokuk, Elsey/Reed Springs, and Pierson Formations. These units are Mississippian-aged limestones. The Springfield Plateau Aquifer lies beneath the surficial water-bearing zone. This aquifer is located at depths of approximately 250 to 300 feet and is recharged by leakage from the surficial aquifer and recharge from fractures and sinkholes. Pumping of water from this aquifer consists primarily of rural domestic use, and the yield ranges from one to 50 gallons per minute (gpm). This aquifer is highly susceptible to contamination because of its proximity to the surface and the high degree of solution weathering to which it is subjected (Reference 14).

The Northview shale and the Compton-Bachelor limestone formations lie below the Springfield Plateau Aquifer and above the Ozark Aquifer. The Northview formation is approximately 25 to 30 feet thick and may act as an aquitard between the Springfield Plateau and Ozark Aquifers; however, downward leakage from the Springfield Plateau to the Ozark Aquifer does occur (Reference 14).

The Cotter through Potosi Formations which lie below the Northview Formation are comprised of Ordovician and Cambrian dolomites and quartz sandstones over 1,000 feet thick. This formation is known collectively as the Ozark Aquifer. Most wells in the area draw from the Ozark Aquifer which yields 1,000 to 2,000 gpm. Although a minor amount of recharge occurs from the overlying aquifer, the Ozark Aquifer is not highly susceptible to contamination unless poorly cased wells provide a conduit for contaminant transport (Reference 14).

Groundwater usage within a four-mile radius of the site is moderate. A review of well logs identified the presence of 86 private residential wells (Reference 15). A total of 46 of the private residential wells are completed in the Springfield Plateau Aquifer, and the other 40 are completed in the Ozark Aquifer (Reference 15). An estimated population of 209 receive potable water from these wells. This population was calculated by multiplying the 86 wells by 2.43 (the average population per household in Greene County, Missouri, also known as the "county multiplier") (Reference 16). Two City of Springfield municipal wells are located within a four-mile radius of the site and are completed in the Ozark Aquifer (References 2, 17, and 18). Springfield has a total of three municipal wells which function as a backup for the four surface water intakes. These three wells supply an average of one percent of the municipal water supply. The Springfield water supply serves approximately 150,000 people, and the three municipal wells serve an apportioned population of 1,500 people (500 people per well) (References 17 and 18). The number of wells within each distance category and the associated drinking water population were assigned as follows:

Distance (miles)	Number of Wells	Population
0 - 1/4	0	0
1/4 - 1/2	0	0
1/2 - 1	2	5 (a)
1 - 2	23	56 (a)
2 - 3	33	80 (a)
3 - 4	30	1,068 (b)

(a) private wells
(b) 28 private wells and 2 municipal wells

Both the Springfield Plateau and Ozark Aquifers were scored using the PREscore methodology. Previous groundwater sampling conducted in the area of the site indicated that groundwater contamination exists; therefore, a likelihood of release score of 550 was assigned to both aquifers. The targets for the Springfield Plateau Aquifer were scored as follows: two private residential wells which were sampled contained Level I contamination, and one private residential well contained Level II contamination; therefore, a primary population score of 50 was assigned based upon the seven people estimated to receive drinking water from these three contaminated wells. A Level I target population score of 40 was assigned because four people drink from wells containing Level I contamination, and a Level II target population score of two was assigned because two people drink from a well containing Level II contamination (References 4 and 16). A secondary target population score of 6 was assigned based upon the populations receiving drinking water from uncontaminated wells completed in the Springfield Plateau Aquifer. Springfield is located in a state-designated wellhead protection area (WHPA); therefore, a WHPA score of 20 was assigned (Reference 19). Well logs of Springfield indicate that groundwater is used for commercial food preparation; therefore, a resources score of 5 was assigned. The total targets score for the Springfield Plateau Aquifer was 123, and the groundwater pathway score for the Springfield Plateau Aquifer was 82.

The wells in the Ozark Aquifer were scored potential contamination targets. No wells completed in this aquifer are known to be contaminated; therefore, Level I and Level II target scores of 0 were assigned. A potential population score of 14 was assigned based upon the number of people estimated to receive water from wells completed in the Ozark Aquifer. A nearest well score of 5 was assigned because the nearest well drawing from the Ozark Aquifer is slightly further than one mile from the site. A WHPA score of 20 and a resources score of 5 were also assigned to the Ozark Aquifer. The total target score was 44, and the groundwater pathway score for the Ozark Aquifer was 29.33. The overall groundwater pathway score was calculated by combining the highest targets for each aquifer, resulting in an overall groundwater pathway targets score of 137. The overall groundwater pathway score was 91.33

3.3 Surface Water Pathway

Numerous surface water samples have been collected from standing water in pits, ponds, and lagoons on-site, as well as from nearby surface water bodies. The sample results indicate that standing water on-site is contaminated and some of the nearby surface water bodies contained similar contaminants; however, given the distance from the site to the nearest surface water body, it is difficult to determine if off-site surface water contamination is attributable to the Litton site.

There is no overland flow pathway from the site to any perennial surface water bodies because precipitation falling in the area of the site enters sinkholes and percolates into the ground before reaching surface water. In addition, surface water is located further than two miles from the site; therefore, the overland flow segment of the surface water pathway cannot be scored. There is a groundwater to surface water pathway because precipitation enters sinkholes and is funneled to spring outlets approximately three miles north of the site.

However, the groundwater to surface water segment of the surface water pathway cannot be scored either because the nearest surface water body is located further than one mile from the site.

3.4 Soil Exposure Pathway

No residences, schools, or day-care centers are known to be located within 200 feet of the site (References 2 and 20). The nearest resident is located approximately 1,500 feet south of the site (Reference 2). The population within a one-mile radius of the site is approximately 126 (References 2 and 16). The Black-tailed jackrabbit (Lepus californicus), a state endangered species, is located in the area of the site (Reference 21).

A likelihood of exposure score of 550 was assigned for the resident population threat portion of the soil exposure pathway because several contaminants were detected in the site soils at concentration greater than three times those detected in the background sample (Reference 4). The resident population and resident individual targets both received scores of 0 because no residences, schools, or day-care centers are present within 200 feet of the site (References 2 and 20). A workers target score of 5 was assigned based on the number of workers estimated to be employed at the Litton site. A terrestrial sensitive environments target score of 0 was assigned because no sensitive environments are known to be located on-site. A resources score of 0 was assigned because no resources are known to be located on-site. The summation of the resident population threat targets was 5, and the overall resident population threat score was 3.33. A likelihood of exposure score of 25 was assigned for the nearby population threat based on the size of the site and the accessibility of the site to the public. A nearby population threat target score of 0.9 was assigned based upon the population residing within one mile of the site. The overall nearby population threat score was 0.03. The overall soil exposure pathway score was 3.37.

3.5 Air Pathway

Air sampling has not been performed at the site; however, a release of site contaminants into the air is not suspected based on the nature of the sources. The Geographic Exposure Modeling System (GEMS) database, U.S. Geological Survey topographic maps, and the county multiplier were utilized to estimate the populations within a four-mile radius of the site (References 2, 16, and 20). The following populations reside within the distance categories:

Distance Category (miles)	Population
0 - 1/4	17
1/4 - 1/2	22
1/2 - 1	87
1 - 2	1,814
2 - 3	7,003
3 - 4	15,069

The state endangered Black-tailed jackrabbit (Lepus californicus) is located within a four-mile radius of the site, and some of the land near the site is believed to be used as pasture land (References 1 and 21).

A likelihood of release score of 450 and a waste characteristic score of 56 was assigned based on the source and contaminant types. A secondary target population score of 5 was assigned based upon the populations within each distance category calculated above. A nearest individual target score of 7 was assigned because the nearest resident is located between one-quarter and one-half of a mile from the site. A secondary sensitive environments target score of 0.27 was assigned because the state endangered Black-tailed jackrabbit is believed to be located within one-half of a mile of the site. A resources target score of 5 was assigned because pasture land is believed to be located within one-half of a mile of the site. The summation of the air pathway target scores was 17.27, and the overall air pathway score was 5.28.

The primary data gap associated with the site is the lack of definitive data regarding the number and size of the surface impoundments located on-site. However, sufficient information was available to adequately calculate a waste characteristics score. Extensive groundwater, surface water, and soil sampling has been conducted. Observed releases to the groundwater and soil exposure pathways have been established; therefore, no further groundwater or soil sampling is anticipated to be necessary. An observed release to the surface water pathway could not be established because of the complex groundwater to surface water system in the area of the site. Additional surface water sampling is not expected to increase the site score because the nearest surface water body is greater than two miles from the site. Additionally, it will be difficult to determine if off-site surface water contamination is attributable to the Litton site because several industrial facilities are located in the area. Air sampling has not been conducted; however, it is not anticipated to be necessary because the source types are unlikely to contribute to air contamination.

5.0 CONCLUSIONS

Although the overall site score was greater than 28.5, it is anticipated that additional site characterization activities would not affect the site assessment results because the Litton site has already been extensively investigated. Existing analytical data is sufficient to complete a National Priorities List (NPL) HRS scoring package for the site. Sampling activities conducted at the site indicate that on-site soils and groundwater have become contaminated as a result of waste disposal activities at the facility. Since the nearest surface water body is three miles from the site and several industrial facilities are located in the area, it will be difficult to determine if off-site surface water contamination is attributable to the site even if additional surface water samples are collected. Although air samples have not been collected at the site, air contamination is not expected to result from the site because of the nature of the waste sources. The Litton Systems, Inc., Advanced Circuitry Division site has recently entered into a Consent Agreement with the MDNR which requires Litton to remediate the site to cleanup levels specified by MDNR.

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11. Kelly, Kevin, Environmental Specialist, Missouri Department of Natural Resources, December 14, 1989, memorandum to Litton Registry File, Greene County.

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13. Missouri Department of Natural Resources, August 4, 1993, Consent Agreement with Litton Systems, Inc., Advanced Circuitry Division.

14. Jacobs Engineering Group Inc., June 5, 1992, EPI/PA Report - Zenith Electronics Corporation, Springfield, Missouri.

15. Missouri Department of Natural Resources, well logs of Greene County, Missouri.

16. Conway, Lisa, Data Specialist, U.S. Bureau of the Census, August 27, 1993, telephone conversation with Carolyn McManigal, Jacobs Engineering Group Inc.

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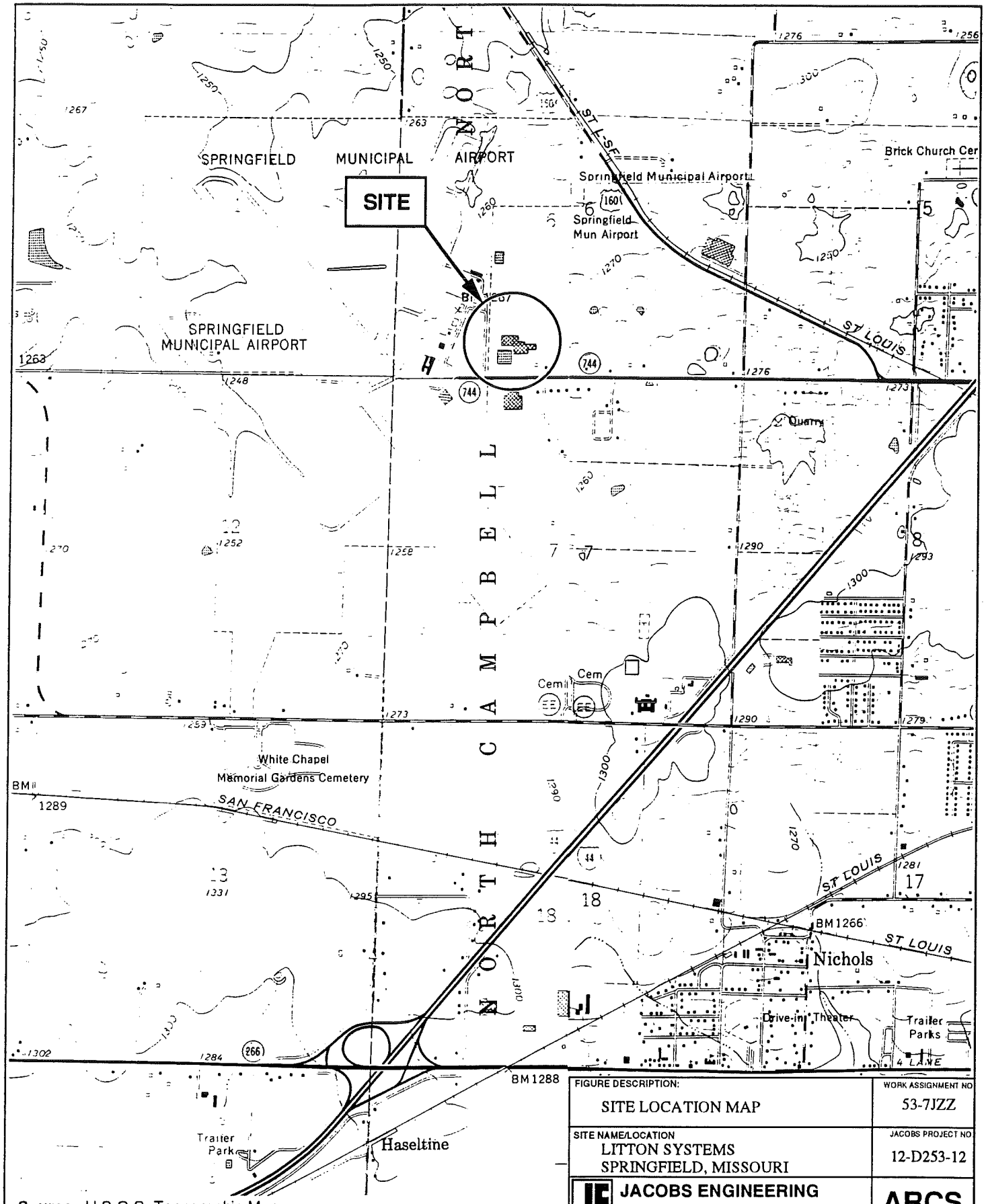
21. Dickneite, Dan, Planning Division Chief, Missouri Department of Conservation, April 12, 1993, letter to Traci Phillips, Jacobs Engineering Group Inc.

APPENDICES

FIGURES



Source: U.S.G.S. Topographic Map

0 .5 1
Approximate Scale in Miles

FIGURE DESCRIPTION: SITE LOCATION MAP	WORK ASSIGNMENT NO 53-7JZZ
SITE NAME/LOCATION LITTON SYSTEMS SPRINGFIELD, MISSOURI	JACOBS PROJECT NO 12-D253-12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: DJK DATE: 04/12/93	FIGURE NO. 1
CHECKED BY: JL DATE: 04/12/93	

D253-12-002

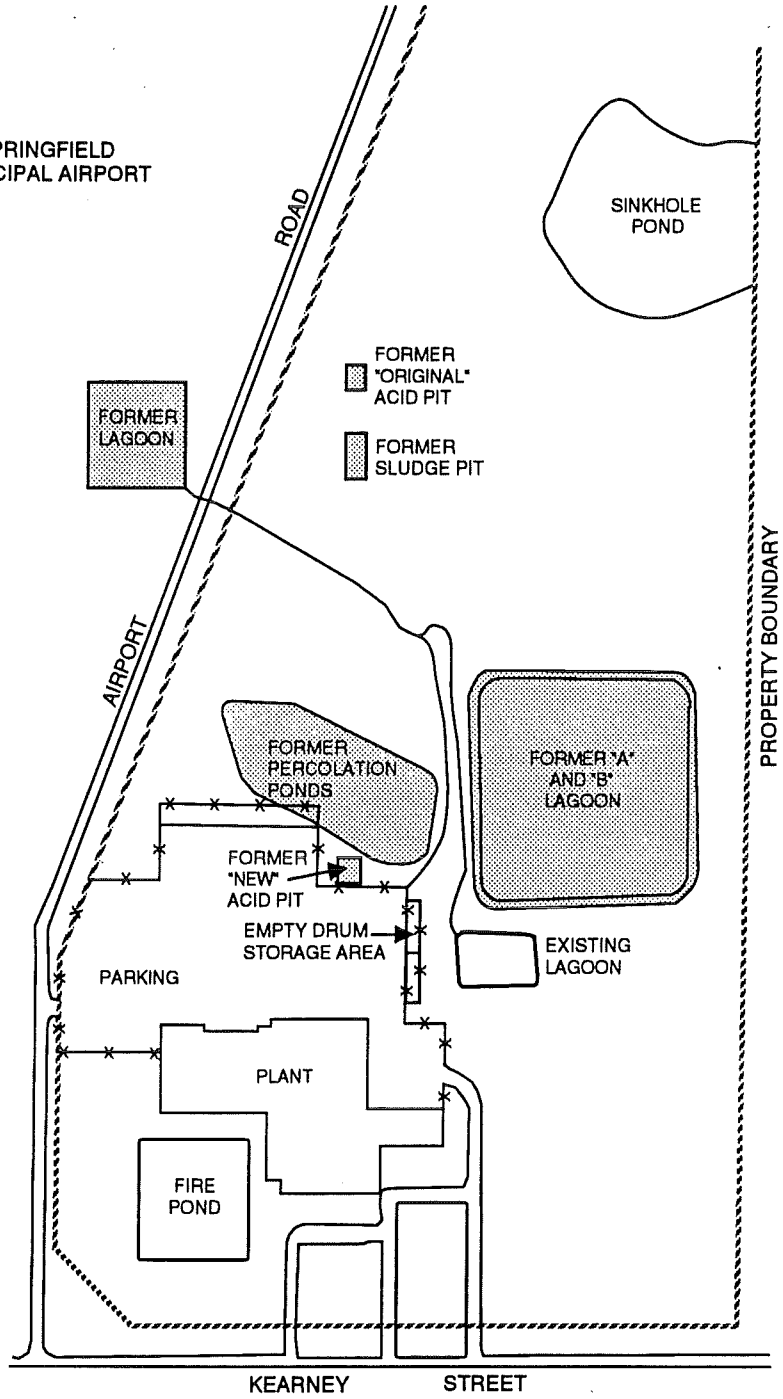


FIGURE DESCRIPTION: SITE MAP	WORK ASSIGNMENT NO 53-7JZZ
SITE NAME/LOCATION LITTON SYSTEMS SPRINGFIELD, MISSOURI	JACOBS PROJECT NO 12-D253-12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD DATE: 03/23/93	FIGURE NO. 2
CHECKED BY: KS DATE: 03/23/93	

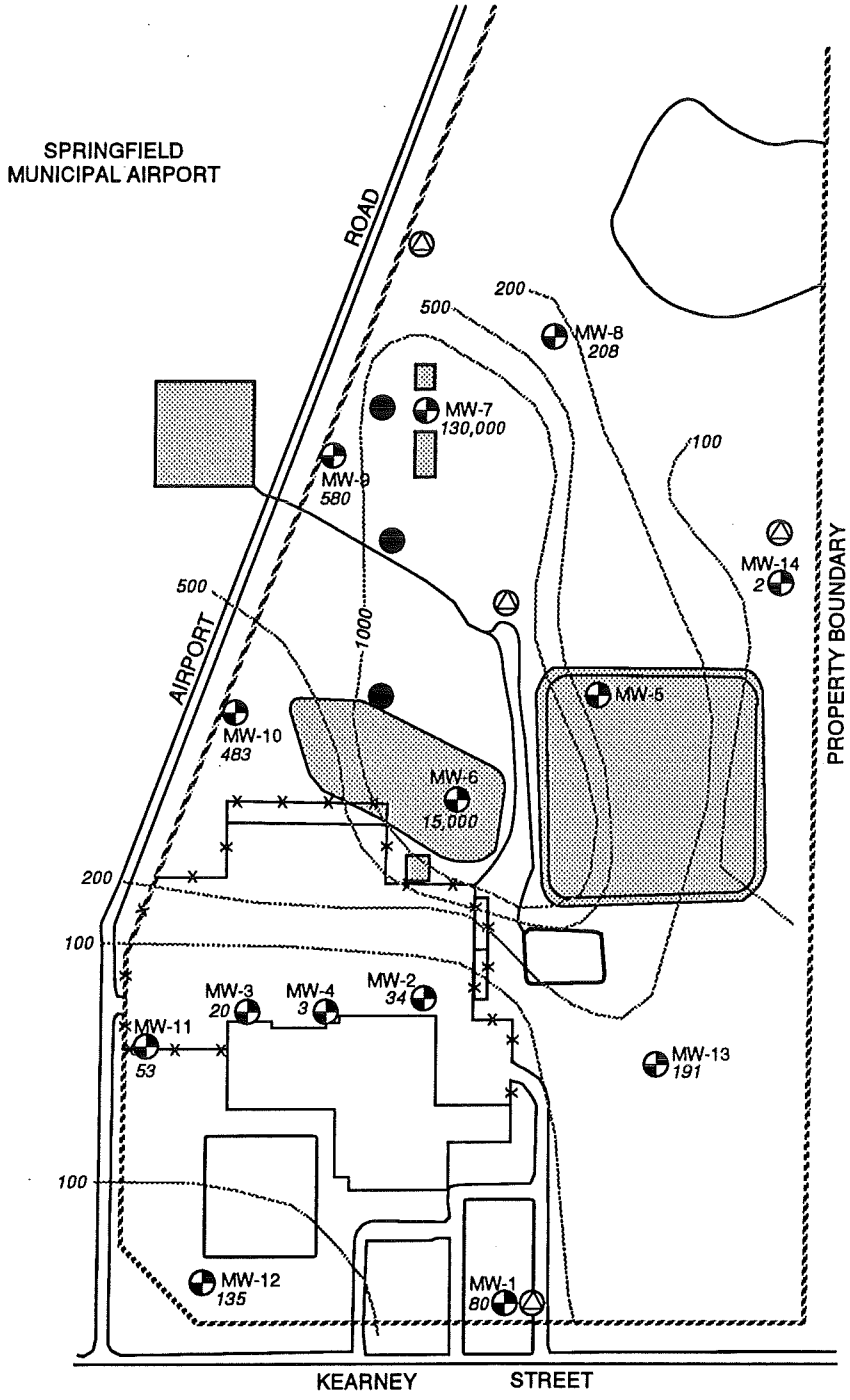
N

0 100

Approximate Scale in Feet

SOURCE: SCS ENGINEERS

D253-12-001



LEGEND

100 TCE ISOCHEMICAL CONTOUR IN µg/l

MW-1 580 MONITOR WELL LOCATION NUMBER, AND TCE CONCENTRATION

PROPOSED RECOVERY WELL

PROPOSED DEEP WELL

N

0 100

Approximate Scale In Feet

SOURCE: SCS ENGINEERS

FIGURE DESCRIPTION: PROPOSED RECOVERY AND DEEP MONITORING WELL LOCATIONS	WORK ASSIGNMENT NO. 53-7JZZ
SITE NAME/LOCATION LITTON SYSTEMS SPRINGFIELD, MISSOURI	JACOBS PROJECT NO. 12-D253-12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD DATE: 03/23/93	FIGURE NO. 3
CHECKED BY: KS DATE: 03/23/93	

D253-12-001

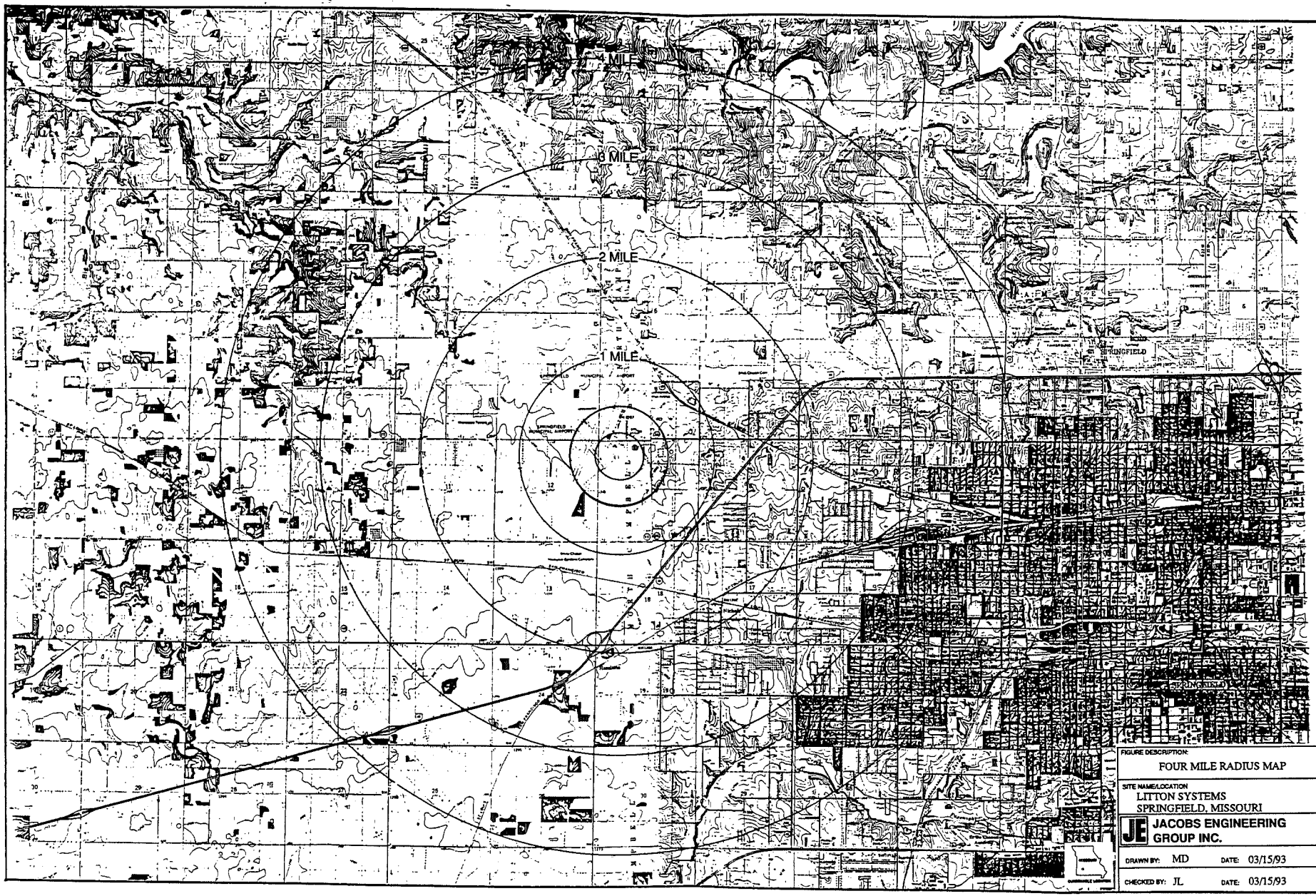


FIGURE DESCRIPTION: FOUR MILE RADIUS MAP	WORK ASSIGNMENT NO 53-7JZZ
SITE NAME/LOCATION LITTON SYSTEMS SPRINGFIELD, MISSOURI	JACOBS PROJECT NO 12-D253-12
JE JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD DATE: 03/15/93	FIGURE NO. 4
CHECKED BY: JL DATE: 03/15/93	

TABLES

TABLE 1
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR
March 24, 1981

	Sample Numbers					
Contaminant	**81-9619**	**81-9620**	**81-9621**	**81-9622**	**81-9623**	**81-9624**
Vinyl chloride	132	340	ND	ND	ND	ND
1,1-Dichloroethylene	8.1	11	ND	ND	ND	ND
1,1-Dichloroethane	176	181	ND	ND	ND	ND
trans-1,2-Dichloroethylene	335	250	ND	ND	ND	17
1,1,1-Trichloroethane	63	58	78	ND	ND	ND
1,2-Dichloropropane	79	54	80	236	392	2.4
Trichloroethylene	17	42	29	17	72	131
Methylene chloride	ND	ND	325	1,008	1,010	174
1,1,2-Trichloro-1,1,2-trifluoroethane	ND	ND	D	D	ND	ND
Chloromethane	ND	ND	ND	9.6	ND	ND

NOTE: All concentrations reported in µg/l.
ND The material was analyzed for, but was not detected.
D Compound was qualitatively identified; however, the quantitative value is less than the sample quantitation limit.

TABLE 2
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR
May 20, 1981

	Sample Numbers								
Contaminant	**81-6230**	**81-6231**	**81-6232**	**81-6233**	**81-6234**	**81-6235**	**81-6236**	**81-6237**	**81-9638**
Trichloroethylene	200	7	4.9	20.8	233	ND	ND	106	30
1,2-Dichloropropane	11.4	ND	ND	ND	ND	4.1	4.3	119	105
1,1,1-Trichloroethane	12.6	ND	ND	3.7	ND	ND	3.2	67.9	47.2
trans-1,2-Dichloroethylene	27.8	ND	ND	ND	27.5	ND	ND	260	256
Chloroform	ND	ND	ND	ND	ND	ND	4.2	ND	ND
Bromodichloromethane	ND	ND	4.4	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	7.1	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	59.4	58.3
1,1-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	14.3	12.5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	112	132
1-Butene	ND	ND	ND	ND	ND	ND	15	ND	ND
Thiobismethane	ND	ND	ND	ND	ND	ND	45	ND	ND
2-Propane	ND	ND	ND	ND	ND	ND	75	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	35	ND	ND
Tetrahydrofuran	ND	ND	ND	ND	ND	ND	16	ND	ND
1-Butanol	ND	ND	ND	ND	ND	ND	300	ND	ND

NOTE: All concentrations reported in µg/l.
ND The material was analyzed for, but was not detected.

TABLE 3
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater, Surface Water, Sediment, and Surface Soil Samples Collected by MDNR
January 27, 1988

	Sample Numbers							
Contaminant	**88-0186 µg/L**	**88-0187 µg/kg**	**88-0196 µg/L**	**88-0198 µg/kg**	**88-0220 µg/kg**	**88-0221 µg/kg**	**88-0222 µg/L**	**88-0223 µg/L**
(T)Silver	ND	600	ND	1,000	400	200	ND	ND
(T)Arsenic	ND	11,000	ND	33,000	3,800	3,200	ND	ND
(T)Barium	87	150,000	51	210,000	180,000	150,000	63	ND
(T)Cadmium	ND	1,200	ND	400	400	400	ND	ND
(T)Chromium	ND	39,000	ND	390,000	31,000	12,000	ND	ND
(T)Copper	40	620,000	40	4,500,000	580,000	7,200	40	30
(T)Mercury	ND	220	ND	400	220	220	ND	ND
(T)Nickel	80	190,000	ND	61,000	37,000	21,000	ND	ND
(T)Lead	ND	ND	ND	290,000	41,000	25,000	ND	ND
(T)Selenium	ND	ND	ND	260	420	ND	ND	ND
(TEP)Copper	ND	90	ND	140	50	ND	ND	ND
(TEP)Nickel	ND	640	ND	70	60	30	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	1,500	ND	ND	ND	ND
Trichloroethylene	68	ND	ND	29,000	2,200	ND	44	ND
Methylene chloride	ND	ND	24	ND	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	7.7
1,2-Dichloroethylene	14	ND	ND	ND	ND	ND	ND	ND

T Total metals.
ND The material was analyzed for, but was not detected.
TEP Toxicity Extraction Procedure Metals.

TABLE 4
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Soil Samples Collected by SCS Engineers
January 1991

	Sample Numbers								
Contaminant	**B-B1-5.5**	**B-B1-10**	**B-B2-6**	**B-B3-5**	**B-B3-10**	**B-B3-15**	**B-B4-5**	**B-B4-7**	**B-B4-10**
Copper	10	12	830	5	6	9	47	9	25
Nickel	38	27	36	ND	12	11	13	ND	25
Zinc	50	56	61	20	29	39	24	20	50
1,2-Dichloropropane	14	ND	ND	ND	16	21	ND	B	ND
Trichloroethene	260	130	41	ND	11	13	ND	B	480
Ethanol	ND	ND	12	ND	73	200	ND	B	ND

NOTE: All copper, nickel, and zinc concentrations reported in mg/kg. All 1,2-dichloropropane, trichloroethene, and ethanol concentrations reported in µg/kg.
ND The material was analyzed for, but was not detected.
B The sample container broke before the analysis could be performed.

TABLE 5
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater Samples Collected by SCS Engineers
January 1991

	Sample Numbers													
Contaminant	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**	**MW6**	**MW7**	**MW8**	**MW9**	**MW10**	**MW11**	**MW12**	**MW13**	**MW14**
Copper	ND	ND	691	7.8	0.2	0.4	5.4	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.6	ND	0.5	0.5	0.8	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	5.4	ND	ND	0.1	0.1	ND	ND	ND	ND	ND	ND	ND
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND
1,2-Dichloropropane	23	22	15	9	135	1,500	ND	ND	ND	172	40	50	50	ND
Trichloroethylene	80	34	20	3	490	15,000	130,000	208	580	483	53	135	191	2
Chloroform	ND	10	ND	ND	ND	8	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	70	ND	ND	15	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ND	ND	5,000	ND	ND	90	73,000	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	20	ND	400	12,000	1,000	76	197	53	14	ND	17	ND
1,1-Dichloroethane	ND	ND	ND	ND	60	32	910	ND	12	ND	28	ND	17	ND
1,1-Dichloroethylene	ND	ND	ND	ND	134	1,200	29,300	ND	250	ND	10	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	10	2,500	5	7	18	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	43	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	30	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	480	ND	ND	ND	ND	ND	ND	ND

NOTE: All copper, nickel, zinc, and cyanide concentrations reported in mg/l. All other contaminant concentrations reported in µg/l.
ND The material was analyzed for, but was not detected.

n:\project\12d25312\wp51\ta5cm902.wp5
9/13/93

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

May 9, 2018

Mr. Doug Campbell
General Manager
Fantastic Caverns
4872 N. Farm Road 125
Springfield, Missouri 65803

Dear Mr. Campbell:

As you are aware, Northrop Grumman entered into a Consent Decree with the Missouri Department of Natural Resources (Department) in 2010 to implement investigation and remedial actions at the Litton site, including both on-site and off-site migration. It is the Department's opinion that the evidence indicates Fantastic Caverns is impacted by TCE from the Litton site. Therefore, under the terms of the 2010 Consent Decree, the Department requires Northrop Grumman to investigate and address TCE contamination from the Litton site, subject to Department review and approval.

At this time, the Department is proceeding on the understanding that Fantastic Caverns is an impacted third party. The Department has not issued an order, nor entered into any agreement with Fantastic Caverns, and Northrop Grumman has indicated to us that it will commit resources to addressing the contamination in Fantastic Caverns' per the Consent Decree.

We appreciate Fantastic Caverns' cooperation during our previous investigations. While we have received Tom Aley's "Fantastic Caverns 2018 Cave Air Management Plan" and the "Summary of Management Actions, Findings, and Management Conclusions from TCE and Cave Environmental Monitoring in Fantastic Caverns in 2016-17," sent on behalf of Fantastic Caverns, our remedial oversight efforts are appropriately directed at Northrop Grumman at this time. As Fantastic Caverns is not a party to the 2010 Consent Decree or under order by the Department, Mr. Aley's submittals are not subject to review and approval by the Department. Therefore, the Department does not plan to provide comment on these documents.

During our meeting of December 13, 2017, representatives from the Department, including myself, met with you and other representatives of Fantastic Caverns. At that time you were encouraged to reach a timely agreement with Northrop Grumman to enable them to fulfill their responsibilities under the Consent Decree. While Northrop Grumman has indicated to the Department its willingness to participate in this effort, they cannot move forward without an agreement with Fantastic Caverns. We again urge Fantastic Caverns and Northrop Grumman to work quickly to reach an agreement on terms of access and work plans for site characterization

and remediation that will address the TCE contamination, remove any unacceptable risk to human health, and protect the cave environment. The Department will continue to exercise oversight, including reviewing and approving all work plans submitted by Northrop Grumman.

If you have any questions or require further information regarding this letter, please contact Ms. Valerie Wilder of my staff, in writing to her attention at the Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102-0176; by phone to (573) 751-4187; or by e-mail to valerie.wilder@dnr.mo.gov.

Sincerely,

HAZARDOUS WASTE PROGRAM

John D. Jurgensmeyer
Director

JDJ:vwd

c: Mr. Tom Aley, Ozark Underground Laboratory
Mr. Russ Campbell, Fantastic Caverns
Mr. Jeff Kuzemchak, Northrop Grumman

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
LABORATORY SERVICES PROGRAM

Report of Investigation
Litton Advanced Circuitry Division
May 20, 1981

INTRODUCTION

At the request of the Water Pollution Control Program, an investigation was conducted of the Litton Advanced Circuitry Division in Springfield, Missouri, and various sites in the vicinity during the period from 1000 to 1800, May 20, 1981. The purpose of the investigation was to determine the source of volatile organics found in earlier analyses, and the effect on local ground water. Sampling was performed by David Paulsen and Larry Alderson of the Laboratory Services Program, DEQ. Personnel involved in the inspection included Jim Dow, Production Engineer with Litton, Bob Carson and Karen Chandler, with the City of Springfield, and Burt McCullough and John Nixon of the Springfield Regional Office.

METHODS

Grab samples were collected by filling appropriate containers while maintaining a zero head space to prevent the loss of volatile organics.

At the request of Litton representatives, two (2) extra sets of samples were collected for comparative analyses. Samples were collected at each of the following locations:

Sample Number	
81-6227	- Fulbright Springs - included as a control.
81-6228	- Unnamed spring located on Stephens property feeding Clear Creek (this site was substituted for the upper end of Clear Creek at Clear Creek Park off Rt. AB - permission to enter the property was denied).
81-6229	- Ritter Spring #1 West
81-6230	- Ritter Spring #2 East
81-6231	- Fantastic Caverns - cave spring
81-6232	- Fantastic Caverns - potable water supply
81-6233	- Little Sac River - at Fantastic Caverns
81-6234	- Litton Sanitary Lagoon

METHODS (CON'T)

Sample Number	
81-6235	- Litton "C" Lagoon
81-6236	- Litton "A" Lagoon
81-6237	- Litton Monitoring Well - West
81-6238	- Litton Monitoring Well - East

Procedures used in the analyses were performed in accordance with those outlined in EPA Method Number 624. This method uses a purge and trap device in conjunction with a Gas Chromatograph/Mass Spectrometer.

OBSERVATIONS

Starting with Fulbright Springs, to be used mainly as a background sample, the investigation moved to Clear Creek Park off Route AB. The owner of the park insisted that no samples were to be collected on his property, so a small nameless spring on the Stephens property neighboring the park was substituted.

The Ritter Springs #1 West and #2 East, were visited next. Ritter Spring #1 West was particularly noted as having a much higher flow and was more turbid than was observed on a prior visit of February 25, 1981.

With the help of Russell Campbell, employee of Fantastic Caverns, samples were collected from a cave stream, the potable water supply, and the Little Sac River, which bordered the Fantastic Caverns property.

Litton's Sanitary Lagoon was sampled from a canoe using a Kemmerer sampler at a depth of about two (2) feet. Litton's "C" Lagoon had been pumped dry, but contained a small amount of water due to recent rains. The "A" Lagoon, which was noted to be very full, about one (1) foot from the top of the dike, was also sampled from a canoe using the Kemmerer sampler at a depth of about three (3) to four (4) feet.

The monitoring wells West and East, located just North of the "A" Lagoon, were sampled by using a small hand operated diaphragm pump supplied by Litton.

RESULTS

The results for the samples collected are attached to this report as Appendix A.

DISCUSSION

The two (2) monitoring wells were not bailed prior to sampling, therefore, some of the compounds found in those samples may have been due to leaching of the PVC casing from which the wells were constructed.

Chlorination of the potable water supply at Fantastic Caverns may also have contributed to the type of compounds found in that sample.

Submitted by Larry Alderson
Larry Alderson
Environmental Specialist II

Date June 23, 1981

Approved by James H. Long
James H. Long, Director
Laboratory Services Program

cc: Richard Rankin, Director of Staff, Water Pollution Control Program
Art Groner, Environmental Specialist IV, Solid Waste Management Program
Burt McCullough, Environmental Specialist II, Springfield Regional Office
Robert Schreiber, Director, Division of Environmental Quality

/ds

RESULTS

COMPOUND NAME	Fulbright Springs 81-6827	Stephens Spring 81-6228	Ritter Spring 1-West 81-6229	Ritter Spring 2-East 81-6230	Fantastic Caverns Cave 81-6231	Fantastic Caverns Potable 81-6232	Little Sac River 81-6233	Litton Sanitary Lagoon 81-6234	Litton C Lagoon 81-6235	Litton A Lagoon 81-6236	Litton Monitoring Well West 81-6237	Litton Monitoring Well East 81-6238
Trichloroethylene (ug/l)	*	*	*	200	7.0	4.9	20.8	233	*	*	106	30
1,2 Dichloropropane (ug/l)	*	*	*	11.4	*	*	*	*	4.1	4.3	119	105
1,1,1-Trichloroethane (ug/l)	*	*	*	12.6	*	*	3.7	*	*	3.2	67.9	47.2
Trans-1,2-Dichloroethylene (ug/l)	*	*	*	27.8	*	*	*	27.5	*	*	260	256
Chloroform (ug/l)	*	*	*	*	*	*	*	*	*	4.2	*	*
Bromodichloromethane (ug/l)	*	*	*	*	*	4.4	*	*	*	*	*	*
Dibromochloromethane (ug/l)	*	*	*	*	*	7.1	*	*	*	*	*	*
Vinyl Chloride	*	*	*	*	*	*	*	*	*	*	59.4	58.3
1,1-Dichloroethylene (ug/l)	*	*	*	*	*	*	*	*	*	*	14.3	12.5
1,1-Dichloroethane (ug/l)	*	*	*	*	*	*	*	*	*	*	112	132
Additional peaks found in some samples were identified using the NBS Library. A gross estimate of concentration was made.												
dibromomethane (ug/l)	*	*	*	*	*	*	*	*	*	*	*	*
1-butene (ug/l)	*	*	*	*	*	*	*	*	*	15	*	*
thiobismethane (ug/l)	*	*	*	*	*	*	*	*	*	45	*	*
2-propanone (ug/l)	*	*	*	*	*	*	*	*	*	75	*	*
carbon disulfide (ug/l)	*	*	*	*	*	*	*	*	*	35	*	*
tetrahydrofuran (ug/l)	*	*	*	*	*	*	*	*	*	16	*	*
1-butanol (ug/l)	*	*	*	*	*	*	*	*	*	300	*	*

*The compound was not found or it was less than 3.0 ug/l.

RESULTS

Ritter Spring 2-East	Fantastic Caverns Cave	Fantastic Caverns Potable	Little Sac River	Litton Sanitary Lagoon	Litton C Lagoon	Litton A Lagoon	Litton Monitoring Well West	Litton Monitoring Well East
81-6230	81-6231	81-6232	81-6233	81-6234	81-6235	81-6236	81-6237	81-6238
200	7.0	4.9	20.8	233	*	*	106	30
11.4	*	*	*	*	4.1	4.3	119	105
12.6	*	*	3.7	*	*	3.2	67.9	47.2
27.8	*	*	*	27.5	*	*	260	256
*	*	*	*	*	*	4.2	*	*
*	*	4.4	*	*	*	*	*	*
*	*	7.1	*	*	*	*	*	*
*	*	*	*	*	*	*	59.4	58.3
*	*	*	*	*	*	*	14.3	12.5
*	*	*	*	*	*	*	112	132

e NBS Library. A gross estimate of concentration was made.

*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	15	*	*
*	*	*	*	*	*	45	*	*
*	*	*	*	*	*	75	*	*
*	*	*	*	*	*	35	*	*
*	*	*	*	*	*	16	*	*
*	*	*	*	*	*	300	*	*

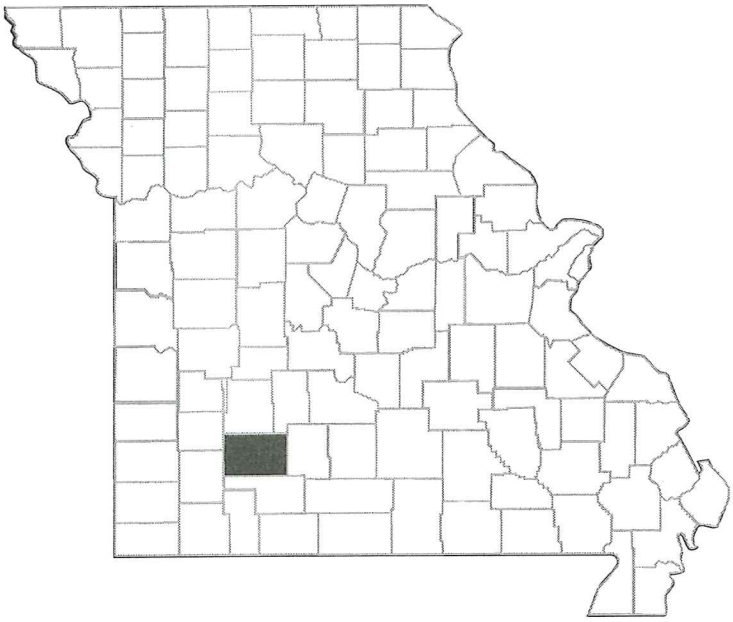
g/l.

SITE REASSESSMENT REPORT

Litton Systems Inc.
Greene County, Missouri

MOD007152903

September 29, 2006



Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 SITE DESCRIPTION 2
- 2.1 Location 2
- 2.2 Site Description 2
- 2.3 Operational History 3
- 2.4 Site History and Previous Investigations 5
  - 2.4.1 Pre-remedial Assessments, 1980-1993 5
  - 2.4.2 Registry Proposal 6
  - 2.4.3 Dye Trace Studies 6
  - 2.4.4 Remedial Activities 6
- 2.5 Waste Characteristics 7
  - 2.5.1 Chlorinated Solvents and Dense Non-aqueous Phase Liquids (DNAPLs)Remedial Activities 7
  - 2.5.2 Copper 8

3.0 SUMMARY OF ADDITIONAL WORK 8

4.0 WASTES/SOURCE SAMPLING 8
- 4.1 Soil Sampling and Results 9
  - 4.1.1 Metals 9
  - 4.1.2 VOCs 11
- 4.2 Groundwater Sampling and Results 12
  - 4.2.1 Metals 12
  - 4.2.2 VOCs 12
- 4.3 Waste/Source Conclusions 13

5.0 GROUNDWATER PATHWAY 14
- 5.1 Hydrogeologic Setting 14
  - 5.1.1 Soil and Residuum 14
  - 5.1.2 Springfield Plateau Aquifer 14
  - 5.1.3 Ozark Confining Unit 15
  - 5.1.4 Ozark Aquifer 15
  - 5.1.5 St. Francois Confining Unit 16
  - 5.1.6 Structural Features 16
- 5.2 Groundwater Targets 16
- 5.3 Groundwater Sample Locations 18
- 5.4 Analytical Results 18
- 5.5 Groundwater Conclusions 20

6.0 SURFACE WATER PATHWAY 21
- 6.1 Hydrologic Setting 21
- 6.2 Surface Water Targets 21

6.3 Surface Water Pathway Conclusions 21

7.0 SOIL EXPOSURE AND AIR PATHWAYS 22
7.1 Soil Exposure and Air Pathway Targets 22
7.2 Soil Exposure and Air Pathway Conclusions 22

8.0 SUMMARY AND CONCLUSIONS 23

9.0 RECOMMENDATIONS 24

REFERENCES 26

Table 1. Population Served by Groundwater Sources 19

APPENDIX A
Figure 1. Site Location Map
Figure 2. Facility Site Map Showing Areas of Concern
Figure 3. Dye Trace Map
Figure 4. Spring Location Sampling Map
Figure 5. Private Residential Water Well Sample Location Map
Figure 6. Ozark Aquifer Wells

APPENDIX B
Photographs 1-9

APPENDIX C
Table 2. Monitoring Well Details
Table 3. Key Sample Summary for Soils
Table 4. Key Sample Summary for Groundwater
Figure 3. Soil Boring Locations
Figure 6. Maximum Soil Copper Detections (Entire Site). 0-4 Feet
Figure 7. Maximum Soil Copper Detections (Entire Site). 4 Feet to Total Depth
Figure 8. Maximum Soil TCE Detections (Entire Site). 0-4 Feet
Figure 9. Maximum Soil TCE Detections (Entire Site). 4 Feet to Total Depth
Figure 38. Map of Monitoring Wells Screened in Springfield Plateau Aquifer Showing Select Contaminants
Figure 39. Map of Recovery Wells Screened in Springfield Plateau Aquifer Showing Select Contaminants
Figure 42. Map of Ozark Aquifer Sampling Locations Showing Volatile Organic Compound Exceedences

APPENDIX D
Table D-1. SR Spring Water Sample Collection Data
Table D-2. Selected Analytical Results for Spring Water Samples
Table D-3. SR Sediment Sample Collection Data
Table D-4. Selected Analytical Results for Sediment Samples

Table D-5. SR Private Residential Well Sample Collection Data
Table D-6. Selected Analytical Results for Groundwater Samples Collected From Private Residential Wells
Table D-7. Summary Table of Private Water Well Analytical Data
Table D-8. Selected Analytical Results for Groundwater Samples Collected from Ozark Aquifer Wells
Table D-9. SR Air Sample Collection Data
Table D-10. Selected Analytical Results for Air Samples
Table D-11. Calculation of Sample/Sample Replicate RPD, Sediment Samples
Table D-12. Calculation of Sample/Sample Duplicate RPD, Spring Samples
Table D-13. Calculation of Sample/Sample Duplicate RPD, Private Residential Well Samples

APPENDIX E
Sampling Documentation

DATE: **September 29, 2006**

PREPARED BY: **Nancy Priddy, Evan Kifer**
Missouri Department of Natural Resources

SITE: **Litton Systems Inc Site**
Greene County

EPA ID. NUMBER: MOD007152903

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Missouri Department of Natural Resources (the department), through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), conducted a Site Reassessment (SR) of the Litton Systems Inc Site (Litton site) in Greene County, Missouri. The Litton site consists of soil and groundwater contamination which resulted from releases of volatile organic compounds (VOC's) and metals.

The Litton site is the location of an active facility that manufactures printed circuit boards and uses metals and VOC's in its plating operations. The site was entered in the CERCLA Information System (CERCLIS), EPA's tracking record of potential hazardous waste sites, on October 1, 1979. The department conducted several pre-remedial investigations from 1980 through1988, finding metals and solvent contamination on the site as well as trichloroethylene (TCE) and methylene chloride in private wells and a nearby spring. Following negotiations with DNR, Litton agreed to conduct remediation activities under a Consent Agreement with the state, which was finalized in 1993. The EPA then archived the site on September 29, 1993, since the site was actively undergoing remediation under a state agreement. However, in 2003, analytical results documented VOCs present in springs north of the site. Evidence of fracture systems from geophysical studies and dye traces led the department to determine that the Litton site was at least a contributor to the springs' contamination. The department requested EPA to de-archive the Litton site for further assessment under CERCLA authority.

The SR was initiated on November 7, 2003. The goal of the SR was to evaluate the threat posed to human health and the environment due to the historic releases of contaminants at the site. One objective of the SR was to further investigate off-site impacts to the groundwater and surface water pathways to determine the need for potential removal actions. A second objective was to re-evaluate the site under the Hazard Ranking System (HRS). The HRS score will determine if the site is eligible for placement on the National Priorities List (NPL).

The scope of the investigation included reviewing of previous file information, collecting and analyzing water, sediment and air samples from springs and caves north and east of the site and water samples from nearby drinking water wells during multiple sampling

events, and collecting additional non-sampling information. The investigation included numerous site visits and sampling events throughout 2004 and 2005.

2.0 SITE DESCRIPTION

2.1 Location

The Litton site is located at the Northrop-Grumman Interconnect Technologies facility at 4811 West Kearney Street, Springfield, Missouri, adjacent to the Springfield-Branson Regional Airport. The site is in the Southeast Quarter (SE ¼) of the Southwest Quarter (SW ¼) of Section 6, Township 29 North, Range 22 West in Greene County (Reference 3). The geographic coordinates for the site are 466520.555 Easting and 4122141.674 Northing, Zone 15, as measured at the former percolation terrace on the north side of the Litton facility using a Trimble Geoexplorer XT GPS unit (Reference 4). A site location map is presented in Figure 1 of Appendix A. Directions to the site are as follows: From Highway I-44 in Springfield, take the West Bypass/Hwy 160 Exit and travel south on West Bypass approximately 0.25 mile to West Kearney Street. Travel west on West Kearney Street approximately 1.5 miles. The Litton site is on the north side of West Kearney Street at the Northrop-Grumman Interconnect Technologies facility.

Greene County has a temperate climate with hot summers and moderately cool winters. In winter, the average temperature is 35° Fahrenheit (F), with an average daily minimum temperature of 25° F. In summer, the average temperature is 80° F, with an average daily maximum temperature of 85.9° F (Reference 5, p. 1, 13). The prevailing wind direction is from the south-southeast, with an average speed of 12 miles per hour. The total annual precipitation at the site is approximately 41.47 inches (Reference 5, p. 48, 74). The 2-year, 24-hour rainfall for the area is estimated to be 3.8 inches (Reference 6).

2.2 Site Description

Figure 2 in Appendix A is a facility site map showing areas of concern taken from the SECOR Remedial Investigation Summary Report-Phase II, April 8, 2005. Site photos are included in Appendix B. The Litton site is the location of an active manufacturing facility that produces printed circuit boards. On-site soil and groundwater are known to be contaminated with volatile organic compounds (VOCs) and heavy metals as a result of historic waste disposal activities. The facility property is triangular and approximately 77 acres. The facility building occupies approximately 207,000 square feet and is located on the southern part of the property, facing West Kearney Street (Appendix B, photographs 1 and 3). The building includes administrative offices and warehouse and production areas. A butyl-rubber-lined pond designed to contain water for emergency fire fighting is located southwest of the building. An asphalt parking lot is located north of the building. An industrial water supply well, completed to a depth of 1,390 feet, is present on the north side of the facility building but is no longer in use as a source of water. (Reference 7). The remaining property is undeveloped. The site surface that does not contain structures or pavement is covered with grass or soil. A number of sinkholes are present on and in the vicinity of the site.

Figure 2 also shows former waste management areas that historically received wastes from facility process operations. The wastes generated included chlorinated solvents and metals. These former waste management units include the Former Percolation Terrace, the Former "A" and "B" Lagoon, the Former "Original" Acid Pit, the Former Sludge Pit, the Former "New" Acid Pit, the Former "C" Lagoon, and the Former Sanitary Lagoon, now on Airport property. Also included as areas of concern in Figure 2 are portions of the facility building complex. Numerous monitoring wells and recovery wells are also present on the site as part of on-going Remedial Investigation and Interim Remedial Measures activities being conducted under the Consent Agreement. (Reference 7).

Access to the site is restricted via fencing and a padlocked gate. The surrounding land use is a mixture of industrial, commercial, and agricultural. The site is bordered by West Kearney Street on the south, an industrial park on the east, agricultural lands on the north, and the Springfield-Branson Regional Airport on the west.

2.3 Operational History

Litton Industries purchased the site property in three different parcels. The first parcel was purchased from the Industrial Development Corporation in 1963 after it had been leased first. The second parcel was purchased from the city of Springfield and the third parcel was purchased from Mr. and Mrs. Roscoe Prescott in 1964. Prior to purchase, the land was undeveloped. Litton Industries constructed the first building in 1967-68. Several additions have been built since the initial construction (Reference 8, p. 3).

Litton's Advanced Circuitry Division (ACD) began operation at the site in about 1969, manufacturing printed circuit boards. Processes included plating with copper pyrophosphate, nickel, rhodium, gold and tin (Reference 9, p. 1). The current manufacturing process includes building multi-layer circuit boards for use in the defense, telecom and information technology industries. The boards are constructed from fiberglass reinforced copper clad material. Then, copper is applied during the process and an image is applied to coating on the boards. Next, the boards are electroplated and etched. Following that, the boards are finished and tested prior to shipping to the customer (Reference 7, p. 2-1).

Litton initially disposed of wastewater by irrigation and by discharging to a lagoon and sinkhole on the Litton property (Reference 9, p. 1). The former percolation terrace, located north of the parking lot, was used for process wastewater disposal from 1971 to 1975. The percolation terrace was approximately 2.5 acres in size and removed metals from the water by the cation exchange capacity of clay rich soils. The percolation terrace contained a slotted subsurface discharge pipe that consisted of a series of 180-degree elbows connecting parallel sections of slotted pipe. The sanitary lagoon, northwest of the percolation terrace, was used from the facility's beginning until 1982 when the facility connected to the city sewer. The sanitary lagoon became part of the airport property in 1975, due to a property transfer. It was filled in the 1980's and a hanger was subsequently built over the northern portion of the feature (Reference 7, pp. 2-2, 2-3). Litton received an Operating Permit from the Clean Water Commission in 1972 for the operation of the

wastewater lagoon. An NPDES Permit was issued in 1974 but was terminated in 1975 when the discharge was thought to have been eliminated (Reference 8, p.3).

As the facility expanded and wastewater generation increased, the percolation terrace became inadequate for wastewater disposal. Use of the percolation terrace ceased in the mid-1970's, when the "A" and "B" Lagoon was constructed to handle wastewater discharge. The "A" and "B" Lagoon consisted of two cells separated by a common berm. This lagoon removed metals from the water by using a 1-foot layer of limestone that would raise the pH of the wastewater. The lagoon was operated under an MDNR Letter of Approval for the operation of a no discharge wastewater system, which included land application of the wastewater. Use of "A" and "B" Lagoon ceased in 1982, when the facility connected to the City of Springfield's sanitary sewer system and installed a wastewater treatment system to remove the plating wastes. "A" and "B" Lagoon was closed in 1982, with EPA oversight. The "C" Lagoon was a lined lagoon, used in the 1980's as a holding area for process wastewater when the wastewater treatment system was at capacity. "C" Lagoon was closed at some time prior to 1990 (Reference 7, pp. 2-2, 2-3; Reference 9, p. 1).

Little information is available about the other waste management units, which were closed in the late 1970's. Those include the Former "Original" Acid Pit, the Former "New" Acid Pit, and the Former Sludge Pit (Reference 7, p. 2-3).

Litton ACD submitted a waste survey form to the department in 1976 in which the process flow diagram identified waste streams including cardboard and other loose trash, reclaimable spent etchants, "dirty" methylene chloride, waste acid, caustic and spent solutions, sludge, and treated wastewater. The form identified three on-site disposal features - a sludge pit, a waste acid pit, and a wastewater treatment pond. The form indicated 100,000 gallons/year (gal/yr) of copper-bearing sludge were disposed in an evaporation pit on-site; 500 gal/yr of miscellaneous waste chemicals were disposed in a limestone-lined pit on-site; and 7,200,000 gal/yr of treated wastewater were disposed in the no-discharge wastewater treatment pond. The cupric chloride and ammoniacal etchant wastes were stored in tanks and collected by chemical companies. Although the waste methylene chloride was collected in barrels for off-site treatment or disposal, there was no treatment/disposal method identified for the 18 tons of waste TCE listed in the waste stream (Reference 10).

The Litton site facility remains active. On October 13, 1999, the name of Litton Systems, Inc.'s Advanced Circuitry Division was changed to Interconnect Technologies Division (Reference 11). Litton Systems, Inc. is a wholly-owned subsidary of Litton Industries, Inc. In 2001, Litton Industries, Inc. was acquired by Northrop-Grumman Corporation (Reference 12). Department file information indicates that by September 2001, the Litton site facility was operating as Northrop Grumman Interconnect Technologies (NGIT).

2.4 Site History and Previous Investigations

The first recorded MDNR inspection was on September 25, 1979. MDNR discovered that plating wastewater discharged to an on-site lagoon system was overflowing and releasing wastes into a nearby sinkhole (Reference 16, p. 2).

In September, 1980, the State of Missouri and the Missouri Clean Water Commission issued a Consent Order and Stipulation, which called for the company to connect to the Springfield municipal sewer line once available and to cease discharges from their property (Reference 16, p. 2).

2.4.1 Pre-remedial Assessments, 1980-1993

Numerous investigations and sampling events have taken place at the Litton site. The Litton System Inc site was first entered in EPA's Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) database on October 1, 1979 (Reference 13). The first PA and SI were completed by EPA and the department under CERCLA authority in 1980 and 1981, following a number of citizen complaints that the facility had disposed of hazardous wastes in their process lagoons. The investigations found overflow from the lagoons entering a sinkhole and contaminating the groundwater. Contamination of groundwater was occurring through percolation as well. Sampling of lagoon waters and monitoring wells documented several organic compounds present, including TCE (References 14 and 15). The department completed an additional PA on April 2, 1985 and a more detailed SI on December 23, 1988. SI sampling documented elevated levels of copper (Cu), chromium (Cr) and lead (Pb), and two solvents, TCE and 1,1,1-trichloroethane (1,1,1-TCA), present in the leach field on the site. Arsenic (As), silver (Ag) and nickel (Ni) were also present in the soil at levels above background. Groundwater samples collected from three private wells off the site showed methylene chloride in one well and TCE present in another well; although, the TCE was not detected in follow-up sampling of that well several months later. TCE and 1,2-dichloroethylene (1,2-DCE) were present in a water sample from Ritter Springs West and the sediment sample from that spring showed higher than background Cr and Cu levels. There are other industries in the northwest Springfield area. The SI report stated that the site is surrounded by sinkholes, and the complexities of the karst topography made it difficult to determine the effects of any one site on the groundwater in the area. Additional dye traces were planned (References 8 and 9).

Jacobs Engineering Group, a contractor for EPA, completed a Site Inspection Prioritization (SIP) in September 1993 to evaluate the site as a potential candidate for an Expanded Site Inspection. The report concluded that the Litton site had already been investigated extensively and additional pre-remedial site assessment under CERCLA authority was not needed. The existing analytical data was sufficient to complete a National Priorities List (NPL) HRS scoring package for the site. However, even though the site scored above 28.5, proposal for the NPL was deferred because the site had recently entered into a Consent Agreement with the department to remediate the site with department oversight (Reference 16).

2.4.2 Registry Proposal

On October 24, 1991, the department proposed placing the Litton site on the Missouri Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites. Litton appealed the proposal and agreed to conduct remediation activities under a Consent Agreement with the state, which was finalized July 29, 1993 (Reference 17).

2.4.3 Dye Trace Studies

Dye traces were conducted in the Litton site area by the department's Division of Geology and Land Survey (DGLS) or under DGLS supervision, between 1977 and 1998 to determine groundwater flow direction for remediation, attribution and research purposes. Tracing dyes injected into sinkholes, lagoons, losing streams and monitoring wells were recovered down gradient in gaining streams and springs discharging from both the Springfield Plateau and the Ozark Aquifers. Underground travel distances observed from the dye traces ranged from 0.4 to 6.3 miles. The most common range was between 1 to 3 miles. The Dye Trace Map, Figure 3 in Appendix A, includes dye injection point locations, dye reception point locations and the straight line paths between the two (References 18 and 19).

2.4.4 Remedial Activities

Since 1993, Litton has been conducting Remedial Investigation (RI) activities in several phases at the Litton site with department oversight. The RI Summary Report-Phase II, completed April 8, 2005, summarizes the findings thus far (Appendix C). Investigations have documented chlorinated solvents and metals contamination in the soil at the site. The inorganic compounds found above CALM (Cleanup Levels for Missouri, Groundwater Target Concentrations (GTARC), September 2001) C_{LEACH} values include Cu, Pb, Cr, As, mercury (Hg) and Ag. Although Cr and As levels exceed the CALM C_{LEACH} objectives, they may be due to naturally elevated levels in the soil for this area. Cu, Pb, Hg and Ag were all present above CALM soil objectives; however, Cu was the most widespread inorganic contaminant found in the soil at the site. Numerous VOC's, including TCE and 1,1,1-TCA and associated degradation compounds were found in the soil above CALM C_{LEACH} values and soil objectives. TCE was the most widespread VOC contaminant found in the soil at the site. RI results show groundwater in the Springfield Plateau Aquifer has been impacted by metals and VOCs at levels above Maximum Contaminant Levels (MCLs). Metals present include Cu, Cd, Hg and Pb. The numerous VOCs present include TCE and associated degradation products. TCE was the most widespread VOC groundwater contaminant found. Groundwater in the deeper, Ozark Aquifer also has been impacted. TCE, cis-1,2-DCE and 1,2-DCP are present above MCLs in the facility industrial well and in the deep well on the airport property, west of the facility (Reference 7, p. 4-6).

Beginning in 1994, extraction wells were installed as part of an Interim Remedial Measures (IRM) system. The wells were located near the areas of the former "new" acid pit, the former "original" acid pit and sludge pit, and adjacent to the west property

boundary. The system was installed to inhibit offsite migration of impacted shallow groundwater. Groundwater is extracted from the wells, pumped to a central location and then passed through an air stripper. After air stripping, the water is combined with other treated wastewater and discharged into the city sewer. Currently there are 12 wells in the system, which is currently active. Limited testing of the IRM system indicates the system is not completely capturing the contaminants (Reference 7, p. 2-8 and 2-9).

The VOC and metals impacts to the Springfield Plateau Aquifer are located in or downgradient from the contaminated soil areas. The contaminant transport is affected by the highly variable karst, bedrock topography.

Groundwater flow in the Springfield Plateau Aquifer somewhat mimics surface topography and moves radially away from the Litton facility, which sits on a topographic high (Reference 7, p. 5-9). In the area north of the Litton facility, groundwater flow within the Springfield Aquifer is generally in the north-northwest direction. The deeper Ozark Aquifer flows generally to the west in the area of the Litton facility (Reference 7, p. 5-10).

RI activities continue with Phase III, whose goal is to further delineate and collect sufficient data on the extent of groundwater impacts and migration pathways to support and help develop technically feasible and cost effective remedial alternatives (Reference 20, p.1-2). The Remedial Investigation Summary Report – Phase III is expected to be submitted in the fall of 2006 (Reference 21).

2.5 Waste Characteristics

The primary contaminants of concern for this SR are chlorinated solvents, specifically TCE and its degradation products, and heavy metals. Per Phase II findings, copper and TCE are the most prevalent contaminants in on-site soils and Springfield Plateau Aquifer water (Reference 7, p. 4-2, 4-7, 4-8). Contamination in the Ozark Aquifer is predominantly TCE (Reference 7, p. 3-3).

2.5.1 Chlorinated Solvents and Dense Non-aqueous Phase Liquids (DNAPLs)

Chlorinated solvents, such as TCE, DCE and TCA, are a class of VOCs encountered at various hazardous waste sites. Chlorinated solvents are man-made compounds that are often used by industry as chemical intermediates, or solvents in the metal finishing, textile processing, and paint industries. Many chlorinated solvents are considered hazardous because they are mutagenic, carcinogenic, or teratogenic (Reference 22, p.2). It is not known if people exposed to TCE in the air or drinking water have a higher risk of cancer or reproductive problems. The International Agency for Research on Cancer has determined that TCE is probably carcinogenic to humans (Reference 22, p. 5). TCE can degrade to 1,1-DCE, cis and trans 1,2-DCE, and vinyl chloride (Reference 23). TCA can degrade to 1,1-dichloroethane (DCA) and 1,1-DCE (Reference 23).

Polychlorinated solvents exist as dense, non-aqueous phase liquids (DNAPLs). DNAPLs are separate-phase hydrocarbon liquids that are denser than water. As free-phase product, chlorinated solvents move downward through the soil under the force of gravity then flow laterally along the surface of a confining unit in the subsurface. Once in the subsurface, it is difficult or impossible to recover all of the trapped residual contamination. The chlorinated solvent that remains trapped in the soil/aquifer matrix acts as a continuing source of dissolved contamination to groundwater, preventing the restoration of the contaminated aquifer for many years (Reference 24, p.1).

2.5.2 Copper

Copper is a reddish-brown metal that occurs naturally in rock, soil, water, sediment and air. Copper also occurs naturally in plants and animals. It is an essential element for all known living organisms including humans and other animals. Copper is extensively mined and processed in the United States and is primarily used as the metal or alloy in the manufacturing of wire, sheet metal, pipe, and other metal products. Copper compounds are most commonly used in agriculture to treat plant diseases, like mildew, or for water treatment and as a preservative for wood, leather, and fabrics. Industrial application of copper sulfate include use as an activator in froth flotation of sulfide ores, production of chromated copper arsenate wood preservatives, electroplating, and many others (Reference 25, pp. 2, 118).

Copper is necessary for good health. However, very large single or daily intakes of copper can harm your health. Intentionally high intakes of copper can cause liver and kidney damage and even death (Reference 25 , pp. 6-7). EPA classifies Copper as a priority toxic pollutant (Reference 26, p. 653).

3.0 SUMMARY OF ADDITIONAL WORK

The SR investigation included reviewing files, and previous RI activities and findings. SR field activities were conducted in a phased approach. Phase I activities included collecting surface water and sediment samples from eight springs where groundwater discharges, in an area from north to east of the site, and collecting air samples in the caves at two of those springs. Phase II activities included collecting samples from 105 private, residential drinking water wells drawing water from the Springfield Plateau Aquifer and/or the Ozark Aquifer and from six non-community drinking water wells completed in the Ozark Aquifer. The drinking water wells were also located in the area north and east of the site. In addition, surface water and sediment samples were collected for a spring that was missed during Phase I activities. As a followup, an Additional Limited Site Investigation was conducted to assess risk due to air quality in Fantastic Caverns. The results to sampling conducted are included in sections 5.3, 5.4 and 7.1.

4.0 WASTES/SOURCE SAMPLING

No soil or groundwater sampling was conducted on the site as part of this SR investigation. RI activities conducted by SECOR for the Litton site have documented

metals and VOC contamination in the soil and groundwater of the site at concentrations significantly above background levels and above health-based benchmark levels.

4.1 Soil Sampling and Results (Reference 7, Appendix C)

RI soil sampling conducted at the site from 1993 through 2005 identified nine Areas of Concern (AOCs) and delineated contaminant distribution in those areas. The AOCs included the following former waste management units: the Former Percolation Terrace, the Former "A" and "B" Lagoon, the Former "Original" Acid Pit, the Former Sludge Pit, the Former "New" Acid Pit, the Former "C" Lagoon, and the Former Sanitary Lagoon. Two additional AOCs are the facility Sub_floor area and the northwest portion of the Parking Lot. Phase I RI soil samples were analyzed for VOCs, total metals and cyanide, with select samples analyzed for hexavalent chromium. Phase II RI samples were analyzed for only VOCs and total metals. The cyanide and hexavalent chromium were dropped due to lack of detections during Phase I sampling. Samples from several soil borings on airport property west of the site were used as background samples. Areas of inorganic contamination were delineated in two depth ranges- surface to 4 feet and 4 feet to bedrock.

4.1.1 Metals

RI activities documented Cu, Cr, Pb, and As present in the soil of the site at levels significantly above background soil sample results and exceeding health-based benchmark levels. Ni, mercury (Hg), silver (Ag) and selenium are also present above background sample results or published background levels for soil in Greene County but do not exceed health-based benchmarks levels. Appendix C provides summary data and maps taken from Reference 7.

Copper

Background sample results ranged between non-detect and 18.2 mg/kg. Published background levels for copper in soil in Greene County range from 15 to 41 ppm (Reference 27, p. H29). There is no Superfund Chemical Data Matrix (SCDM) value for copper (Reference 2). The EPA Region 9 Preliminary Remediation Goal (PRG) for copper in industrial soil is 41,000 mg/kg (Reference 25). Cu was the most widespread metal contaminant at the site, present significantly above background levels in all AOCs except the Former "C" Lagoon and the Parking Lot area and at all depths. Concentrations ranged up to 120,000 ppm, found in the vicinity of the Former Sludge Pit. Cu is present above the CALM STARC value for industrial use of 4,700 mg/kg in the AOCs as follows: "A" & "B" Lagoon between 2 and 7 feet, highest concentration is 16,000 mg/kg at 4-5 feet; Percolation Terrace between 0 and 3 feet, highest concentration is 28,000 mg/kg at 2-3 feet; "New" Acid Pit between 0 and 9.5 feet, highest concentration is 17,000 mg/kg at 7-7.5 feet; "Original" Acid Pit between 3.5 and 21 feet at soil interface with bedrock, highest concentration is 22,000 mg/kg at 3.5-4 feet; Sludge Pit between 0 and 14 feet, highest concentration is 120,000 mg/kg at 5-6 feet; Sanitary Lagoon between 8 and 13 feet, highest concentration is 64,200 mg/kg at 8.5–9.5 feet, interface with bedrock;

and Sub-floor of the facility between 0 and 16 feet, highest concentration is 37,000 mg/kg at 6-7 feet.

The RI determined that since copper was the most prevalent inorganic contaminant of concern and the most likely to influence remedial actions, copper concentrations were used to represent the areas of inorganic contamination. The RI delineated areas totaling 59,100 square feet (ft^2) of copper contamination above 4,700 ppm in the 0 to 4 foot depth range. In the depth range of 4 feet to bedrock, areas of copper exceeding 4,700 ppm totaled 51,500 ft^2 (Appendix C, Figures 6 and 7).

Chromium

Background sample results ranged between 23.5 and 86.5 mg/kg. Published background levels for chromium in soil in Greene County range from 25 to 54 ppm (Reference 27, p. H21). The SCDM value for chromium is 230 mg/kg and the EPA PRG for chromium in industrial soil is 450 mg/kg. Although chromium is not present at the site above the CALM STARC value for Scenario C of 4,500 mg/kg, it is present above SCDM and EPA PRG benchmarks in the following areas: "A" & "B" Lagoon between 2 and 7 feet, highest concentration is 1,100 mg/kg at 4-5 feet; Percolation Terrace between 0 and 3 feet, highest concentration is 1,400 mg/kg at 0-1 foot, soil interface with bedrock; "New" Acid Pit between 0 and 7.5 feet, highest concentration is 2,700 mg/kg at 7-7.5 feet; Sanitary Lagoon between 8.5 and 10 feet, highest concentration is 2,740 mg/kg at 8.5-9.5 ft, soil interface with bedrock; and Sub-floor of the facility between 2 and 18 feet, highest concentration is 760 mg/kg at 17-18 feet.

Lead

Background sample results ranged between 12.4 and 33.5 mg/kg. Published background levels for lead in soil in Greene County range from 20 to 42 ppm (Reference 27, p. H29). There is no SCDM value for lead. The EPA PRG for lead in industrial soil is 750 mg/kg. Lead is present above the CALM STARC value for Scenario C of 660 mg/kg in the following areas: "A" & "B" Lagoon between 4 to 6.5 feet, highest concentration is 890 mg/kg; Percolation Terrace between 0 and 3 feet, highest concentration is 2,580 mg/kg at 0-1 foot, soil interface with bedrock; "Original" Acid Pit between 3.5 and 6 feet, highest concentration is 7,250 mg/kg at 5-6 feet, soil interface with bedrock; Sludge Pit between 0 and 6 feet, highest concentration is 15,000 mg/kg at 5-6 feet; Sanitary Lagoon between 8.5 and 13 feet, highest concentration is 5,550 mg/kg at 8.5–9.5 feet, soil interface with bedrock; and Sub-floor of the facility at 0-1 foot, concentration is 50,000 mg/kg.

Arsenic

Background sample results ranged between 9.72 and 17.8 mg/kg. Published background levels for arsenic in soil in Greene County range from 18 to 23 ppm (Reference 27, p. H13). The lowest SCDM value for arsenic is 0.43 mg/kg and the EPA PRG for arsenic in industrial soil is 1.6 mg/kg. Although arsenic is present in several locations at concentrations above the lowest SCDM value, the EPA PRG and the CALM STARC value for Scenario C of 14 mg/kg, only one of the samples is significantly above background levels. Arsenic is present in the Parking Lot area at 77 mg/kg at a depth of 13-14 feet.

Mercury

All background results were non detect for mercury. Published background levels for mercury in soil in Greene County range from 0.017 to 0.030 ppm (Reference 27, p. H33). The lowest SCDM value for mercury is 23 mg/kg and the EPA PRG for mercury is 310 mg/kg. Although mercury is present in several locations at concentrations significantly above background levels, none of the results exceed the SCDM or EPA PRG health-based benchmarks. Mercury is present above the CALM STARC value for Scenario C of 1.0 mg/kg in the following areas: Percolation Terrace between 2- 3 feet at 9.2 mg/kg, "Original" Acid Pit at 20-21 feet at 1.12 mg/kg, Sanitary Lagoon at 8.5-9.5 feet at 2.09 mg/kg, and the Sub-floor of the facility at 1-2 feet at 2.3 mg/kg.

Nickel, Silver and Selenium

These metals are present at concentrations significantly above analytical and/or published background levels at several of the AOCs; however none exceed health-based benchmark levels. Nickel is present in the "New" Acid Pit, nickel and silver are present in the "Old" Acid Pit and the Sanitary Lagoon, silver is present in the Percolation Terrace and selenium is present in the Parking Lot area. The selenium could be naturally occurring as the level present falls within the published background range for selenium in soil in Greene County of 17-27 mg/kg (Reference 27, p. H41).

4.1.2 VOCs

RI activities documented the following VOCs present in soil at the site at concentrations significantly above background levels: 1,1,1,2-tetrachloroethane, 1,1,1-trichloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,2-dichloropropane,1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-butanone, 2-chlorotoluene, 2-hexanone, 4-chlorotoluene, 4-methyl-2-pentanone, benzene, bromomethane, carbon disulfile, carbon tetrachloride, chlorobenzene, chloroform, chloromethane, cis-1,2-dichloroethene, ethylbenzene, isopropylbenzene, m&p-xylenes, methylene chloride, naphthalene, n-butylbenzene, n-propylbenzene, 0-xylene, tetrachloroethene, toluene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride and total xylenes (Appendix C, Table 3).

Those VOCs that also exceed SCDM benchmark levels for soil exposure and the CALM STARC values for Scenario C include 1,1,2-trichloroethane, 1,2,dichloropropane, tetrachloroethene, trichloroethene, vinyl chloride and total xylenes. Three additional compounds, 1,1,1-trichloroethane, 1,1-dichloroethene and methylene chloride, exceed the CALM STARC values for Scenario C, however, there are no SCDM benchmark values for those compounds.

TCE is the most widespread VOC, present in all AOCs. Concentrations ranged up to 16,000,000 ug/kg found in the "Original" Acid Pit Area at a depth of 6 feet. The RI delineated areas totaling 11,100 ft^2 of TCE in the below 4 feet depth at concentrations above the CALM STARC value for Scenario C of 89,000 ug/kg for TCE (Appendix C, Figures 8 and 9).

4.2 Groundwater Sampling and Results

RI activities included groundwater sampling from 27 monitoring wells and 11 recovery wells screened in the Springfield Plateau Aquifer, and 4 monitoring wells and 3 industrial wells completed in the Ozark Aquifer located on and nearby the site. Table 4 in Appendix C provides summarized sampling results. Figures 38, 39 and 42 in Appendix C provide a graphical representation of the sampling results.

Phase I RI groundwater samples were analyzed for VOCs, dissolved metals and cyanide. Phase II RI Springfield Plateau Aquifer samples were analyzed for VOCs, dissolved metals and total metals. The cyanide analysis was dropped due to lack of detections during Phase I sampling. All Phase II RI Ozark Aquifer samples were analyzed for VOCs. Metals and cyanide were dropped from the Ozark Aquifer analysis due to the lack of detections of these analytes during the Phase I analysis.

4.2.1 Metals

RI sampling documented several metals released to the Springfield Plateau aquifer. Copper, cadmium, nickel, mercury, and lead were present in groundwater at concentrations exceeding MCLs. The dissolved metals copper, cadmium and nickel occurred in two areas- near the facility building and near the "Original"Acid Pit area. Highest copper concentrations were 110,000 ug/L in MW-3 near the building and 23,000 ug/L in RW-6 near the "Original" Acid Pit. The MCL for copper is 1,300 ug/L. Highest cadmium concentrations were 9 ug/L in MW-4 near the building and 87 ug/L in MW-16 near the "Original" Acid Pit. The MCL for cadmium is 5 ug/L. Highest nickel concentrations were 220 ug/L in MW-4 near the building and 3,400 ug/L in RW-6 near the "Original" Acid Pit. The MCL for nickel is 100 ug/L. Dissolved mercury was also present above its MCL of 2 ug/L in MW-16 at 7.8 ug/L near the "Original" Acid Pit. Dissolved lead was present in several wells but not above the MCL of 15 ug/L. Total lead was widespread, occurring in wells on the north and west portions of the site. Highest total lead concentration was 530 ug/L in MW-4 near the building.

4.2.2 VOCs

<u>Springfield Plateau Aquifer</u>

RI sampling documented numerous VOCs present in the Springfield Plateau Aquifer. Chlorinated solvents found in groundwater samples from Springfield Plateau Aquifer wells include PCE, TCE, 1,1,1-TCA, 1,1,2-TCA and numerous degradation products. Additional chlorinated solvents present in those water samples include 1,1,2,2-tetrachloroethane, chloroform, methylene chloride and 1,2-dichloropropane. In addition to chlorinated solvents, benzene, toluene, ethylbenzene, xylene and several other petroleum constituents were also present in the groundwater samples; however, most of these compounds were found in airport monitoring wells. The highest levels of chlorinated solvents were in the vicinity of the Former "Original" Acid Pit and Former Sludge Pit areas, and the Former Sanitary Lagoon area. TCE and 1,1,1-TCA concentrations ranged as high as 330,000 ug/L and 120,000 ug/L, respectively, both occurring in MW-16.

The chlorinated solvents in the Springfield Plateau Aquifer samples at concentrations exceeding the MCL occurred as far west as MW-112 where TCE was present at 110 ug/L, which exceeds the MCL of 5 ug/L TCE; as far south as MW-103 on the south where TCE was present at 1,500 ug/L, as far east as MW-104R, where TCE was present at 18 ug/L, and as far north as MW-115 where TCE was present at 8 ug/L. Although not above the MCL, additional TCE detections extend to MW-118 on the south, where TCE was present at 2 ug/L and as far east as MW-117, where TCE was present at 3 ug/L.

Ozark Aquifer

RI sampling documented chlorinated solvents present in the Ozark Aquifer. TCE, cis-1,2-DCE and 1,2-DCP were present in the Litton industrial well IW-1 and the airport industrial well APD-1 at concentrations exceeding MCLs of 5ug/L for TCE, 1,2-DCP and cis-1,2-DCE. Highest concentrations in IW-1 were 1700ug/L TCE, 280 ug/L cis-1,2-DCE and 98 ug/L 1,2-DCP, collected at the 593 foot depth. Highest concentrations in APD-1 were 470 ug/L TCE, 130 ug/L cis-1,2-DCE and 32 ug/L 1,2-DCP. No VOCs were detected in the four Ozark Aquifer monitoring wells.

4.3 Waste/Source Conclusions

RI activities have established a release of metals and VOCs to soil and groundwater at the Litton site. RI sampling documented Cu, Cr, Pb, and As in the soil of the site, and copper, cadmium, nickel, mercury and lead in the Springfield Plateau Aquifer at concentrations exceeding health-based benchmark levels. Chlorinated solvents were documented in the soil and in both the Springfield Plateau Aquifer and the Ozark Aquifer at concentrations exceeding health-based benchmark levels. Copper is the most widespread metal contaminant and TCE is the most widespread VOC. The contaminants are present in soil predominantly in the vicinity of the former waste management units and beneath the facility building and parking lot. It is anticipated that the Phase III RI Report will determine the extent of the contaminant plumes in the Springfield Plateau and Ozark Aquifers.

A Phase II Feasibility Study was conducted to determine appropriate remedial actions for on-site soils (Reference 28). Remedial actions of choice for on-site soils include in-situ electrical resistive heating (ERH) with soil vapor extraction (SVE) to remediate VOC contaminated areas, and engineered barriers with institutional controls to remediate metals contaminated areas. Full scale implementation of ERH with SVE is expected to occur in November 2006 (Reference 21), and is expected to be completed in approximately two years. Engineered barriers with institutional controls are expected to be implemented site-wide once ERH with SVE is completed.

A Phase III Feasibility Study is expected to be conducted to determine appropriate remedial actions for groundwater once the Phase III RI has been submitted to and accepted by the MDNR. It is expected that the ERH with SVE soil remediation will have a positive impact in reducing VOC contamination in the Springfield Aquifer, although additional treatment may be necessary. Preliminary discussions for remediation of the

Ozark Aquifer have included plugging back the Litton site well to about 700 feet and pumping and treating the contaminated water. The produced water could be used as site process water (Reference 21).

5.0 GROUNDWATER PATHWAY

5.1 Hydrogeologic Setting (Reference 18 and 29)

The Litton site lies on the northeast edge of the Springfield Plateau of the Ozark Plateau sub-province of the Interior Highlands physiographic province in Missouri. This area is characterized by rolling uplands with shallow dissected valleys. All known drinking water wells within four miles of the site draw from the Springfield Plateau or Ozark Aquifers. Table 2 of Reference 18 illustrates the aquifer stratigraphy and hydrology.

5.1.1 Soil and Residuum

Stratigraphy
Soil and Residuum: The soil beneath the Litton Site consists of Keeno-Eldon cherty silt loam complex. Keeno-Eldon cherty silt loam is composed of roughly twenty-five to fifty percent clay. Residuum beneath the soil is cherty silty clay that grades into cherty silty clayey gravel with depth. The soil and residuum range in thickness from 10 to over 60 feet beneath the site.

Hydrology
The pH of the Keeno-Eldon soil complex is acidic and ranges between 3.6 and 6.5. Permeability is moderate to rapid ranging from 0.2 to 6.0 inches per hour. The hydraulic conductivity is roughly 4.2 x 10-3 to 1.4 x 10-4 centimeters per second (cm/sec). Overburden groundwater flow is toward the north–northwest beneath the site.

5.1.2 Springfield Plateau Aquifer

Stratigraphy
Mississippian-Age Limestone: Mississippian-age limestone is present beneath the site and is divided into the Burlington-Keokuk Limestone, Reeds Spring Formation, and the Pierson Limestone. These formations consist of limestone, cherty limestone, and argillaceous limestone units. The Mississippian-age rocks in this aquifer extend from near the ground surface to approximately 235 feet below the ground surface.

Hydrology
The hydraulic conductivity of the aquifer is roughly 7.8 x 10-3 cm/sec. Due to the karst nature or the area, permeability and gradient characteristics may vary over short distances. Based upon site specific and dye trace data, the Springfield Plateau Aquifer groundwater flow direction is toward the north to north-northwest. Forty-eight of the 432 known wells within a four-mile radius of the site are completed in the Springfield Plateau Aquifer.

5.1.3 Ozark Confining Unit

Stratigraphy
Mississippian-Age Rocks: The deepest and oldest Mississippian-age rocks beneath the site include the Northview and Compton Formations. These Formations make up the Ozark Confining Unit, and form a roughly 40 foot thick semi-effective barrier to downward migration of water in the area. The Northview Formation, which is approximately 25 feet thick beneath the site, is composed of greenish-gray shale and siltstone. The Compton Formation, which lies beneath the Northview Formation, consists of finely crystalline crinoidal limestone and thinly-bedded greenish shale beds.

Hydrology
The hydraulic conductivity of the confining unit ranges from 1.0 x 10-5 to 5.0 x 10-6 cm/sec. Dyes injected into sinkholes, lagoons, and losing streams in the soils above the Springfield Aquifer were recovered in springs and gaining streams discharging from the Ozark Aquifer a few miles north-northeast of the site. This indicates that the Ozark Confining Unit is not an effective aquitard. Table 3 of Reference 18 and Table 3 of Reference 29 indicate the locations and measured flows of the springs that are located within four-miles of the site. Two hundred and sixty-one of the 432 known wells within a four-mile radius of the site are completed through the Ozark Confining Unit.

5.1.4 Ozark Aquifer

Stratigraphy
The Ozark Aquifer extends approximately 1200 feet beneath the Ozark Confining Unit. The aquifer consists dominantly of Ordovician and Cambrian-Age dolomitic formations. The Ozark Aquifer is the dominantly used aquifer by both private and public supply systems. All new well construction in the Greene County area requires that the Springfield Plateau Aquifer be cased out during well construction and the Ozark Aquifer used.

Ordovician-Age Formations: Ordovician-Age formations beneath the site are divided into the Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, and Gasconade Dolomite. These rocks consist of dolomite, cherty dolomite, and the occasional sandstone and cherty sandstone bed.

Cambrian-Age Formations: Upper Cambrian-Age formations beneath the site include the Eminence Dolomite and the Potosi Dolomite. The Eminence Dolomite is a light gray fine to medium crystalline dolomite that generally consists of less than 5% chert. The Potosi Dolomite, which lies below the Eminence Dolomite, is a fine to medium-crystalline, massive to thickly bedded brownish-gray dolomite that exhibits vugs or small cavities filled with quartz druse.

Hydrology
The hydraulic conductivity of the Ozark Aquifer ranges from 1 x 10-4 to 1x10-5 cm/sec. Based on injected dyes detected in springs located in the Ordovician-age strata along the

Little Sac River located north of the site, groundwater flow beneath the site may be toward the north-northeast. Two hundred and sixty-one of the 432 known wells within a four-mile radius of the site are completed in the Ozark Aquifer.

5.1.5 St. Francois Confining Unit

Stratigraphy and Hydrology

Cambrian-Age Formations: None of the known wells within a four-mile radius of the site penetrate the Cambrian-age Derby-Doerun Dolomite and Davis Formation of the St. Francois Confining Unit. This sequence of alternating shale and argillaceous dolomite is most likely about 150 feet thick; however, none of the wells extend to such a depth locally. The Derby-Doerun may have hydraulic conductivity as low as 1 x 10-8 cm/sec. The St. Francois Confining Unit is an effective barrier to downward groundwater movement.

5.1.6 Structural Features

Three east-west faults within four miles of the site may influence groundwater flow direction. These faults may allow water to flow from the Springfield Plateau Aquifer into the underlying Ozark Aquifer.

5.2 Groundwater Targets

A hydrogeologic summary report for the site, prepared by the department's DGLS, includes a survey of groundwater use within a four-mile radius of the site. (Reference 18). An addendum to the report was prepared to account for the 77 acre Litton site (Reference 29).

Drinking water in the site area is obtained from a combination of private wells and public wells and systems, with the wells drawing from the Springfield Plateau and Ozark Aquifers. The DGLS databases list information on all wells that were installed after 1987. Prior to 1987, DGLS certification of private wells was not required. The DGLS databases do contain information on wells drilled before 1987, but only for those wells that the owner voluntarily provided information to DGLS (Reference 18). Therefore, some existing private wells within four miles of the site may not be included in this report. In addition, fifty-one of the 432 wells listed do not have sufficient information available to determine if these wells are still in use. Furthermore, thirty-five non-community and nine community wells presented in the DGLS database are not listed in the Missouri Public Drinking Water Branch's Census of Missouri Public Water Systems for 2004 (Reference 30). Therefore, these wells are presumed to no longer be in operation. Additionally, of the 432 wells listed, four are industrial wells, two are heatpump wells, and one is an irrigation well. These wells are not considered potable drinking water sources and, along with the wells mentioned above, are not considered groundwater targets for the purposes of this SR investigation. Therefore, 332 active wells within a four-mile radius of the Litton site are considered groundwater targets.

DGLS databases contain records for 14 public wells within four miles of the Litton site. The City of Springfield's public drinking water system serves a large portion of the residential, commercial, and industrial area south and east of the Litton Site. The City obtains its water from five wells, one spring, two lakes and a river. The system is blended and served approximately 69,293 residential service connections or an estimated 162,146 people in 2005 (Reference 31).

Springfield City Wells #1 and #10 are located within a four-mile radius of the Litton site. The 1,404-foot Well #1 produces water from the Springfield and Ozark Aquifer and is located between three and four miles east-northeast of the Litton site. The 1,215-foot Well #10 produces water from the Ozark Aquifer and is located between two to three miles southeast of the site (Reference 18 and 29). Three of the city wells are located outside of the four-mile radius of the Litton site.

Fulbright Spring is a significant contributor to Springfield's public water supply system. It produces water from the Springfield Plateau Aquifer. The Spring is located between 3 and 4 miles from the site and contribributes approximately 10% of the raw water used in the system (Reference 31).

Since none of the individual water sources produced more than 40% of the total drinking water production, the population served was apportioned equally among six sources. Therefore, approximately 60,804 people are being served by two wells and one spring that are located within a four-mile radius of the Litton site (Reference 32).

Twelve additional Community and Non-Community wells located within a four-mile radius of the Litton site all produce water from the Ozark or Springfield Aquifers. The Country Squire Village well, Players Softball Complex well, and one of the two Evergreen Church wells produce water from the Ozark Aquifer. The second well serving the Evergreen Church produces water from both the Springfield and Ozark Aquifers. All of these wells are located between one and two miles from the site. The Country Squire Village well serves approximately 142 people, the Players Softball Complex well serves approximately 160 people, and the two wells serving Evergreen Church provide water for approximately 225 people. Between two and three miles from the site, the Meadows Water Company well produces water from the Ozark Aquifer and serves approximately 2,670 people. The wells serving Travelers Mobile Home Park, Northwest Baptist Church, and Agape Life Fellowship all produce water from the Ozark Aquifer. These wells are located between two to three miles from the site and serve approximately 50, 80, and 25 people respectively. Within a three to four mile radius of the site, the KOA Campground well, Ritter Springs Park well, and the two Fantastic Caverns wells provide water for 90, 25, and 500 people respectively. The KOA campground well, Ritter Springs Park well, and one of the two Fantastic Caverns wells produce water from the Ozark Aquifer. The second well that serves Fantastic Caverns draws water from both the Springfield and Ozark Aquifers (References 18).

Private residences not connected to a public system depend on domestic drinking water wells. DGLS databases show 312 private domestic wells within four miles of the site. Of

these domestic wells, 20 are drawing water from both the Springfield Plateau and Ozark Aquifers, 232 are drawing water the Ozark Aquifer, 48 are drawing water from the Springfield Aquifer, and 12 are drawing water from either the Springfield or Ozark Aquifers. Using the 2000 U.S. Census figure of 2.34 persons per household in Greene County (Reference 33), an estimated 732 people use domestic drinking water wells within four miles of the site. The table on the following page presents the estimated populations using groundwater from both public and private sources within distance categories. Approximately 65,503 people are using groundwater within four miles of the site for drinking water purposes.

The nearest private well lies between .5 and one mile of the site (Reference 18, Table 2).

5.2 Groundwater Sample Locations

SR field activities were conducted in a phased approach to assess off-site impacts. Phase I activities included collecting water and sediment samples from eight springs where groundwater discharges, in an area from north to east of the site. Phase II activities included collecting samples from 105 private, residential drinking water wells drawing water from the Springfield Plateau Aquifer and/or the Ozark Aquifer and from six non-community drinking water wells completed in the Ozark Aquifer. The drinking water wells were also located in the area north and east of the site. In addition, water and sediment samples were collected for a spring that was missed during Phase I activities.

Figure 4 shows the locations of springs that were sampled. Figure 5 shows the locations of private residential wells sampled. Figure 6 shows the locations for Ozark Aquifer wells that were also sampled as part of the SR.

5.4 Analytical Results

Table D-1 provides spring water sample collection data and Table D-2 provides the analytical results for those samples. Samples were analyzed for VOCs, SVOCs and metals. Samples collected from the emergence of Ritter West Spring and the Williams Spring indicated TCE levels above MCLs in those springs (6.81 and 12.5 micrograms per liter respectively). Samples collected from Fantastic Caverns spring and water inside the cavern indicated the presence of TCE, but at levels below MCLs (.48(e) and .82(e) micrograms per liter respectively). TCE was the only VOC identified in the springs sampled at levels above established limits. Ritter Spring East had an elevated level of the SVOC bis(2-ethylhexyl) phthalate (DEHP), but this contaminant has not been identified at the Litton site. None of the springs had levels of metals above established benchmark values.

Table 1: Estimated Population Served By Groundwater From Both Aquifers Within Four Miles of the Litton Systems, Inc. Site

Distance (In Miles)	Name of Public Supply and Population Served	Total Population Served By Public Wells	Number of Private Wells	Total Population Served By Private Wells[1]	Total Population Served by Groundwater
0-1/4	None	**0**	0	**0**	**0**
> 1/4 –1/2	None	**0**	0	**0**	**0**
> 1/2 – 1	None	**0**	4	**10**	**10**
> 1 –2	Country Squire Mobile Home Park 142				
	Players Softball Complex 160				
	Evergreen Church (2 wells) 225	**527**	52	**122**	**649**
> 2 – 3	Travelers Mobile Home Park 50				
	Meadows Water Company 2,670				
	Northwest Baptist Church 80				
	Agape Life Fellowship 25				
	City of Springfield, Orchard Well (Well # 10) 20,268	**23,093**	118	**277**	**23,370**
> 3 –4	KOA Campground 90				
	Ritter Spring Park 25				
	Fantastic Caverns (2 wells) 500				
	City of Springfield, Fulbright Spring 20,268				
	City of Springfield, Fulbright Well (Well #1) 20,268	**41,151**	138	**323**	**41,474**
TOTAL	14	**64,771**	312	**732**	**65,503**

1 The number of people served per private well was estimated by multiplying the average household size of 2.34 persons per household in Greene County by the number of wells within a distance category (Reference328).

Table D-3 provides collection data on sediment samples collected in proximity to spring water sampling locations. Table D-4 provides the analytical results for those samples. Samples were analyzed for VOCs, SVOCs and metals. Samples from Ritter West Spring and Williams Spring showed elevated levels of TCE. Samples from Vich Spring showed elevated levels of a number of SVOCs. Fantastic Cavern Spring, Fantastic Cavern, Ritter Spring Park, Ritter West Spring, and Williams Spring all showed elevated levels of copper, with the highest levels in Ritter West Spring and Williams Spring.

Table D-5 provides collection data for private residential well sampling conducted north and east of the Litton site. Table D-6 provides the sampling results for these wells. The wells were tested for VOCs and metals. Wells where TCE was detected were sampled an additional three quarters to determine fluctuations in the observed levels. Table D-7 summarizes the quarters of monitoring results. The results from 13 wells indicated the presence of TCE. Well DW-08 was the only well that tested above the established MCL for TCE. A granulated activated carbon treatment system was subsequently installed by Litton Systems, Inc. on this water supply .

Table D-8 provides the results of sampling of Ozark Aquifer wells sampled north and east of the Litton site. None of the wells sampled tested above the MCL for TCE.

5.5 Conclusions

The analytical results show impacts to shallow groundwater north and east of the Litton site. Two springs, Ritter West Spring (2-3 miles from the Litton site) and Williams Spring (3-4 miles from the Litton site) were impacted by TCE, the predominant VOC at the Litton site, above the MCL. Sediment samples collected at the emergence of these two springs also showed copper at levels above EcoTox Threshholds (Reference 25) Copper is also a contaminant of concern at the Litton Systems Inc. site. Based on the Wellhead Protection Area 1-C Casing Requirement Map (Reference 34), which indicates the depth required to case a newly constructed private domestic well below the Ozark Confining Unit, and the available locations for these springs (Reference 18), they both produce water from the Springfield Plateau Aquifer.

Analytical results also indicate that private residential wells three to four miles north-northeast of the Litton site are impacted with TCE. Of 105 wells sampled, 13 showed detectable levels of TCE. One well (DW-08) indicated levels exceeding MCLs.

A comparison was made of calcium to magnesium ratios of wells impacted with TCE versus ratios determined for the Springfield Plateau and Ozark Aquifers (Reference 7). Well DW-08, which had the highest level of TCE, had a ratio comparable to water from the Springfield Plateau Aquifer, which is consistent with the conclusion that the Springfield Plateau Aquifer has been impacted. The remainder of the impacted wells had ratios more similar to the Ozark aquifer. It is suggested that these wells may be cased through the Ozark Confining Unit, but due to poor domestic well construction techniques may be allowing a limited amount of contaminated water from the Springfield Plateau Aquifer to leak downward and mix with Ozark Aquifer water. All of the wells were

constructed prior to 1987 when the regulation of private residential wells began in Missouri, thus there were no minimum casing or grouting requirements in place during the construction of most private residential wells in this area.

Area wide dye traces have shown that dye injected in the vicinity of the Litton site has surfaced in springs in proximity to wells that have shown TCE impacts. This implies a connection between the observed contaminated wells and the Litton site. However, due to the nature of the karst system in the Springfield area, subsurface flow directions may not be limited to the direction of the area sampled. It is strongly recommended that additional private well sampling be conducted, with emphasis on shallow wells constructed prior to 1987.

The apparent absence of contamination in wells to the north and east of the Litton site known to be producing water from the deeper Ozark Aquifer suggests that contamination in this off site area may be predominantly in the shallower Springfield Plateau Aquifer. Offsite contamination to the west of the Litton site is known to exist in the Ozark Aquifer (Reference 7).

6.0 SURFACE WATER PATHWAY

6.1 Hydrologic Setting

The topography of the site is relatively flat with elevation ranging from 1,270 to 1,290 feet above mean sea level. Surface water runoff from the area drains toward several sinkholes during rain events. The infiltrated water most likely discharges from springs located north of the site. Since the discharge to surface water is greater than one mile from potential source areas and the sinkholes on site, there is no probable point of entry for surface water (Reference 18).

6.2 Surface Water Targets

Due to the karst nature of the area, the surface runoff has the potential to influence the habitat of organisms that live in caves. The Litton site is located approximately one to three miles northwest of the southern boundary of the recharge area for the Ozark cavefish (Amblyopsis rosae). The Ozark cavefish is a federally listed threatened specie. The habitat for the Ozark cavefish extends between two and four miles north to northeast of the site and one to three miles northwest of the site. The Ozark cavefish could be adversely affected if the groundwater or surface water feeding the caves were to become contaminated (Reference 35).

6.3 Surface Water Pathway Conclusions

Due to surface discharge being greater than one mile from potential source areas, the surface water pathway was not evaluated as part of this reassessment.

7.0 SOIL EXPOSURE AND AIR PATHWAYS

Site soil exposure and proposed remedial actions for on site soils are presented in detail in Section 4 of this report. No additional off site soil sampling was conducted as part of this SR since there was no reason to expect off site soil exposures.

Air sampling was conducted as part of this SR to assess possible impacts of volatilization of TCE on human health and the environment when exposed to it in the subsurface environment.

7.1 Soil Exposure and Air Pathway Targets

Air sampling was conducted at the emergence of Williams Spring and at two locations in Fantastic Caverns. One sampling event was conducted at William Spring. Three sampling events were conducted in Fantastic Caverns. Table D-8 provides air sample collection data. Table D-9 provides air sampling results.

Williams Spring was chosen for sampling because dye traces have shown it to be an outfall for the karst system that drains the Litton site area (Reference 18). Fantastic Caverns is a commercial cave located northeast of the Litton site. Past testing has shown it to contain volatile organic compounds. It was chosen for air sampling to assess potential health effects to workers and cave visitors.

Sampling results for Williams Spring indicate levels of cis-1,2-Dichloroethene, TCE and Tetrachloroethene above EPA Region 9 Preliminary Remediation Goals (PRGs). It also indicated levels of 1,1-Dichloroethene above Superfund Chemical Data Matrix January 2004 lowest of reference dose and cancer risks for air pathway (SCDM) values.

Initial sampling results for Fantastic Caverns (April 4, 2004 sampling event) indicated levels of TCE above EPA Region 9 PRGs at the sampling location under the bridge overpass near the underground stream. The February 24, 2005 sampling event showed no tested analyte at either sampling location above established benchmark values. The November 2, 2005 sampling event again showed TCE levels above EPA Region 9 PRGs.

7.2 Soil Exposure and Air Pathway Conclusions

Off site soil exposure was not a pathway of concern for the SR. The air pathway was explored through sampling efforts at Williams Spring and Fantastic Caverns. At the request of MDNR, the Missouri Department of Health and Senior Services (MDHSS) evaluated the risk posed by air contamination at Fantastic Caverns. MDHSS concluded that there was not significant risk posed by the TCE levels in Fantastic Cavern (Reference 36).

8.0 SUMMARY AND CONCLUSIONS

This Site Reassessment was conducted to further investigate off-site impacts from historic releases of contaminants at the site. In addition, it was conducted to re-evaluate the site under the Hazard Ranking System, and determine its eligibility for placement on the National Priorities List (NPL).

RI activities have established a release of metals and VOCs to soil and groundwater at the Litton site. RI sampling documented Cu, Cr, Pb, and As in the soil of the site, and copper, cadmium, nickel, mercury and lead in the Springfield Plateau Aquifer at concentrations exceeding health-based benchmark levels. Chlorinated solvents were documented in the soil and in both the Springfield Plateau Aquifer and the Ozark Aquifer at concentrations exceeding health-based benchmark levels. Copper is the most widespread metal contaminant and TCE is the most widespread VOC.

Sampling conducted as part of the Site Reassessment shows impacts to shallow groundwater north and east of the Litton site. Two springs, Ritter West Spring (2-3 miles from the Litton site) and Williams Spring (3-4 miles from the Litton site), were impacted by TCE, the predominant VOC at the Litton site, above the MCL. Sediment samples collected at the emergence of these two springs showed copper at levels above EcoTox benchmark values. Copper is also a contaminant of concern at the Litton Systems Inc. site. Based on the Wellhead Protection Area 1-C Casing Requirement Map (Reference 34), which indicates the depth required to case a newly constructed private domestic well below the Ozark Confining Unit, and the available locations for these springs (Reference 18), they both produce water from the Springfield Plateau Aquifer.

Analytical results from the sampling of private residential wells three to four miles north-northeast of the Litton site shows impacts from TCE. Of 105 wells sampled, 13 showed detectable levels of TCE. One well (DW-08) indicated levels exceeding MCLs.

A comparison was made of calcium to magnesium ratios of wells impacted with TCE versus ratios determined for the Springfield Plateau and Ozark Aquifers (Reference 7). Well DW-08, which had the highest level of TCE, had a ratio comparable to water from the Springfield Plateau Aquifer, which is consistent with the conclusion that the Springfield Plateau Aquifer has been impacted. The remainder of the impacted wells had ratios more similar to the Ozark aquifer. It is suggested that these wells may be cased through the Ozark Confining Unit, but due to poor domestic well construction techniques may be allowing a limited amount of contaminated water from the Springfield Plateau Aquifer to leak downward and mix with Ozark Aquifer water. All of the wells were constructed prior to 1987 when the regulation of private residential wells began in Missouri, thus there were no minimum casing or grouting requirements in place during the construction of most private residential wells in this area.

Area wide dye traces have shown that dye injected in the vicinity of the Litton site has surfaced in springs in proximity to wells that have shown TCE impacts. This implies a

connection between the observed contaminated wells and springs and the contamination in groundwater at the Litton site.

The apparent absence of contamination in wells to the north and east of the Litton site known to be producing water from the deeper Ozark Aquifer suggests that contamination in this off site area may be predominantly in the shallower Springfield Plateau Aquifer. However, off-site contamination to the west of the Litton site is known to exist in the Ozark Aquifer (Reference 7).

Due to surface discharge being greater than one mile from potential source areas, the surface water pathway was not evaluated as part of this reassessment.

Off-site soil exposure was not a pathway of concern for the SR. The air pathway, however, was explored through sampling efforts at Williams Spring and Fantastic Caverns. The Missouri Department of Health and Senior Services has concluded that there was not significant risk posed by the TCE levels in Fantastic Caverns (Reference 35).

Based on the population potentially exposed to groundwater contamination, the Litton Systems Inc. site would likely qualify for placement on the NPL based on a score of 28.5 or higher. Further CERCLA action is warranted, however, as long as the following recommendations are implemented by Litton, further CERCLA action is not recommended at this time.

9.0 RECOMMENDATIONS

Based on this site reassessment the following recommendations are made:

1. The Springfield Plateau Aquifer has been shown to be impacted to the north and east of the Litton Site. Site source areas need to continue to be addressed through the remedial process to prevent the further migration of contamination from the site.

2. The Ozark Aquifer has been shown to be impacted to the west of the Litton Site. Remedial measures need to be implemented to contain and treat this plume.

3. Additional private well sampling should be conducted in the area north and east of the Litton site. Effort should be made to sample the area wells not previously sampled as part of the SR. Priority should be given to wells constructed prior to November 1, 1987, the date regulation of well construction began. Wells should be tested for VOCs.

4. Owners from #3 whose wells are determined to contain TCE at levels above MCLs should be provided with adequate treatment to reduce contaminant levels below MCLs if the well is producing water from the Springfield Plateau Aquifer. Periodic long term sampling and maintenance should be conducted to assure the system is properly functioning.

5. Owners from #3 whose wells are determined to contain TCE at levels above MCLs that are known to be constructed into the Ozark Aquifer should have the well plugged and a new well provided. Alternatively, the well may be reconstructed sealing out the Springfield Plateau Aquifer (assuming well production is sufficient to allow this option).

6. Private residential wells whose test results indicate the presence of TCE should be monitored during remediation activities to assure residents are not exposed to additional risk during such activities.

7. Per MDHSS recommendation, additional monitoring should be conducted in Fantastic Caverns to assure cave worker and visitor exposure levels do not increase during soil remediation and over the long term.

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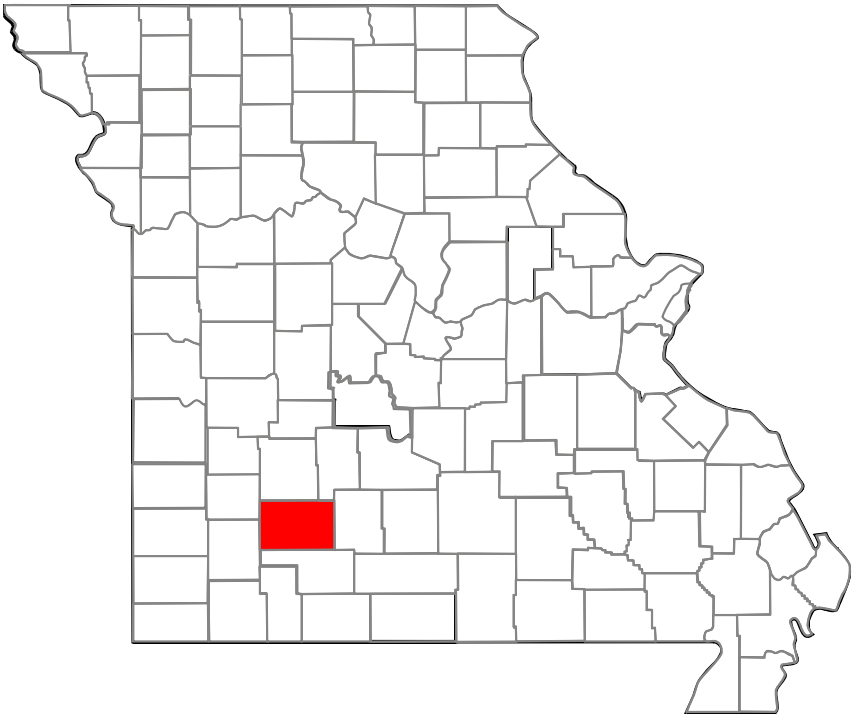
APPENDIX A: FIGURES

PRE-CERCLA SCREENING SAMPLING AND ANALYSIS PLAN

Fantastic Caverns
Greene County, Missouri
September 1, 2016



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared By:

Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste and Environmental Services Programs

Table of Contents

1.0 Introduction 1
2.0 Site Information 1
2.1 Location 1
2.2 Operational History 2
2.3 Background and Previous Investigations 2
3.0 Data Quality Objectives 4
3.1 Problem Statement 4
3.2 Planning Team 4
3.3 Conceptual Site Model 5
3.4 Study Questions 8
3.5 Inputs to Study Questions 9
3.6 Study Boundary 10
3.7 Decision Rules 10
3.8 Tolerable Limits on Decision Error 11
3.9 Sampling Design 11
4.0 Field Activities 12
4.1 Sample Collection 13
4.1.1 Indoor Air Sampling 13
4.1.2 Ambient Air Sampling 14
4.1.3 Surface Water Sampling 14
4.2 Sampling Order 14
4.3 Sample Analysis 14
4.4 Number of Samples, and Container and Preservation 15
4.5 Chain-of-Custody 17
5.0 Quality Control 17
5.1 Field Decontamination 17

5.2 Quality Assurance/Quality Control (QA/QC) Samples 20

5.2.1 Duplicate Sump Water Sample 20

5.2.2 Collocated Indoor Air Vapor Samples 18

5.2.3 Laboratory QC 18

6.0 Investigation Derived Wastes (IDW) Plan 21

7.0 Site Safety 19

8.0 Reporting 19

Appendix A – Health and Safety Plan

Appendix B – Figures

Figure 1: Site Location Map

Figure 2: Fantastic Caverns MGS Map

Figure 3: Fantastic Caverns MGS Map with Sample Locations

Figure 4: Fantastic Caverns/Smalley Sinkhole Cave System Map

Appendix C – Field Sheets and Chain of Custody Forms

Appendix D – Surface Water Collection SOP

Appendix E - Cave VI Survey Form

Appendix F – Standard Operating Procedure

Appendix G – FROG-4000™ Vapor Intrusion Testing

1.0 Introduction

As authorized under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986, the Missouri Department of Natural Resources (Department), Hazardous Waste Program (HWP), Site Assessment Unit (SAU) is conducting a Pre-CERCLA Screening at Fantastic Caverns located in Greene County.

The objective of this investigation is to assess potential threats to human health and the environment at the site, gather data necessary for the preparation of a preliminary site score under the Hazard Ranking System (HRS), and evaluate the need for a removal action. This Sampling and Analysis Plan (SAP) describes the collection of indoor air vapor samples and surface water samples at Fantastic Caverns located in Greene County.

2.0 Site Information

2.1 Location

Fantastic Caverns is a commercial cave located at 4872 N. Farm Road 125 in Springfield, Missouri. Figure 1 shows the cave location at 37.287698° Latitude, -93.358996° Longitude. From Jefferson City take US-54 W for approximately 57 miles towards Camdenton, Missouri. Merge onto MO-5 S toward Lebanon, Missouri and drive approximately 24 miles. Turn left onto N Jefferson Ave and travel approximately 1.5 miles and merge onto I-44 W toward Springfield. Travel west on I-44 for approximately 53 miles and take the US-160 exit, EXIT 75, toward Willard. Travel west approximately 1 mile and turn right onto N Westgate Ave. Then turn left onto N Farm Road 123. Next, turn right onto W Farm Road 94. Then, take the second left onto N Farm Road 125. Turn left to stay on N Farm Road 125 and Fantastic Caverns will be on your right.

2.2 Operational History

Fantastic Caverns was discovered in 1862 by farmer John Knox, who owned the land. Five years later, the cave was opened to the public for exploring. The caverns changed hands several times over the years and was used for various purposes. In the 1950's the cave was named Fantastic Caverns and became a popular Route 66 attraction. New owners, the Trimble family, who also owned the Shepard of the Hills Outdoor Theatre in Branson, began giving jeep tours in the 1960s. At this time the caverns also became a country music venue. The Campbell family, who have managed the property since 1966, bought it in 1992 and are the current owners. Following acquisition of the cave by the Campbells, the current visitor center was built, and jeeps and trams were put into service. The cave offers the general public tour using propane powered jeeps. Tours last approximately 55 minutes, and are offered 4 to 5 times a day to groups of up to 20 people. Group size and tour frequency are dependent on demand during the season while they are open. A tour guide can spend from four to eight hours a day in the cave conducting tours.

Caves are often active groundwater conduits, and in some cases it is possible to follow an entire karst groundwater system from sinkhole through cave to spring outlet. This is nearly the case with Smalley Sinkhole Cave and Fantastic Caverns. Although tours are not given in this portion of the cave, Smalley Sinkhole Cave can be entered through a large, open sinkhole in the base of a normally dry valley. The cave can be traversed for a considerable distance toward Fantastic Caverns, but the two have only been connected using fluorescent dyes. The water exits Fantastic Caverns at a spring overlooking the Sac River, a short distance upstream from the cave entrance. Except for a short distance between the two caves and between the downstream limit of human exploration and the spring in Fantastic Caverns, this system is traversable from recharge point to discharge point.

2.3 Background and Previous Investigations

Meramec Caverns in Franklin County was recently temporarily closed due to elevated levels of trichloroethene (TCE), also known as trichloroethylene, in cave air believed to originate from the volatile organic compounds (VOC) contaminated groundwater plume associated with the Oak Grove Village Well National Priority List (NPL) site. This situation has prompted concern regarding air quality inside other publically-toured cave systems in Missouri.

In April 2016, the Superfund Section initiated Pre-CERCLA Screening investigations at Fantastic Caverns and five (5) other tourist caves in Missouri that were located within 10 miles of a known VOC groundwater plume. Previous sampling at the other five commercial caves revealed no contaminants above EPA's Vapor Intrusion Screening Levels (VISL). After two rounds of sampling at Fantastic Caverns, TCE was found exceeding the VISL of 6 ug/m^3.
Air sampling was conducted at Fantastic Caverns in April 2004, February 2005, and November 2005 as part of a Superfund Site Reassessment investigation of the Litton Systems Site (MDNR, 2006). TCE was detected in April 2004 at 150 ug/m^3 under the bridge and November 2005 at 53 ug/m^3 under the bridge. Samples collected during those timeframes from the back of the cave turnaround point were non-detect, although it should be noted the detection limit at that time was 5.3 ug/m^3.

As part of this Pre-CERCLA Screening, indoor air samples were collected in April of 2016 at two locations inside the cave; the back of the cave turnaround point and at the second bridge (Figure 2). There was not enough water in the cave to sample at the time. The TCE air sampling results were 0.94 ug/m^3 (at the back of cave turnaround point) and 1.6 ug/m^3 (at the second bridge). There were several other VOCs detected as well at relatively low levels, including benzene, carbon tetrachloride, chloroform, tetrachloroethylene (PCE), 1,1,1-trichloroethane and toluene. None of the VOCs detected exceeded the EPA VISLs.

Another round of cave air sampling was conducted at Fantastic Caverns on July 13, 2016. Two 8-hour air samples were collected from inside the cave along the tour route, one background

ambient air sample outside of the cave and one water sample from pooled water inside the cave. Sampling locations are shown in Figure 3. No VOCs were detected in the water sample. The sample from the back of the cave at the turnaround point of the one mile tour showed 61 ug/m^3 TCE. The sample from the sinkhole area in the back 1/3 of the cave showed 88 ug/m^3 TCE. These concentrations exceed the EPA VISL for TCE of 6 ug/m^3. No TCE was detected in the background air sample from outside the cave.

3.0 Data Quality Objectives

To help ensure precise, accurate, representative, complete, and comparable data, all field work and analyses will be conducted in accordance with the Quality Assurance Project Plan (QAPP) for Pre-Remedial/Pre-Removal and Targeted Brownfields Site Assessments Revision 7, December 7, 2012, and ongoing (MDNR, 2012). The QAPP describes the general data quality objectives (DQOs) for site assessment investigations conducted by the HWP and Environmental Services Program (ESP). Those DQOs specific to this project are described below.

3.1 Problem Statement

Cave air sampling was conducted inside Fantastic Caverns in April and July, 2016. TCE was detected at concentrations above health-based screening levels in the July samples. Further sampling is necessary to assess potential risk to the cave employees and visitors.

3.2 Planning Team

The planning team includes staff from the HWP Superfund Section, EPA Region 7, ESP Field Services and Chemical Analysis Sections, Missouri Department of Health and Senior Services (DHSS) and CH2M Applied Sciences Laboratory (private laboratory).

3.3 Conceptual Site Model

Release

Fantastic Caverns is within 10 miles of several sites of known groundwater VOC contamination including; Sac River Landfill, Fulbright Landfill, Litton Systems Inc., Tuthill Corporation, Burlington Northern Westyard, and Greenfield Env Multistate Trust, LLC sites.

Subsurface

Based on a Missouri Geologic Survey (MGS) report, in the general vicinity of Fantastic Caverns, the majority of the large-scale karst features are formed in the Burlington-Keokuk Limestone formation and can be cavernous. A total of 174 springs are located within 10 miles of Fantastic Caverns (MDNR, 2016). Fantastic Caverns does not have an active spring or flowing water inside the cave unless there is a significant rain event. Smalley Sinkhole Cave does act as a groundwater conduit system which runs through Fantastic Caverns emptying out in a spring above the Sac River. Subsurface vapor concentrations and therefore vapor intrusion (VI) can be highly variable on both the diurnal and seasonal time scales. Temperature fluctuation within the cave changes depending on location within the cave and proximity to an entrance but an average temperature of 57° F ± 1° F has been reported for the cave. Other factors of barometric pressure, wind direction and rock temperature also drive air movement direction within caves as seen in the Figure below (Palmer, 2007).

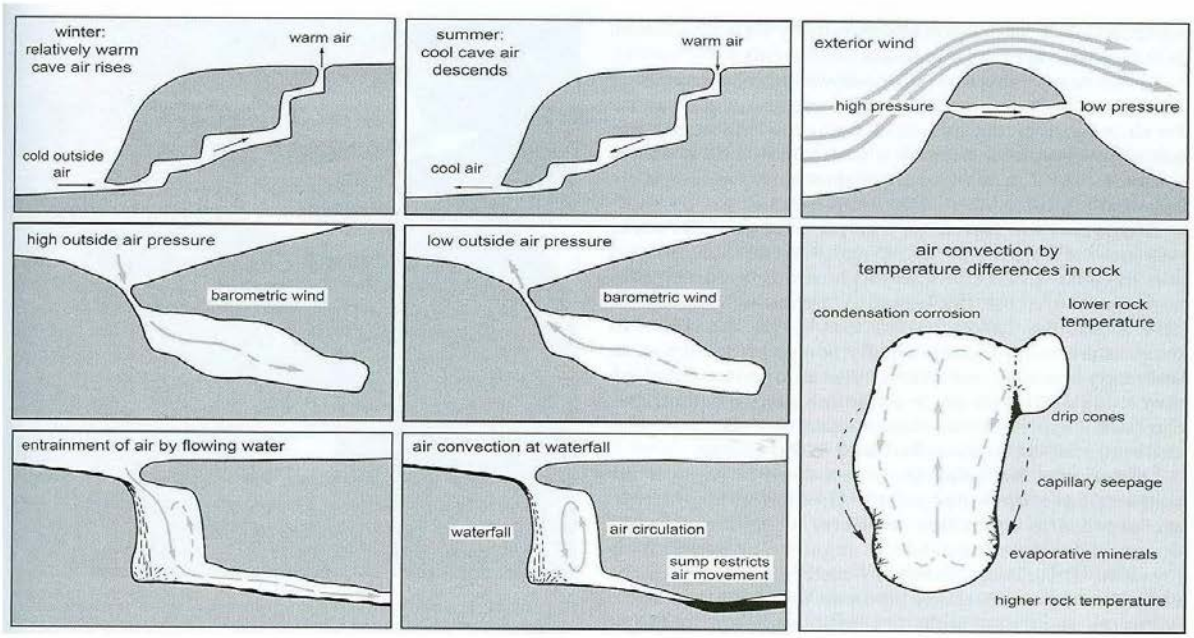


Figure 2.9: Major processes involving the movement of air in caves and the exchange with the outside atmosphere. The two primary processes invoked for air exchange at Hollow Ridge cave are gravitational exchange by density differences between cave air and the outside atmosphere, and by winds blowing into or across the entrances. Figure from Palmer (2007).

Groundwater Plume

TCE is present in groundwater at all the sites within 10 miles of Fantastic Caverns listed above. Due to the karst features near these sites, the ability for these contaminants to travel long distances from the source(s) is enhanced. Groundwater in these caves is present as springs, meteoric water that seeped from the surface, and streams that flow through the caves. Contaminated groundwater poses the most likely source of TCE contamination in the cave air.

Litton Systems, Inc. is the most plausible source of the TCE contamination because of previous dye-trace studies and the sampling of William's spring just north of the Fantastic Caverns site revealing traces of TCE and copper. The fact that copper was found with the TCE is evidence

that the TCE came from Litton Systems because of the historical use of copper in the manufacturing of circuit boards.

Surface Water

Water present in caves is either spring fed, streams flowing through caves, or meteoric water that seeped from the surface. Surface water fed by springs in caves is expected to be the main mechanism transporting VOC's into the caves. The location where a spring enters a cave or encounters a feature that aerates it, is expected to have VOC's present in the air. Fantastic Caverns, however, does not have an active spring or flowing water inside the main portion of the cave unless there is a significant rain event. In light of this, water samples from Fantastic Caverns should be collected from any dripstone pools encountered and analyzed for VOCs because VOCs can partition from water to air, and then from air back to water in pools throughout the cave.

Pooled surface water present in Fantastic Caverns was sampled during the July sampling event and analyzed for TCE and other VOCs. The water sample showed no VOCs present in the surface water. Additional sampling needs to be conducted within Smalley Sinkhole Cave where water is documented to flow along two different points, if these locations are accessible.

Vapor Intrusion

The vapor intrusion pathway refers to the migration of volatile chemicals (i.e., chemicals that easily evaporate from the subsurface soils and groundwater upwards as vapors), through conduits and preferential pathways, and into confined occupied spaces. These vapors can then collect inside the spaces and affect indoor air quality.

Exposure to VOCs at the cave can result from one or more of the following potential sources:

- Volatilization from subsurface groundwater contamination into cave air;

- Occupational, household, or consumer products used that have been stored inside or outside of the cave;
- Contribution from outdoor air moving into a cave through natural air movement driven by pressure and temperature changes. This outdoor air can include contributions from off-site background concentrations, nearby industrial emissions, and volatilization from the subsurface to outdoor air near the cave.

Chemicals may volatilize from the groundwater and soil, migrate upward and enter caves through voids and cracks in the floors, dry conduits, or areas where streams or springs aerate (i.e. waterfalls or spring point of entry), and then enter the cave. In general, there is less flow of air in caves when the outside temperature is warmer than the temperature inside the cave. As shown in the figure on page 6, when the outside temperature is colder than inside the cave, such as during the winter months, the warmer air inside the cave expands outward, causing a lower pressure and this pressure difference tends to increase air flow. When the air in the cave is colder than outside air, it is denser and tends to stay in the lower parts of the cave resulting in less air flow. Of particular importance are the transitional periods of spring and fall during which outside air approaches the temperature of cave air, as this can cause stagnation and higher VOC concentrations.

The VI pathway has been identified as the most immediate potential threat posed by the release(s) at the site, and will be the primary focus of this investigation. The potential receptors are cave workers and tourists.

3.4 Study Questions

The primary study question is whether intrusion of solvent vapor from the subsurface in the vicinity of Fantastic Caverns is causing cave air contaminant concentrations that pose an unacceptable risk for workers and/or visitors. Attendant sub-questions include:

- What is the short term (8 hour) average indoor air concentration of TCE and its degradation products inside Fantastic Caverns?
- What is the concentration of TCE that an employee would be exposed to during five (5) hours of conducting tours?
- What is the longer term (14 days) average indoor air concentration of TCE and its degradation products inside Fantastic Caverns.
- What is the concentration of TCE and its degradation products in the surface water of Fantastic Caverns or the connected Smalley Sinkhole Cave?
- What is the outdoor ambient air concentration of TCE and its degradation products near the cave?

3.5 Inputs to Study Questions

The following lists the primary inputs required to address the principal study questions.

- Presence, location and magnitude of preferential vapor intrusion pathways from the surface water to indoor air in the cave. These will be noted and documented in the field based on a visual survey of the cave.
- Inventory of potential VOC-containing products stored or used in the cave.
- Indoor air screening levels protective of commercial workers. The indoor air screening levels are summarized in the table below.

Vapor Intrusion Investigation Screening Levels, Commercial			
Compound	Screening Levels[1], ug/m^3	EPA VISL	EPA Region 7
	Indoor Air	Indoor Air	Indoor Air
1,1-Dichloroethene	880	NL	NL
cis-1,2-Dichloroethene	790	NL	NL
trans-1,2-Dichloroethene	790	NL	NL
Trichloroethene (TCE)	10	8.8	6
Vinyl Chloride	28	NL	NL

[1] Screening levels based on lower of cancer (1E-5) and non-cancer risk (HQ=1). All values obtained from EPA VISL (USEPA, 2015), except indoor air values for cis-1,2-DCE and trans-1,2-DCE which are ATSDR's minimum risk level (MRL) for intermediate (2 week-1 year) exposure to trans-DCE (ATSDR, August, 1996).

- Measurements of short term (8 hour) indoor air contaminant concentrations inside the cave.
- Measurements of indoor air contaminant concentrations inside the cave to assess typical employee tour guide exposures of five (5) hours in duration which is the maximum amount of time a tour guide spends in the cave.
- Measurement of contaminant concentrations in outdoor ambient air in the vicinity of the cave.
- Measurements of overall sampling and analysis precision.

3.6 Study Boundary

The site boundary includes the Fantastic Caverns cave system. Within the cave, the main focus is along the commercial tour path where most of the time is spent by workers and visitors.

3.7 Decision Rules

Comparison of VI data to screening levels

Exceedances of screening levels will be used to determine whether additional sampling or action is needed to protect public health. DHSS will evaluate the sampling results and conduct a site-specific risk assessment and will recommend appropriate response actions to protect public health.

3.8 Tolerable Limits on Decision Error

The hypothesis is that TCE released from surface water in the caves has resulted in vapor concentrations in the cave air around the tour paths at levels that pose a risk to employees and/or visitors. Falsely rejecting that hypothesis, considered a Type I decision error, would mean mistakenly concluding that there is no VI health threat. Falsely accepting this hypothesis, considered the Type II decision error, would mean concluding that there is a VI threat when in fact there is not. The Type I error would result in taking no mitigation action in the caves when indoor air solvent vapors are actually present at levels that could pose a health threat. A Type II error would result in the unnecessary use of resources to conduct additional VI assessment and possibly mitigation in the cave when none is warranted. The Type I error is considered more severe since it results in potential threats to human health.

Several measures will be taken to protect against making a Type I decision error. Screening levels will be used that are based on conservative risk levels; $1x10^{-5}$ for cancer and hazard quotient of 1 for non-cancer effects. Sampling will also be conducted during more than one season to account for variations in temporal variation in vapor concentrations. Long term

passive samplers will be used to provide estimates of vapor concentrations more representative of long term exposure. The overall sampling and analysis precision will be assessed from collocated and concurrent sampling data. If the level of sampling error interferes with decision-making, variability may be factored into decision making. For example, if sampling data is below but near screening levels and overall sampling and analysis precision is poor, the presumption may be made that the sampling data exceeds screening levels. Potential sources of indoor and outdoor vapor contributions will be identified and assessed to protect against a Type II error.

3.9 Sampling Design

Indoor air and surface water samples will be collected from inside Fantastic Caverns and Smalley Sinkhole Cave System which is believed to be the southern-most entry point to the Fantastic Caverns Cave System (Figure 4). Ambient air samples will also be collected above the entrance of Fantastic Caverns. The exact locations of the ambient air samples will be determined based on field conditions and access.

4.0 Field Activities

Field activities will include the collection of air samples from inside the caves at locations where tours spend the most amount of time according to the cave guide and from areas outside the caves (ambient outdoor) using 6L Summa canisters over an 8 hour period and a 5 hour period for the PAM samples. Surface water samples will also be collected from areas upstream from where aeration is likely to occur.

Information will be collected and evaluated in a Cave VI Survey Form (Appendix E) regarding physical conditions and characteristics that are pertinent to assessing the cave's susceptibility (i.e. cave entrance location, aeration points, air flow direction, etc.). Such information may help interpret spatial differences in indoor air concentrations. Relevant meteorological data, such as

temperature, precipitation, wind speed, significant recent precipitation, and changes in barometric pressure will be recorded at beginning and ending of day via local weather reports.

The Cave VI Survey Form will also be used to document information about each cave including number of entrances, area commercial tours take place, and an inventory and location of any potential indoor or outdoor sources of chlorinated solvent vapors including paints, solvents, cleaners, recently painted surfaces, glues, insecticides, etc.

4.1 Sample Collection

4.1.1 Indoor Air Sampling

An indoor air sample will be collected from approximately seven locations where the tour spends the most time as indicated by the cave manager (Figure 2). One duplicate sample will be collected at one location. Sample locations will be chosen based on current use patterns and exposure durations inside the cave, the presence of any preferential vapor intrusion pathways from the subsurface. Air samples will be collected using 6L Summa canisters set to collect an 8 hour sample (approximately 12 mls/min) from the breathing zone level. The air temperature and barometric pressure will be documented for the beginning and ending collection times using a local weather website.

Radiello 130-SE passive air samplers will be deployed for a 14 day period at locations where the 6L Summa canisters were set. The samples will be collected using sorbent tubes where solvent extraction will be used to remove the analytes of interest. This will aid the investigation by collecting low levels of VOCs in the cave air over an extended period of time.

The FROG-4000™ is a portable gas chromatograph (GC) which will be used to gather data in real time. Target compounds are concentrated from ambient air onto an adsorbent trap, separated

on the GC column and detected using a photoionization detector operating at 10.6eV. The GC will be used as a screening tool to estimate levels of TCE concentrations at different areas in the cave throughout the work day. Data will be available from each sample in approximately 10 minutes.

Personal Air Monitoring (PAM) samples will be collected to evaluate inhalation exposures to cave tour guides during the portion of their workday spent in the cave. This section describes the methodology that will be followed. The approach to collecting PAM samples will be as follows:

- Samples will be collected via 6L evacuated stainless steel canisters (Summa canisters). Canisters will be individually certified clean and used only if received from the laboratory with a vacuum of at least -25 inches of mercury (in. Hg).
- Canisters will be obtained with laboratory-supplied vacuum gauges and flow controllers pre-set for collecting a sample over a 5-hour time period (i.e., the standard duration of a tour guide's shift).
- The canister will be placed in a backpack, with the intake protruding at least three inches outside of the zipped volume of the bag.
- Sampling activities will be either performed by or with supervision by a MDNR employee present at the caverns during sampling. Cave employees may be used to carry backpack samplers on simulated or actual tour guide workdays; however, a MDNR team member will be responsible for handling canisters and regulators, keeping notes and records, and providing guidance for appropriated conduct of backpack carriers during sampling. Cave employees assisting with sampling will be asked to keep notes of times in specific areas of the cavern.
- Samples will be collected to represent a tour guide's typical workday in the cavern by following actual tours in progress. Tour guides give a maximum of five tours a day and those tours last approximately 50-55 minutes each. It is

important to note that employees spend their time between tours in the gift shop/lobby area and other work areas not directly in the cave.

- The sampler will carry the backpack for the full period of time spent in the cave. For the period of time spent outside of the cave, the backpack may be taken off and the summa canister will be turned off. The summa canister will be turned back on and placed back on the MDNR employee upon entry into the cave for the next tour.
- At the end of the workday, the summa canister will be removed from the backpack, sealed, and labeled with the sample identification number. The sample will be shipped via overnight carrier to Eurofins Air Toxics for analysis of TCE via USEPA Method TO-15.

4.1.2 Ambient Air Sampling

Background ambient outdoor air samples will be collected from one location over an 8 hour period (approximately 12 ml/min) using a 6L Summa canister. The ambient air location will be identified near an entrance but far enough away to be outside the influence of the caves. The location will be selected in the field based on access and logistics.

4.1.3 Surface Water Sampling

Surface water VOC sampling will be conducted at areas upstream from aeration areas in the stream or as logistically close to these areas as possible. A 40 ml sample will be taken using the surface water SOP in Appendix F. One duplicate will be taken per sampling team.

4.2 Sampling Order

The 8 hour indoor air samples will be set first and surface water samples will be taken if running water is present. PAM samples will collected using 5 hour flow controllers on 6L summa canisters. Passive samplers will be deployed for 14 days to measure long term TCE exposure.

4.3 Sample Analysis

4.3.1 Indoor and Ambient Air Sample Analysis

Based on previous sampling of these caves, it is established that the primary contaminants of concern for the VI pathway are TCE and its degradation byproducts 1,1-dichloroethene, cis- and trans-1,2-dichloroethene, and vinyl chloride. The Summa canister samples and Radiello 130 passive samples will be analyzed for these five VOCs by modified EPA Method TO-15 using selected ion monitoring to improve reporting levels. The minimum required levels of detection for each type of sample are provided in the following table. They are established at levels in order of magnitude below the lowest screening level for each compound. Actual reporting levels for several contaminants will be significantly lower than these minimums. Reporting levels for the passive samplers will vary slightly depending on the actual time of deployment and collection.

Reporting Limits, ug/m^3		
Analyte	**Air Sample** **Summa 8 hr TWA** **EPA Method TO-15**	**Air Sample** **Radiello 130-SE 14 day deployment** **EPA Method TO-17 Modified**
1,1-dichloroethene	0.010	0.2611
cis-1,2-dichloroethene	0.020	0.0800

Reporting Limits, ug/m^3		
Analyte	**Air Sample Summa 8 hr TWA EPA Method TO-15**	**Air Sample Radiello 130-SE 14 day deployment EPA Method TO-17 Modified**
trans-1,2-dichloroethene	0.100	0.1653
trichloroethene	0.020	0.0719
vinyl chloride	0.010	0.2205

4.4 Number of Samples, and Container and Preservation

The estimated range of sample numbers for laboratory analysis is provided in the following table. The Summa canisters and passive samplers will be obtained from the CH2M Applied Sciences Laboratory in Corvallis, OR.

Sample Matrices, Analytes, Analytical Methods and Sample Numbers			
Matrix	**Analytes**	**Analytical Method**	**Number of Samples**
Surface Water	Full VOC scan	EPA 8260B	1-4
Indoor air vapor via 6LSumma canisters	1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride	EPA TO-15 modified	11
Radiello 130 Passive Samplers	1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride	EPA TO-17 modified	5

The surface water samples will be submitted to the department's analytical laboratory in Jefferson City for analysis; all vapor samples will be submitted to the CH2M Applied Sciences Laboratory in Corvallis, OR for analysis. Refer to the following tables for container and preservation requirements on all samples.

Sample Containers Preservation and Holding Times			
Parameters	**Container(s)/Volume**	**Preservative(s)**	**Holding Time**
VOCs in air vapor	Summa canisters, 6L volumes	None	2 Weeks
VOCs in air vapor	Radiello 130 Passive Samplers	Sealed in glass vial	6 months
VOCs in surface water	40ml amber glass vials with Teflon coated lids	HCL, 6^0C	2 weeks

4.5 Chain-of-Custody

All samples will be entered onto an ESP chain-of-custody (COC) form to be relinquished to a sample custodian at the state's environmental laboratory for analysis. The Summa canisters samplers and the Radiello passive samplers will be subcontracted to CH2M Applied Sciences Laboratory in Corvallis, OR.

5.0 Quality Control

At one sample location, collocated air samples will be collected by placing two Summa canisters next to each other and collecting an 8 hour sample in each simultaneously.

5.1 Field Decontamination

Clean disposable nitrile gloves will be worn by sampling personnel and clean or field decontaminated equipment will be utilized for each sample location to minimize the possibility of cross-contamination.

5.2 Quality Assurance/Quality Control (QA/QC) Samples

The following samples will be collected as part of the quality control/quality assurance procedures for the investigation.

5.2.1 Duplicate Surface Water Sample

A duplicate surface water sample will be collected at one surface water location to assess overall sampling and analysis precision in accordance with the SOP MDNR-ESP-210. Precision will be assessed from the relative percent difference between duplicate sample results and should be below 30%.

5.2.2 Collocated Indoor Air Vapor Samples

A collocated indoor air sample will be collected from within the cave at a sample location identified in the field to assess overall sampling and analysis precision. At this location, two summa canisters will be deployed adjacent to each other and allowed to collect vapor for the same time period. Also at this location, two passive samplers will be deployed adjacent to each other and allowed to collect vapor for the same time period. Precision will be assessed from the relative percent difference between collocated sample results and should be below 30%.

5.2.3 Laboratory QC

Laboratory precision and accuracy will be assessed as described in the QAPP for Pre-Remedial/Pre-Removal and Targeted Brownfields Site Assessments Revision 7, December 7, 2012, and ongoing.

6.0 Investigation Derived Wastes (IDW) Plan

Efforts will be made to minimize IDW generation. IDW may include soil, sediment, decontamination fluids, disposable sampling equipment, and disposable personal protective equipment (PPE).

Disposable PPE and disposable sampling equipment will generally be handled as solid waste, containerized, and properly disposed. Wash and rinse waters generated during equipment decontamination will containerized and returned to the ESP laboratory for proper disposal.

7.0 Site Safety

A safety briefing will be held on-site prior to initiating field activities and field personnel will be required to read and sign the site-specific health and safety plan. The site safety plan is attached as Appendix A.

8.0 Reporting

ESP will provide a copy of the field notes, chains-of-custody and laboratory result sheets in the sampling report.

REFERENCES

ATSDR, 1996 Agency for Toxic Substances and Disease Registry (ATSDR). 1996. Minimum risk level (MRL) for intermediate (2 week-1 year) exposure. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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USEPA, 2015 U.S. Environmental Protection Agency, Vapor Intrusion Screening Level Calculator, accessed April 27, 2015. http://www.epa.gov/oswer/vaporintrusion/documents/VISL-Calculator.xlsm

SIGNATURES

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Date: 9/1/2016

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Fantastic Caverns Vapor Intrusion Field Form

Location ID: _____

Part 1: Physical Cave Inspection

Preparer's name: Doug Campbell Date/Time prepared: 7/13/16

1. Occupant information

Occupant name(s): Doug Campbell Fantastic Caverns Interviewed: ☐ Yes ☐ No

Mailing address: 4872 N. Farm Road 125

City: Springfield State: Mo. Zip code: 65803

Phone: 417-833-2010 Fax: 417-833-2042 E-mail: dcampbell@fantasticcaverns.com

Number of occupants at this location: _____ Age range of occupants: _____

2. Cave Details

Source of cave water (springs,streams,etc) count and names:

Watershed from around Springfield Airport

Number of entrances/exits:

2

Describe Air Flow in the cave (how it fluctuates with seasonal variation):

Average Daily temperature and range: 58° 59°

Seasonal temperature fluctuation: _____

3. **Cave Operation**

Months of Operation: Year Round

Hours of Operation: 8-4 in offseason and 8+8 in the summer

Number of Employees that work within the cave: 12 to 14

Number of hours and days a week spent in cave: 4 to 8 hour Shift

Number of tours given a day (average): 20

Time to complete tour: 55 min

Length of commercial trail through cave: about 1 mile

Total length of cave: 1 mile

Is there an area of the cave that is not open to the public, but is to the workers? If so where? No

Areas where people spend majority of time in cave:

on the Tour Trail

Incidents that have occurred related to spills, leaks, or outside infiltration into the cave. Please include year of incident:

Part 2: Indoor Air Quality Survey

Complete if indoor air sampling is conducted (use grids in Part 1 for labeling sampling locations).

Factors that may influence indoor air quality:

Is there smoking in the cave:	☐ Yes ☒ No	How frequently:
Have any professional cleaning products been used recently:	☐ Yes ☐ No	When & type:
Have cosmetic products been used recently:	☐ Yes ☒ No	When & type:
Has painting/staining been done in the last 6 months:	☐ Yes ☒ No	Where & when:
Has any remodeling or construction occurred in the last 6 months:	☐ Yes ☒ No	Where & when:
Have air fresheners been used recently:	☐ Yes ☒ No	When & type:
Are any gasoline powered devices or gasoline storage cans stored in any area of the cave?	☐ Yes ☒ No	Where & type:

Are there any pets allowed? ☒ Yes ☐ No type: Dog, cats, Pets

Have pesticides/herbicides been used inside or immediately outside of the cave in the last week? ☐ Yes ☒ No When & type:

Have you noticed unusual odors in the cave: ☐ Yes ☒ No If yes, please describe:

Are there any solvents/glue used for repair in the cave: ☐ Yes ☒ No

If yes, what types of solvents are used:

Product inventory form (Add additional rows if needed)

List products identified in the building that have the potential to contribute contaminants of concern to indoor air:

Location	Product description*	Comments	Instrument readings if taken and units

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D). Include photographs of product containers as appropriate to document products and ingredients.

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Monday, Apr 18, 2016

Beat the heat at Fantastic Caverns

Wednesday, 08 August 2012

Visitors cool off with a ride through Fantastic Caverns near Springfield, Mo. The temperature in the caverns is a constant 60 degrees year-round. Summer visitors are encouraged to bring a light jacket for the tour. (Photos courtesy of the Missouri Division of Tourism)

By Amy Newcomb
GUIDON staff
amy.k.newcomb.civ@mail.mil

It's safe to say summer temperatures in mid-Missouri can be stifling. So, how do you beat the heat?

Fantastic Caverns, North America's only ride-through cave, stays a constant 60 degrees year-round. Not only can you escape the heat, but you also get to explore one of Missouri's natural wonders.

Kirk Hansen, public relations director, said Fantastic Caverns is one of three all-riding cave tours in the world. He said that even in the winter months, the cave's 60-degree temperature feels warm, making it "kind of an all-weather attraction" suited for all ages.

"Everyone may participate in the tour regardless of their age or physical ability. There are no long walks or stairs," Hansen said. "It's ideal for seniors, disabled travelers and families with small children."

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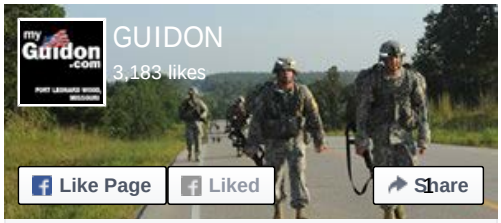

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The caverns are filled with glistening stalactites and stalagmites that range from hundreds to thousands of years old and grow approximately one inch every 100 years. There are also several water pools and two sinkholes throughout the caverns that visitors can view during their tour.

Hansen said the stalactites and stalagmites are very fragile. Every human touch to a cave formation leaves behind a small amount of body oil that could discolor or slow down the formation growth. Touching the formations also makes accidental breakage more probable.

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Cave history

In 1862, not long after the Civil War began, John Knox, who was a farmer, and his dog discovered the caverns. The farmer decided to keep them a secret because he was afraid the caverns would be exploited by Union and Confederate forces for saltpeter, an ingredient used to make gunpowder.

Approximately five years after discovering the cave, Knox placed an ad in the local newspaper looking for explorers, which was answered by 12 women from the Springfield Women's Athletic Club, whose names are painted on the cave wall.

The first explorers had to crawl through an opening about two feet across and use rope, ladders and homemade lights made with candles.

Today, explorers ride in jeep-drawn trams, which are powered by clean-burning propane.

"The trams are all equipped with ramps/lifts that allow most wheelchairs to just go right onto the tram," Hansen said. "I guess this, combined with the other features of the facility, makes us 'wheelchair friendly,' an unusual moniker for any cave facility."

For almost a century, people, in one way or another, have utilized the caverns. In the 1900s, the cavern was used to grow mushrooms. During Prohibition in the 1920s, the caverns were used as a "speakeasy," which allowed people to dance, drink and gamble.

In the 1960s and 70s, the country music radio show, Farm-A-Rama was filmed in the Auditorium Room of the caverns, Hansen said, and Buck Owens, Bobby Bare, Ray Price and other big country stars shared the stage with the Ozark Playboys.

"The (Ozark) Playboys went on to be Presley's show in Branson," he added.

Some of the world's most impressive stalactites and stalagmites are located inside Fantastic Caverns. The ride-through nature of the tours keeps visitors from touching and damaging the rock formations, which take thousands of years to form.

In 1961, Mark Trimble purchased the caverns and turned it into a ride-through tour. Bridges were built to span the sinkholes and a pathway of gravel was laid for the jeeps, but every precaution was taken to preserve the caverns and the

animals that reside there.

Natural residents

Within the caverns, cave animals like cave crayfish, grotto salamanders and Ozark cavefish dwell in total darkness. These creatures have become blind and lost the pigment in their skin from living in total darkness for generations.

Hansen said sightings of the cave animals while on tour are rare because these small, protected critters spend their time in parts of the cave not normally toured.

“There is a stream passage on a lower level that has permanent pools of water where the most fragile animal, — the Ozark cave — fish, lives,” Hansen said. “It is common to see bats flying around … an occasional sighting of the cave salamander is possible.”

Hours, tickets

Fantastic Caverns is open daily from 8 a.m. to dusk, except for Thanksgiving Day, Christmas Eve and Christmas Day. Admission is $22.50 for adults, $14.50 for children ages 6-12 and free for children 5 and younger. Season passes are available.

Fantastic Caverns is located northwest of Springfield off of Exit 77 off I-44. Follow Hwy. 13 North and watch for the Fantastic Caverns signs. For more information, visit www.fantasticcaverns.com or call 417.833.2010.

Last Updated (Wednesday, 29 August 2012)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

DEC 0 9 2016

Steve Sturgess
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr Sturgess:

Thank you for providing a copy of the Fantastic Caverns Information for Employees on TCE in Cave Air, authored by Tom Aley, dated September 1, that was provided to employees by Fantastic Caverns at a facility meeting on October 13, 2016 (TCE Fact Sheet). The U.S. Environmental Protection Agency considers it an important step that the employees of Fantastic Caverns have information about the measured levels of TCE at the caverns. However, the EPA believes there is information in the TCE Fact Sheet that may mislead employees about the risks of exposure to TCE in air. Specifically, the EPA action level is based on the most current scientific studies that were not available when the Occupational Safety and Health Administration established the Permissible Exposure Levels for TCE. As noted on OSHA's website (www.osha.gov/dsg/annotated-pels) many PELs "are outdated and inadequate for ensuring protection of worker health." The TCE Fact Sheet also incorrectly dismisses the need to study or address the TCE contamination to ensure the health of employees and guest tourists.

The TCE risk-based action level for a typical industrial/commercial scenario with an 8 hour workday is 6 $\mu g/m^3$ (EPA, 2016). This level is based on the TCE chronic reference concentration of 2 $\mu g/m^3$ and an assumption that a single exposure to TCE at any time during an approximate three-week period in early pregnancy could result in one or more types of cardiac malformations. Thus, the critical exposure period of concern used to evaluate the potential for heart defects and derive the TCE action level is one day. Chronic exposure to TCE may affect the central nervous system, kidneys, liver, immune system, and/or male reproductive system, and poses cancer risks. An exceedance of the TCE action level indicates a potential imminent threat to human health. The EPA applies this analysis to sites with environmental contamination, and the OSHA standard referred to in the employee fact sheet is not a risk-based level that the EPA would apply to this situation.

The employees of Fantastic Caverns should be made aware how the EPA calculates the risks from exposure to TCE, and how the EPA uses the most current scientific information to protect workers and others at sites with environmental contamination. The EPA is available to discuss with MDNR and MDHSS options for enhancing communication with employees at Fantastic Caverns to ensure they receive correct information regarding potential health risks from exposure to TCE.

If you have any questions, please call me at (913) 551-7882.

Sincerely,

Mary P. Peterson, Director
Superfund Division

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Airflow Study in Support of Missouri Department of Natural Resources Air-Quality Monitoring, Smalley Cave Complex Springfield, Missouri

Abbreviated Statement of Work

for

Missouri Department of Natural Resources

Hazardous Waste Program
Superfund Section

by

U.S. Geological Survey, Missouri Water Science Center

September 21, 2016

DRAFT

Contacts

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USGS
science for a changing world

Abbreviated Statement of Work for Assistance to the Missouri Department of Natural Resources for Airflow Monitoring in Smalley Cave Complex, Springfield, Missouri

Problem:

Trichloroethene (TCE) has been detected in some indoor air samples from Smalley Cave complex, a privately owned show cave in southwest Missouri. Concentrations of TCE in some samples have exceeded 6 ug/m3 (micrograms per cubic meter) above which the U.S Environmental Protection Agency (EPA) considers a human-health concern. The private show cave has more than 100,000 visitors a year. There are 9 active sites in the MDNR hazardous waste inventory within 5 miles of Smalley cave complex (fig. 1). A dye trace has directly linked at least one of these sites at the Springfield Airport (Airport site.) to a spring near the cave complex. Active remediation of TCE and other VOCs is underway at the Airport site and according to the MDNR, thousands of pounds of VOCs have already been removed from soils at the site. A groundwater investigation is underway and TCE has been detected in private wells between the Airport site and Smalley cave complex.

The Missouri Department of Natural Resources (MDNR) is working with the cave owner and other parties to monitor TCE concentrations within the cave complex to assess the possible human-health risk and have requested assistance from the U.S. Geological Survey (USGS) in understanding air flow patterns within the cave that could cause variability in VOC levels being monitored by the MDNR. The USGS Missouri Water Science Center has worked closely with the U.S. EPA and MDNR on monitoring air flow and TCE concentrations inside Meramec Caverns in Stanton, Missouri that was closed for several months in early 2016 while the EPA worked with a PRP (potentially responsible party) to design and install a mitigation system.

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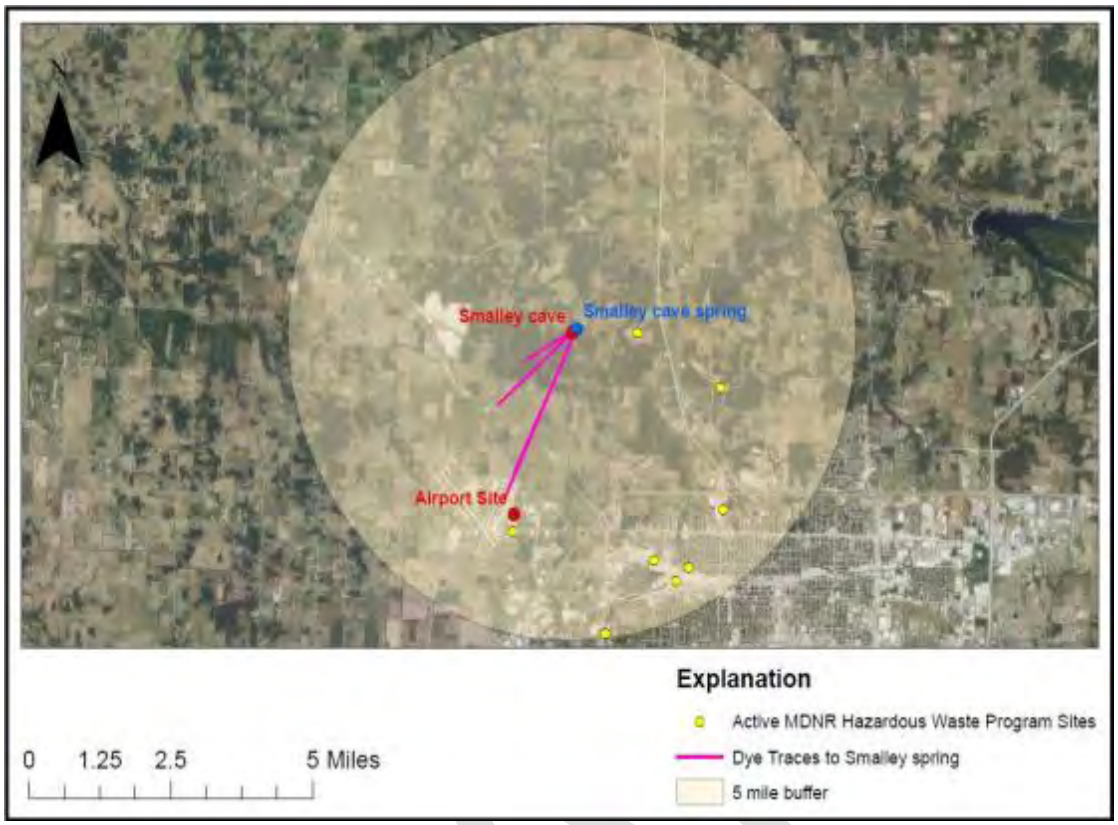

Figure. 1 Smalley Cave complex in relation to active MDNR hazardous waste program sites, dye traces, and the Airport site.

Background

Cave air-flow dynamics tend to follow general patterns dependent on a number of factors including the number of large surface connections (entrances), average passage cross-sectional area, and temperature differential between outside air and cave air. In general, there is less flow of air in caves when the temperature differential between outside air and cave air is smaller (fig. 2). A simple conceptual model for some caves is that during the summer months, cool dense air tends to exit the lower elevation cave entrances setting up a natural convection system that draws in warmer air into higher elevation cave entrances that then cools and flows “downcave” toward lower elevation entrances. Often the higher elevation openings into a cave system are a myriad of unknown tiny openings that are a considerable distance beyond (or upcave) from the known mapped cave extent; whereas the cave mouth or lower elevation openings often are large and primary access points to the cave. During the winter months, this convective flow is reversed with cool dense outside air entering the

lower elevation cave entrances where it then warms and flows upcave toward higher elevation entrances. Complex cave systems with multiple openings and commercial activity increases air flow complexity and variability.

Concentrations of volatile organic compounds (VOCs) in confined areas such as buildings and caves are typically controlled by ventilation, and caves ventilate naturally. Understanding the pattern of air flow in a cave requires knowledge of cave geometry and extent, climate (primarily air temperature at various locations within the cave relative to outside temperature), and human activities that add complexity in show caves. VOC concentrations in cave air can be variable based on ventilation patterns within the cave, the source of the VOCs (volatilization from groundwater entering the cave, mass transport in air flowing within the unsaturated karst conduit system, or both), and diffusion exchange with surfaces and materials inside the cave measurements to mention a few. Fundamental to developing a conceptual model for understand VOCs concentrations in cave air is determining air-flow patterns and volumetric air-flow rates within the cave system. This is done by measuring air flow at various locations within the cave and monitoring climatic variables (primarily temperature inside and outside the cave and relative humidity inside the cave. Because cave passages are complex and irregular, detailed cross-section surveys of cave passages are needed at locations where air-flow measurements are made. The time needed to establish ventilation patterns will vary, but in general, continuous air flow monitoring equipment is needed to collect data during various climate seasons that could results different air-flow patterns in the cave. If air flows out of the cave during the summer and into the cave in the winter, it would be desired that data be collected throughout each flow condition (all summer and all winter). This seasonal flow can also change daily. The transitional period, at which outside air approaches the temperature of cave air is of particular importance, as this can cause low flow conditions, and short term reversals in flow, resulting in higher VOC concentrations.

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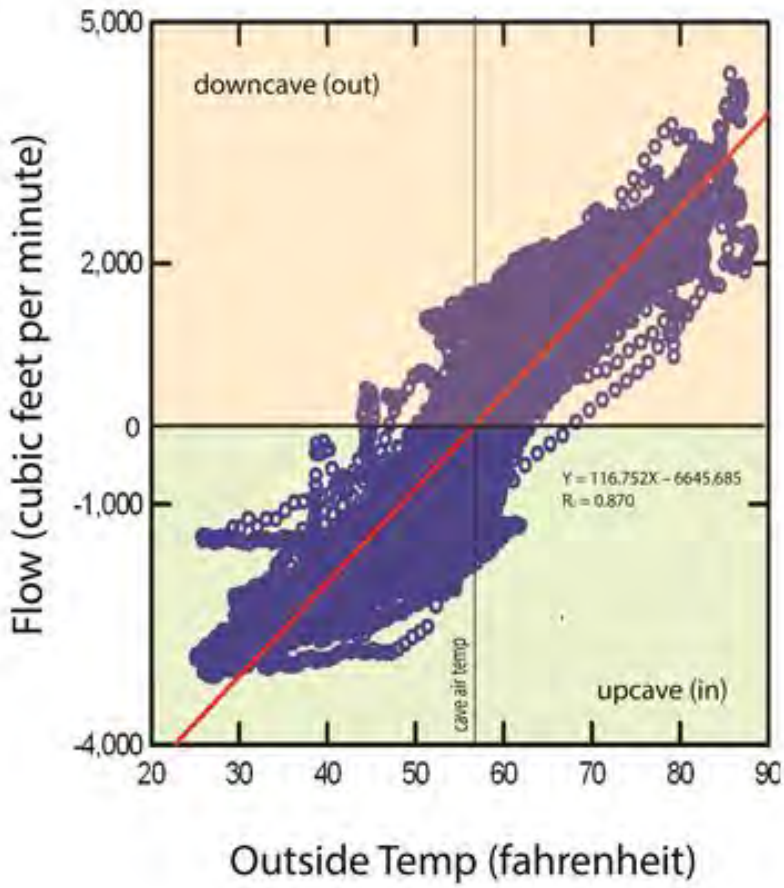

Figure 2. Graph showing volumetric air-flow rate in a Missouri cave in relation to outside air temperature near the low elevation cave mouth.

APPROACH

To support the MDNR request for USGS assistance, the USGS will monitor air flow, temperature, and relative humidity at selected locations within the cave complex and work with the cave owner, cave owner consultant, and MDNR to help develop a conceptual model for air flow and VOC contamination within the cave complex. This will be accomplished by first making a reconnaissance visit to the cave and meeting with the cave owner and staff to develop an understanding of the cave system and cave operations followed by the collection of manual cross-sectional airflow, temperature, and relative humidity measurements; deployment of one or more continuous recording airflow sensors, and detailed cross-sectional surveys at selected locations inside the cave. Air flow measurements will be coordinated with MDNR air sampling events. The USGS will provide technical support and assist the MDNR and cave

owner in integrating cave airflow information with VOC concentration data being collected by the MDNR into a conceptual model for TCE vapors inside the cave. The following is a summary of the various work tasks.

Manual Cross-Sectional Air Flow Measurements

Manual cross-section air flow measurements are made to determine volumetric air-flow measurement. Volumetric air flow at a location is determined using cross-sectional air flow measurements because air velocities at any point in a cross section maybe different with the smallest velocities generally near walls and ceiling and maximum velocities often within several feet of the floor near the center of passages (fig. 3). The smallest and least complex cross section location should be selected to minimize turbulence around irregular surfaces and locate areas of higher air overall flow rates that will reduce uncertainty in individual measurements because as flow rates reach the instruments minimum threshold values, error increases. Because of low velocities expected in the cave (often less than 0.1 m/s), a hot wire anemometer with a manufacturer stated minimum velocity threshold of 0.01 m/s and accuracy of 3% or less than .025 m/s is necessary (such as a Kanomax Climomaster ®). The cross-section should be gridded into at least three vertical grids and 7 to 10 horizontal grids and a manual measurement made at each point (minimum of 20 individual points evenly distributed throughout the cross-section). Ideally, permanent marks on the floor at the cross-section location should be made to ensure subsequent measurements are made at the same location. Before measurements, the hot-wire anemometer should be allowed to warm up and equilibrate with the cave temperature and ambient humidity (this could require 10-15 minutes). The sensor tip should be placed perpendicular to the flow (verify general flow direction with smoke or other means) and at as far from the individual operating the instrument as possible (minimum of 5 ft from the body trunk). Readings at each point should be allowed to stabilize for 15 seconds before recording to allow for localized turbulence cause by moving the probe tip to dissipate. Readings should be observed for 15-20 seconds after stabilization to note oscillations in air flow. Use of a stand to hold the hot-wire probe is desired to ensure stable readings and good quality measurements. Reading obtained by holding the instrument by hand are less desirable and rated as fair to poor quality. Once recording begins, the minimum, maximum, and estimated mode (most commonly occurring value) over the 15-20 second measurement period should be recorded. Any movement of objects or persons within 20 ft of the measurement should be avoided throughout the entire cross-section measurement. An arithmetic or

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area-weighted method will be used to compute an average cross-section velocity that will be multiplied by the cross-sectional area.

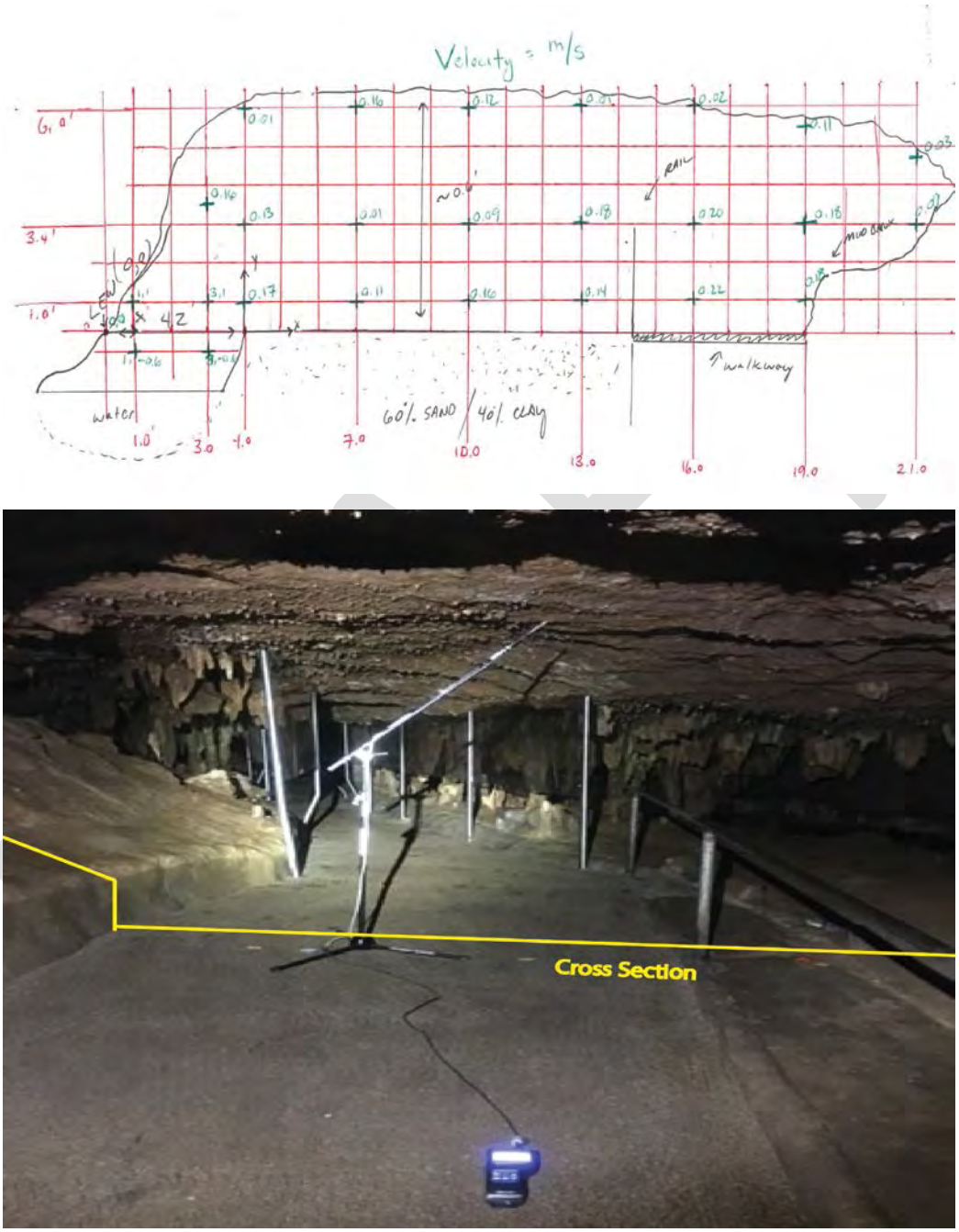

Figure 3. Example sketch of a manual cross sectional air flow measurement inside a cave (top) passage and photograph of manual air-flow measuring equipment (bottom).

Continuous air-flow measurement

Continuous air flow measurements will be made using an ultrasonic anemometer that records both airflow velocity and two-dimensional air-flow direction (such as Gill Windsonic ®). The instrument will be placed at a location where the cave cross-section is a minimum size and of more regular geometry (fig. 4). Ideally, this location would have access to 110 volt power that can be used to charge the instruments backup battery power. In the event that the location does not have power, batteries will be staged onsite and replaced at regular intervals. The sensor will be placed at a fixed location in a suitable location for cross-section air flow measurements. The instrument should have a minimum velocity threshold of 0.01 m/s and accuracy of within 5% at that level. The goal is to place the sensor at a location within the cross-section that approximates the average cross-section velocity or about 0.6 of the maximum velocity recorded in the section. A relation (rating) between the continuous sensor and manual cross-section measurement are used to develop a rating curve to translate the anemometer velocity and directional azimuth to volumetric air flow. Measurements of air velocity and direction should be recorded at a minimum of every 10 minutes, and manual cross-section air flow measurements made and the instrument data downloaded every 2 weeks. Instrument maintenance should be made according to the manufacture specifications. Initial deployment of the anemometer may require several days to adjust the location of the sensor to capture the most laminar air flow possible and approximate the mean cross-sectional velocity determined from manual cross-sectional measurements.

Figure 4. Photograph of two ultrasonic anemometers deployed in a cave passage.

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Detailed Cross-Sectional Survey

Cross-sectional surveys are detailed measurements that closely approximate passage cross-section at manual and anemometer air-flow measurement locations for the purpose of obtaining cross-sectional areas to compute volumetric air flow. Cross-sectional surveys are to be made using structure from motion (SfM) photogrammetry to build a three-dimensional model of the cave passage (fig. 5). A high- resolution DSLR camera is used to take a series of SfM pictures along the passage of interest. Depending on the length and complexity of the cave passage and level of detailed desired, two hundred or more overlapping scene pictures are used. A high-accuracy dimensional model will be produced using photogrammetry software (such as Agisoft Photoscan ® or equivalent) . Cross-sectional area will be obtained from the model and used with measured anemometer air flow velocities to estimate cross-sectional flow (Velocity x Area = Flow). Each cross-sectional survey requires 1-2 hours for collecting photographs and 4-12 hours to process the data and produce a model.

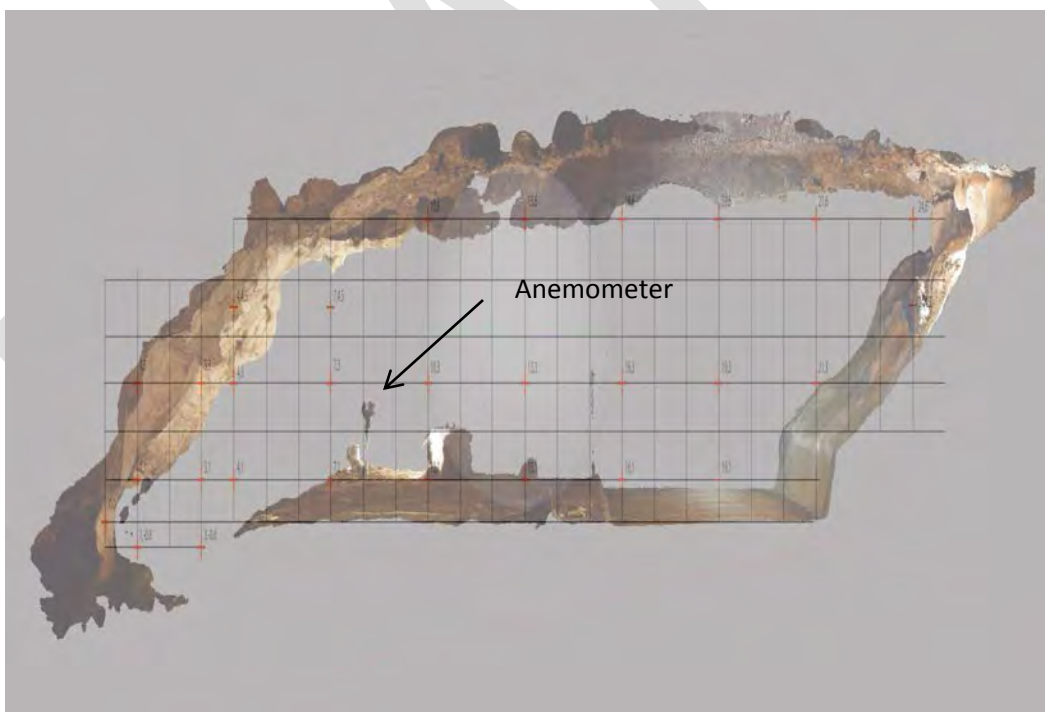

Figure 5. An example of a dimensional cross-sectional model of a cave passage at the anemometer location shown in figure 4. Also shown is an overlay of the grid where manual cross-sectional airflow measurements were taken. View is looking down cave

Temperature and Relative Humidity Monitoring

Continuous temperature and pressure data loggers (such as Solinst Edge®) are to be used to measure and record the temperature and pressure at selected locations inside the cave (such as near the continuous recording anemometer) and outside of the cave.. Relative humidity sensors such as HOBO Pro V2 are used to record temperature and relative humidity. These temperature and relative humidity loggers will record every 5 minutes and provide information on air temperature differentials that may partially drive cave airflow rates. Understanding relative humidity changes inside the cave is important as it changes in response to airflow. Relative humidity also is an indicator of cave-air exchange rates and an important variable in understanding and preserving cave formations, especially if mitigation is needed.

Site Reconnaissance and field visits

Because of the significant investment in equipment and time required for the collection of air flow and VOC measurements inside the cave, and variable nature of VOC concentrations and airflow rates, the selection of air-flow and VOC monitoring locations within the cave is critical to development of a reliable conceptual model of VOC and airflow movement. An initial site reconnaissance of the cave with the owner and knowledgeable staff is important as they have considerable first-hand knowledge and often anecdotal evidence of cave air dynamics and cave hydrology. This will include a careful review of existing cave maps and physical inspection of toured and in some cases remote (off-tour route) areas of the cave to select the best possible measurement locations. Proper equipment for access to remote areas of the cave (hard hats, cave lights, sturdy boots, backup lights, etc.) will be used and access to remote locations will be only with consent of the cave owner. The physical inspection likely will include collection of screening level VOC samples from water and air, screening level manual air-flow, temperature and relative humidity measurements, and photo documentation of locations and dimensional measurements. Site visits will be done in the least intrusive manner as possible and coordinated with the cave owner to avoid disruption of business activities and call the least amount of attention from cave visitors as possible.

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Relevance and Benefits

The project is in the form of a technical assistance request to support to the MDNR in airflow monitoring, and provide technical expertise as they develop a conceptual model for air flow and TCE contamination in the cave. The MDNR will use this information in consultation with various health agencies (U.S. EPA, Missouri Department of Health and Senior Services, Agency for Toxic Substance and Disease Registry) to provide oversight to the cave owner, the PRP, and their consultants on monitoring and possibly mitigation of the TCE (if needed). The USGS Missouri Water Science Center has unique and considerable expertise in cave airflow measurements and VOC monitoring—much of which was developed during recent work with the USEPA at Meramec Caverns. The technical assistance will benefit the MDNR, U.S. EPA, health agencies, and cave owner by providing impartial scientific data as they work on monitoring and, if needed, mitigation strategies. The technical assistance also will provide the USGS the opportunity to expand the scientific understanding about airflow dynamics and VOC transport in karst systems. This understanding and techniques developed for this technical assistance can be applied to other cave systems and issues beyond the immediate human-health concern to broader subjects such as such as characterization of cave habitats for rare and endangered species. The assistance also is within the USGS mission to provide scientific support to other federal agencies and address human health and the environment.

Deliverables

This short-term technical assistance project is focused on collection of airflow and climate data within the cave to assistance the MDNR and other agencies, and cave owner in developing a conceptual model of air flow and VOC transport within the cave complex. Within this limited technical assistance project, there are no formal deliverables to the MDNR other than transmittal of the airflow monitoring data. The USGS will transmit the airflow, temperature, and humidity measurements monthly to the MDNR and other project team members. In addition, the USGS will provide technical advice to the MDNR and other agencies, attend meetings and conference calls, and review documents, as they work to develop a conceptual model of the airflow and VOC transport in the cave.

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General Project timeline and Budget

The data collection project is anticipated to begin in late September, 2016 and continue through May, 2017. This should provide sufficient data to help the MDNR and other health agencies, and cave ownership develop a basic conceptual model of air flow within the cave; however, monitoring should continue over the summer months to capture that extreme temperature season and its influence on cave air flow and VOC levels.

Task 1: Initial site visit and sensor deployment (5 days lead time for mobilization) to include:

- Choosing anemometer/manual measurement locations (primary anemometer probably near back of tour route but a second may be needed at remote location—possibly in Smalley sinkhole).
- Selection of 2-5 manual measurement locations.
- Cross-sectional survey (photogrammetry) at all air-flow measurement locations.
- Installation of monitoring equipment (1-2 anemometers, 4-5 temperature and/or humidity sensors with one set being outside known cave entrances).
- Review of area hydrogeology and topography, possible reconnaissance of Smalley sinkhole. Although not part of the USGS scope at this time, at selected times during the period air-flow monitoring is being done, collection of VOC samples from springs flowing through the cave and field measurements of discharge, temperature, specific conductance of the water should be done to estimate VOC flux and loading to the cave from groundwater

Timeline: Late September, 2016: 3-5 days on site (2-3 people)

Est. Cost: $12,600 (includes equipment deployment and supplies)

Task 2: Routine airflow and temperature monitoring -- includes:

- Operation and maintenance of anemometers and data loggers for 8 months.
- Downloading of equipment.
- Repeat manual airflow measurements at selected locations (monthly).**
- Additional cross-sectional dimensional survey/photogrammetry as needed.
- Collaboration with cave owner/consultants /DNR.

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Timeline: Oct. 2016 – May, 2017: 2 site visits/month (1-2 people)

Est. Cost: $2,275 per month ($18,200 total for 8 months)

** cave air and water should ideally be sampled for VOCs to coincide with selected routine manual airflow measurements. VOC samples of air optimally should be collected at several locations in monthly intervals with bi-weekly sampling at a subset of sites during the fall and spring transition periods.

Task 3: Data Reduction and develop conceptual model of airflow

- Data reduction and reporting (raw data provided to MDNR and cave owner monthly).
- Establish cave ventilation patterns in connection with outside air temp and barometric changes.
- Identify stagnation/low ventilation periods.
- Identify primary source(s) of air exchange.

Timeline Oct. 2016 – May, 2017

Est. Cost: $10,500

Total estimated project cost: $41,300

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Fantastic Caverns: The Only Drive-Through Cave in the U.S.

ConnieR Attractions & Events, Midwest Destinations, Missouri

October 6, 2015 branson area attractions, branson cave, branson caverns, branson caves and caverns, branson ozarks, caverns in branson, caverns in springfield missouri, caverns in teh us, caverns in usa, caves in springfield missouri, caves near branson, caves near sringfield mo, fantastic cavern, Fantastic Caverns, fantastic caverns branson, fantastic caverns branson mo, fantastic caverns canyon, fantastic caverns in springfield missouri, fantastic caverns missouri, fantastic caverns mo, fantastic caverns springfield, fantastic caverns springfield missouri, fantastic caverns springfield mo, in springfield, in springfield missouri, springfield attractions, springfield branson, springfield fantastic caverns, springfield missouri attractions, springfield missouri tourism, springfield no, sringfield caverns, us caverns 0 Comment

Stalactites hang tight to the ceiling. Stalagmites grow from the ground up as calcite from dripping water builds up. When the formations meet in the middle they become a column. I've heard how cave formations build every time I take a cave tour. Yet, I never tire of touring the underground beauty of a cave. Each one is different in its own way, with unique formations, history, and in the case of Fantastic Caverns in Springfield, Missouri, its mode of transportation. Fantastic Caverns is the only cave in the United States that doesn't require walking or climbing stairs. Rather, you ride through in a tram pulled by a jeep. We sat back and relaxed as our guide drove us through the caverns, explaining the history of the cave, as well as its geology.

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History

Fantastic Caverns was discovered in 1862 by farmer John Knox when his hunting dog ran into the opening. Five years later, the cave was opened to the public for exploring. The first explorers were a group of twelve women, all members of the Springfield Athletic Club. Their names are still inscribed on a cave wall.

The caverns changed hands several times over the years and was used for various purposes. During Prohibition, it was a speakeasy. The local police looked the other way for some time, but shut it down when a shooting

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occurred. For a few years after that it was used as a secret meeting place for a local vigilante group. During the Depression the owner grew mushrooms in the cave and sold them at the city center to supplement his income.

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In the 1950s the cave was named Fantastic Caverns and became a popular Route 66 attraction. New owners began giving jeep tours in the 1960s. The caverns also became a country music entertainment venue, home to the nationally broadcast Farmarama show that featured stars like Buck Owens and Ray Price.

The Campbell family, who had managed the property since 1966, bought it in 1992. By then the current visitor center was built, and jeeps and trams were put into service. Fantastic Caverns remains a small, family-owned business today.

Fantastic Caverns development, creatures and geology

The earliest visitors explored by candlelight, but by 1880, the lighting was electrified. Lights were powered by a steam engine before switching to an AC Delco battery system. An indirect lighting system was installed in the 1970s, which shows the cave off better.

Steam engine used to power lights in the early days of the cavern

Along the trail our guide talked about the cave creatures, including the Eastern Pipistrelle bat, the smallest bat in the United States. Most of the

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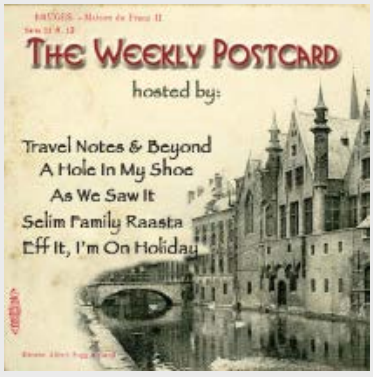

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other creatures, including blind cave fish, blind cave salamander and blind cave crayfish live in the water than runs a level lower than the tram trail. These creatures originally lived outdoors and weren't blind. After two generations, their bodies adapt. A thin layer of skin covers the eye sockets, and they lose pigmentation.

Photo courtesy of Fantastic Caverns

The tour highlight, of course, is the beautiful formations. Our guide pointed out the various formation types and explained how they develop. Darker formations are dormant, no new water dripping on them. Formations still growing are crystal white. The tour finale was huge, beautiful calcite sprials.

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Indian Spring

Following our tour, we hiked the Canyon Trail down to Indian Spring, where the water that emerges from the cave. The spring only flows during wet weather months, and we visited in March, when there had been rain and snow had recently melted.

If you go:

Fantastic Caverns, located at 4872 North Farm Road 125 in Springfield, Missouri, is open daily except Thanksgiving Day, Christmas Eve and Christmas Day. **Check the web site** for hours and admission rates. The temperature in the cave is always around 60 degrees, so dress appropriately.

*Disclosure: Our visit to Fantastic Caverns was hosted by the **Springfield Missouri Convention and Visitors Bureau** and Fantastic Caverns, but any opinions expressed in this post are my own. Photos by Skip Reed.*

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Director

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Governor

Jeff
Dennis

September 28, 2017

Doug Campbell, General Manager
Fantastic Caverns
4872 N. Farm Road 125
Springfield, MO 65803

Dear Mr. Campbell:

Thank you for sharing your concerns with me regarding the impact of government actions on small businesses such as yours. As you have alluded to, the issue of Trichloroethylene (TCE) is particularly difficult given the differing federal regulatory approaches and standards that businesses and states must navigate. I understand that this is made worse by the fact that your small business, and others like yours, is impacted by environmental contamination through no fault of your own. Please accept my assurance that as we go forward the Missouri Department of Health and Senior Services (MDHSS) is committed to working together with you so that any standards we recommend account for the complexity of the issues, that our requests respect your situation, and that you, your management, and staff have the information you need to make health-protective decisions for your business and families.

The principle is fundamental that individuals need to have good information to make good health decisions. However, information about chemical hazards and exposures is often incomplete, conflicting, or uncertain. In such situations, there can be a range in the interpretation of health risks and options to mitigate those risks. Here I have briefly described the reasoning behind the previous recommendations of MDHSS, and I propose that my environmental public health management staff meet with you to discuss more fully your concerns and how to move forward together.

As you note, the federal Occupational Safety and Health Administration (OSHA) enforces a TCE standard for worker exposure that is widely different from the standard adopted by the federal Environmental Protection Agency (EPA). Different situations may call for the selection of one of these, or a different standard altogether. MDHSS has historically maintained that OSHA standards do not apply in workplaces where exposure is solely from environmental contamination. This is not only because those standards are often outdated in relation to current science, but also largely because those standards assume workers are aware of the chemicals to which they are exposed and receive training and equipment to minimize exposures and health risks.

For this reason, MDHSS previously recommended in a December 21, 2016 letter to your attorney, John Price, that Fantastic Caverns inform its employees of up-to-date health information regarding what is currently known and unknown about TCE hazards. Potential public health concerns must be made known to your employees, but we understand the concern you have expressed about the scientific study relied on heavily by EPA in setting its standard. We are reviewing the health messaging we have used in the recent past regarding TCE exposures to more clearly account for those uncertainties and will provide that information to you for your employees. We would then again request that you provide the health information we supply to your employees, and confirm that you have done so.

In addition, MDHSS previously recommended gathering as much information as practical about potential exposures. While we recognize that the sampling efforts at your business have been burdensome, the data gathered to date, including the most recent August data, has been painting a clearer picture of potential exposure and health risks. This data help to clarify how your situation is distinct from any other in the state, and that it should be handled as unique by the federal and state agencies involved. The data also provide information for us to make the best recommendations possible, and for individuals involved to make the best personal health decisions with the least amount of uncertainty weighed into those decisions.

In our previous letter to your attorney, we offered to meet with you to address any questions or health concerns. Such a face-to-face meeting would be beneficial in this complex situation where the OSHA standard is inappropriate, the current EPA standard is not without its own inadequacies, and information about exposures is still being gathered. Also, if your employees have questions after having been provided the current health information, we would be happy to make our environmental staff available to meet with you and your employees together.

MDHSS strives to make recommendations that are reasonable and protective of public health, while recognizing the crucial component that individuals must ultimately decide and act themselves. We do not mandate compliance with our recommendations, but we work to ensure that our recommendations are science-based and trustworthy. We appreciate your participation thus far, and support the ongoing efforts to ensure that the party responsible for the environmental contamination is also responsible for the assessment and cleanup in a way that minimizes impact to your business.

We recognize the difficulty of this situation and that our recommendations affect you, your business, and your employees. We are committed to working with you to minimize any impacts and provide the best possible outcome. I have instructed the Administrator of the Section for Environmental Public Health, Jonathan Garoutte, to reach out to you to discuss further your concerns and to meet with you at your convenience. Please feel free to contact him with any questions at jonathan.garoutte@health.mo.gov, or 573-751-6141.

Sincerely,

Randall W. Williams, MD, FACOG
Director

RW:JG:th

cc: Bret Fischer
Kerri Tesreau