Introduction

The availability of water sources has always been an essential part of surviving in the arid areas of California. The Upper Santa Ana Watershed is one of these regions and has become increasingly interested in current and historical uses of water in order to preserve this region’s critical lifeline. The purpose of my internship at the Water Resources Institute (WRI) at California State University San Bernardino was to participate in the research and organization of the WRI’s collection of this information. My primary goal was to make this information, already in the WRI collection, easily accessible to future researchers.

Lytle is Vital Project

My primary focus was to find documents pertaining to the Lytle Creek Area of the Santa Ana Watershed. Shortly before internship with the WRI began, the institute had begun a project called “Lytle is Vital.” The goal of that project was to inform the public about preventing contamination of their water sources and conserving water by changing wasteful habits. I worked on a team of interns of many educational backgrounds, such as, Anthropology, Computer Science, Photography, Biology, and Communications. Through meetings and communication we all worked to promote and encourage conservation habits and get the community to realize that our drinking water supplies will be destroyed if we do not protect them. My portion of the effort was to search the WRI’s archives to gather the information available about Lytle Creek to inform the work of the team members in the field. I created a new section in the Archives for documents that only concerned Lytle Creek, to make future searches more intuitive.

Below is a photograph of the specialized Lytle Creek area of the archives.

In the process, I also learned how I could apply my skills within a professional setting to accomplish complex tasks. In order to familiarize myself with the project area, I attended the “Lytle is Vital” kickoff event and got a first-hand look at how important the overall
project is to the Lytle Community. Seeing the problems of the Lytle Watershed in their native context left me feeling that our project would really affect the community in a positive way.

Below is one of the articles that have appeared about our efforts. This article, featured in The (Lytle Creek) Canyon News, is about the “Lytle is Vital” project. The photo in the upper right shows me (in the striped shirt) demonstrating to children how to make planters from recycled newspaper. The children were then given native plants to take home in the planters, as a way to promote water-conserving gardens. I also told them why protecting our water sources is so important.

**LYTLE IS VITAL KICKED OFF IN AUGUST**
By Jennifer Kimmel, WRI intern

Hundreds of people attended the Aug. 3 kick-off event for the “Lytle is Vital: Watershed Protection Program,” at the 11th Annual Lytle Creek Community Charity Car Show. The Water Resources Institute, and Lytle is Vital partners Inland Empire Resource Conservation District, Santa Ana Watershed Association, and the Fire Safe Council had booths at Green Mountain Ranch event. The Conversation-On-Wheels (COW), a mobile educational display, was also present at the Applewhite Picnic grounds just up the road from Green Mountain Ranch, with information about the water quality testing taking place in the creek under the auspices of Prof. James Noblet.

Lisa Pierce, Gigi Hanna, Susan Lien Longville, along with WRI interns Jennifer Kimmel, Angelique Santiago, Karen Travis, Nick Perry, and Brian Spears were present at the WRI booth, handing out information about the Lytle is Vital outreach program, demonstrating a novel use for used newspapers and giving away about 100 water-conserving plants. The WRI gave away small yarrow (*Achillea millefolium*) plants as a way to introduce the topic of native plants as a water conservation method. The plants were placed into small planters that visitors to the booth made out of recycled newspapers.

Ellen Pollem from the Lytle Creek Fire Safe Council handed out brochures about defensible space, planting lists for fire-resistant plants, weed abatement techniques and laws, and techniques for trimming trees. Potholders and pencils, with Fire Safe Council information located on the items, were also passed out.

Mandy Parkes from the IERCD and Dolly Aguirre from SAWA spoke with attendees about Lytle Creek and the services their respective agencies offer area residents. They displayed promotional

**Geographic Information Systems (GIS)**

Part of my internship involved completing 20 hours of training in the Geographic Information System that the WRI uses. With no prior knowledge of GIS, I have learned during this internship how useful it can be, especially for historians like myself.

Specifically, the GIS component of the internship involved me completing tutorials on: Learning ArcGIS Desktop, Georeferencing Rasters in ArcGIS, Creating and Maintaining Metadata Using ArcGIS Desktop, The 15-Minute Map: Creating a Basic Map in ArcMap, and Turning Data into Information Using ArcGIS 9. All of these courses
taught me skills to preserve rare, aging, and decaying maps from the WRI Collections by translating them to a lasting digital format. Digital Library Science has become the way of the future, and desire to convert holdings into digital formats is high, because original copies can be protected from further damage once there is a digital copy available for use. Digital copies are great to have because they are easier to store, and can be accessed remotely.

A major component of my internship was to scan important maps and documents to the WRI’s databases to make then easier to obtain through the WRI’s website. Most of my GIS experience was to geo-reference important maps and input their data into the WRI’s servers for future use. For example, I took a U.S. Geological Survey map, called Major Components of Surface-Water System in the San Bernardino Area, and, with GIS technology, created a new GIS map, shown below.

A map used to see a current view of water use in the San Bernardino area.
The map I used as an outline contains constructed canals, ditches, some important landmarks, and pipelines over the years of 1840 to 1940 in the Lytle Creek Area. These can now be used as layers in GIS for future use and analysis.

**Bringing the Past to Life with GIS**

Historians are always concerned with some basic questions as they analyze history, but sometimes even the simple questions become vague and hard to answer, in addition to “when,” “who,” “what,” “why,” and “where,” a historian can use GIS to effectively explain these types of questions. GIS is an excellent tool for the historian’s tool kit because it can show changes over time in a certain area. For example, a fellow intern and I created a map of San Bernardino ditches when people first settled in San Bernardino and how it has changed over the decades. This can be useful for planning and other purposes.
Another example of how GIS can help people tell a story of the past can be illustrated by a project by another WRI intern, who used GIS technology to map all of the Indian Trails in California before Europeans arrived. I was surprised to find that Route 66 was an Indian trail long before it became an historic highway, or became memorialized in song. The uses of GIS for history are limitless, and it is a way that we can bring the past to life through technology, to tell a story from a different approach, with a technological voice.

Digital Library Science and Metadata

I also discovered the importance of metadata, which is basically data about data. I realized that having information about a map, document, or picture is very important. It provides the information that is needed for resources to be used like a biography. GIS borrowed the concept of metadata from the field of library sciences, which used it to catalog information. I learned that it is important to have correct metadata to be able to use and share anything in the GIS and Archive fields. Sometimes titles are misleading, but by checking metadata a person will know exactly what that resource is and what it can be used for. For example, I could not remember where I’d found the “Lytle Creek Diversions” map, pictured above, so I checked the metadata to find it quickly.

WRI Archives Document Search Engine by Watershed

The WRI wanted to make its online search databases easier to use for people with little or no GIS experience. Being fairly new to Geographic Information Systems, I was a natural choice to figure out how to make their database better and more user friendly. To accomplish this, part of my internship included writing instructions on how to use the searchable databases and recommend changes to GIS search engine itself. Also, to make the archive document search engine more useful, I added hundreds of documents to the database, so people could know exactly what is available.
Santa Ana Watershed document Search Engine:  
http://wrigis.csusb.edu/docsearchProject/Default.aspx

Archival Management

I obtained many skills during my internship at the WRI by doing actual archive work. With the help of WRI archivist/historian Suzie Earp, I learned how to correctly repair damaged books and maps with the proper materials, such as acid free tape and boxes, which are an important parts of acceptable preservation methods.

This map was ripped in half and badly damaged, but is now in working order.
In addition to proper repair techniques, I also learned how important it is to make an archive accessible or “friendly” to its users. The majority of people who use the WRI archive are concerned with a particular area or watershed, so instead of arranging this archive in alphabetical order, or by author, the archive is categorized by place. Organizing the archive by place, Lytle Creek for example, provides researchers quick access to what they need to find about a particular water issue. I also assisted Suzie with donations and acquisition of new archive materials from various sources. In the process, I learned that people donate documents to the WRI, so they can maintain access but not worry about storage. An Archivist must cull through the documents offered and decide what is useful and what is irrelevant to that archive’s researchers, because some documents fall outside of an archive’s collection criteria, such as personal memos, numerous duplicate documents, or financial records. I assisted Suzie with dating maps by doing research and observing features that have changed with time, such as countries, cities, bridges, highways, etc.. Ultimately, I learned that archival practices are not set in stone, and whatever can be done to make an archive more useful and practical, when time and money permits, is the best course of action.