Cultural Section

SECTION 1

Wild River

In the past, the Colorado River was a river that could be a rampaging giant, a spawner of killer and destructive floods in the spring that, like a chameleon, turned into a placid trickle of water in the hot, dry months of summer.

The rivers' characteristics are described clearly in Justice Black's opinion in *Arizona vs. California* (1963):
"The Colorado River itself rises in the mountains of Colorado and flows generally in a southwesterly direction for about 1,300 miles through Colorado, Utah and Arizona and along the Arizona-Nevada and Arizona-California boundaries, after which it passes into Mexico and empties into the Mexican waters of the Gulf of California. On its way to the sea it receives tributary waters from Wyoming, Colorado, Utah, Nevada, New Mexico, and Arizona. The river and its tributaries flow in a natural basin almost surrounded by large mountain ranges and drain 242,000 square miles, an area about 900 miles long from north to south and 300 to 500 miles wide from east to west – practically one-twelfth the area of the continental United States excluding Alaska. Much of this basin is so arid that it is, as it always has been, largely dependent upon managed use of the water of the Colorado River System to make it productive and inhabitable. Arizona, page 552."

In the desert, even a small stream is king because there is no competition for the job. So it is that the Colorado River is the most important source of surface water for the thirsty deserts of California and the Southwest.

Early Settlers Along the Colorado River

When the first Europeans discovered the Colorado, they found it to be totally unpredictable, and often a raging barrier. It was impossible to cross at flood stage, but they could practically walk across it during dry periods.

To the pioneers, the river had few redeeming attributes. So encumbered with silt, it was dismissed as "too thick to drink and too thin to plow." It was not considered a navigable stream. For a time, shallow-draft streamers operated on the river between the Gulf and Fort Mojave (now Needles). Captains never knew from one day to the next if they would be stranded on a sand bar or sheltering from a raging flood. All the boats were eventually wrecked. It was dangerous and unprofitable, and no good could be seen in the river.

Geologist John Wesley Powell, the first man to traverse the Grand Canyon by water, reported the river would never be of beneficial use.

Settlers At the Sea...

Settlers soon began to come in, mutual water companies were organized, and before April 3, 1902, four hundred miles of irrigation ditches had been dug, and water was available for 100,000 acres or more of irrigable land.

Meanwhile, the future of the Imperial Valley was seriously imperiled by unfavorable reports concerning its soil. In the early part of 1902, the Bureau of Soils of the US Agricultural Department published the results of a survey of the irrigable lands in the Colorado Desert. They reported that the lands were so impregnated with alkali that very few things could be successfully grown on them. The report said in part,
"One hundred and twenty-five thousand acres of land have already been taken up by prospective settlers, many of whom talk of planting crops which it will be absolutely impossible to grow. They must early find that it will be useless to attempt their growth .... No doubt the best thing to do is to raise such crops as sugar beet, sorghum and the date palm (if the climate will permit), that are suited to such alkali conditions, and abandon as worthless the lands which contain too much alkali to grow those crops."

This report was widely quoted and commented upon and was a real deterrent to further colonization. If it had been issued two or three years earlier, it might have been fatal to the whole irrigation project. Fortunately, though, the crops raised by a few farmers who had already been cultivating this "alkali impregnated" land proved conclusively that the report of the analysis of the soil made by the Government experts was unduly pessimistic, if not wholly erroneous.
Almost everything that was tried did grow, in spite of those expert predictions, and the practical experience of the farmers gradually revived public confidence and interest in the irrigated lands. The colonization and development of the valley proceeded rapidly there were two thousand settlers on the ground at the end of 1902. There were seven thousand in 1903 and ten thousand in 1904.

A branch of the Southern Pacific Railroad was built through the Valley from Imperial Junction to Calexico and Mexicali; town sites were laid out in six or seven different places; the water system was extended by the digging of nearly four hundred additional miles of irrigation ditches and canals, and before the first of January 1905, one hundred and twenty thousand acres of reclaimed land were actually under cultivation, while two hundred thousand acres more had been covered by water stock.

The observed fertility of the soil completely discredited the reports of the government experts and more than justified the prediction made by Professor Blake a half century before. Grapes, melons and garden vegetables matured in the Valley earlier than in any other part of California; barley was a profitable crop; alfalfa could be cut five or six times a year; and the finest quality of long-staple Egyptian cotton yielded more than a bale (500 pounds) to the acre. Experiments proved also that the climate and soil were well adapted to the culture of grapes, grapefruit, oranges, lemons, olives, figs, dates, apricots, pomegranates, peaches and pears.

The fear that men would not be willing or able to do hard work in the hot climate of the Valley proved to be wholly groundless. The Valley heat was a dry heat, much easier to bear than the very humid heat of much of the country in the summer time. Under these favorable conditions, it seemed almost certain, in 1904, that the Imperial Valley had a great and prosperous future.

In the winter of 1905, the California Development Company made a cut into the Colorado River to create a new canal. Unfortunately, the annual spring floods came sooner than the company expected, and with no flood control gates, massive flooding ensued throughout the Imperial Valley. For two years the Colorado River poured into the Imperial Valley destroying settlements, farms, and thousands of acres of prime farmland.

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Aloha, Eugene Singer

California Water, Arthur L. Littleworth and Eric L. Garner (GET PERMISSION)

Colorado River Water User Association

SECTION 2

Control of the River

With the constant threat of flood looming along the wild Colorado River, demands grew for some sort of control of the river. As more states wanted water from the River, the seeds were sown for a decades-long battle over apportionments. Then in 1922, the Colorado River Compact was hammered out to apportion the beneficial consumptive use of the river's water between the upper and lower basins. The dividing point between the two basins was set at Lee Ferry near Page, Arizona. The upper basin states include Wyoming, Colorado, Utah, and New Mexico; the lower basin states are Arizona, Nevada, and California. Both upper and lower basins were allowed 7.5 million acre feet (MAF) per year; provided no less than 75 MAF for any ten-year period to flow from the Upper to the Lower Basin; and provided that the Upper and Lower Basins share any obligation to Mexico.

The Colorado River Compact included representatives of the seven states who negotiated the historic compact to remove causes of present and future controversies surrounding apportionment of the river's waters. The Compact provided adequate water for present needs in the Colorado River Basin and protected the water rights of those states that were not growing as fast as California.
But those who signed the compact at that time could not have predicted the enormous urban growth in the desert southwest. Perhaps the biggest problem with the 1922 compact was its mistaken belief that the river's yield was between 20 and 21 MAF annually. Actual annual flow is closer to 15 MAF, thus the river was oversubscribed.

After considerable maneuvering in Congress, legislation that cleared the way for the Boulder Canyon Project Act of 1928 that divided the Lower Basin entitlement: 2.8 MAF for Arizona, 0.3 MAF for Nevada, and 4.4 MAF for California. California was also entitled to 50% of any surplus water available to the Lower Basin. This law also authorized the construction of Boulder (now Hoover) Dam and its reservoir, Lake Mead. Completed in 1935, the dam was the first big step toward harnessing the wild, often violent river. Authorization to build the Imperial Diversion Dam and the All American Canal to the Imperial Valley was also granted at this time.

The Upper Basin Compact of 1948 divided the entitlement between the Upper Basin states. However, since the residual amount available each year for the upper basin was variable, those states agreed to divide water among them on a percentage basis, with one exception – Arizona would receive 50,000 acre-feet for its small upper basin area. As for the rest, Colorado would lead in the list of allotments with about 52 percent; Utah with 23 percent; Wyoming with a 14 percent share followed in order; and New Mexico would have about 11 percent for its uses.

In 1956 the passage of the multi-provision Colorado River Storage Project Act allowed the upper basin states to develop use of their share of the river's water, resulting in the construction of a number of facilities, including Glen Canon Dam and Lake Powell, the second of the two major dams on the main stem of the Colorado.

The river is now kept in check by over 30 dams that supply water to nearly 30 million people and irrigate approximately 6,000 square miles of agricultural land as well as controlling the flooding along the river.

The dams also provided water for agriculture irrigation, municipal and commercial needs, industrial needs, and the increasing power demands.

Power at the River

One of the major benefits of placing dams on the Colorado River is the production of hydroelectric power. The annual production of electricity from the hydroelectric plants in the upper basin is 1,804,857kW and 2,438,800kW in the lower basin. It not only meets the water and power needs of the nearly 25 million people within the basin states and adjoining areas, but many more when you include those south of the border in Mexico.

Urban Use along the River

Throughout the seven basin states, the Colorado River provides water for people, business, and industry creating jobs for millions, jobs that contribute mightily to local economies and billions of dollars to the nation. Cities such as Phoenix, Salt Lake City, Denver, Albuquerque, San Diego, Rock Springs, Las Vegas, Los Angeles and many others that are less well known but with one major commonality, rapid growth. Often having to face tremendous physical obstacles to reach the areas of need, the river's water travels through man-made channels over mountains and across 242 miles of desert in California to its coastal cities.

California 4.4 Plan

The Colorado River Compact designated California, Arizona, and Nevada as the "lower basin" states. The compact stated that both the upper and lower basins were to receive 7.5 MAF (million acre feet) of Colorado River water, with 4.4 MAF appointed to California.

In 1931, the California Seven-Party Agreement established priorities for California's entitlement among seven stakeholders. The first 3.85 MAF is allotted for Imperial Irrigation District, Coachella Valley Water District, Palo Verde Irrigation District, and the Reservation Division of the Yuma Project. The next 550,000 AF allotment is to the Metropolitan Water District of Southern California (MWD). If surplus water is available, MWD is entitled to an additional 550,000 AF, the City and County of San Diego is entitled to 112,000 AF, Imperial Irrigation District and Coachella Valley Water District, and Palo Verde Irrigation District (16,000 acres) are entitled to 300,000 AF of surplus water.

Although the Colorado River Compact of 1922 did not provide for a specific entitlement of Colorado River water to Mexico, it did specify that the Upper and Lower Basins share the obligation to provide water to Mexico when surplus is not available. The Mexican Water Treaty of 1944 guaranteed Mexico 1.5 MAF per year, with the possibility of an additional 200,000 AF in years of surplus. Therefore, in years of no surplus, the Lower Basin's share of Mexico's entitlement (750,000 AF) must come from the Lower Basin entitlement of 7.5 MAF.

Control at the Sea...

After the breach was controlled in 1907, the sea no longer had an inflow that would maintain its water level. Because of this, the Sea was thought to dry up in about 10 – 20 years. With the controlling of the River and

the distribution of water to agriculture fields, agriculture expanded. In 1924 President Calvin Coolidge declared the Sea as an agricultural sump, which would collect all agricultural runoff as well as give the Sea an inflow that would preserve its water level.

Agriculture at the Sea

Prior to 1900, commercial agriculture in the Imperial Valley was non-existent. It was not until soil tests were done that the soil in the Valley was found to be rich and perfect for farming. The problem the farmers faced at this time was getting water for irrigation. All that was readily available for irrigation was a minimal amount of rainfall and the nearby head ditch that had very little water. In the fall of 1901 settlers started to flock to the area and by December of that year, about 8,000 acres of land were being prepared for cultivation. By 1904, the settler's population reached 9,000 and the amount of farmland being cropped had grown to 150,000 acres. Eleven years later in 1915, the number of acres covered in crop reached a remarkable 300,000. Today the Imperial Valley's agricultural lands are spread out roughly over 572,286 acres while Coachella Valley covers about 56,600 acres. The expansion of these agricultural lands, and the creation of a billion-dollar agricultural industry, could not have been accomplished without the control of the Colorado River and the creation of the All American and Coachella Canals.

Construction on the All-American Canal started in 1934 and was completed in 1942. The Coachella Canal broke ground in 1938 and ten years later was finally finished. With the completion of these two canals, water could now be distributed to farmers all over the valley, which directly lead to the explosion in agriculture acreage and value. The Colorado River water that is brought to the Imperial and Coachella Valleys is actually returned to the rest of the nation, and some of the world, in the form of food. A year-round climate characterized by a temperate fall, winter and spring and a dry summer, allow for year-round crops, making the valleys' farmland among the most productive in the world. Because of this moderate climate, these two valleys are able to grow winter vegetables where most farming in the "Bread Basket" is unable to because of the frigid temperatures. The vegetables that are produced during this rare time of year are and important in supplying produce to the nation.

Power at the Sea...

The first electric energy produced at the Salton Sea was in 1903 by W.F. Holt when he conceived the first hydroelectric drop in Imperial Valley. Holt's company, Holton Power Company, provided light and power to the entire Imperial Valley until 1916, then sold his company to the Nevada California Company (Nev-Cal).

The All-American Canal was completed in 1942 to supply water to the agricultural fields and to create electrical power along the canal, which would help repay the construction cost of the canal. Subsequently, in 1943, Imperial Irrigation District (IID) purchased the facilities of private power companies in the Imperial and Coachella valleys, which allowed IID to transmit and distribute power over a large and growing area. Today, IID provides power to over 95,000 customers and produces over 500MW of power.

Colorado River Water Users Association

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IID

Amrivers.localweb.com/20-6.html

California 4.4 Plan and Water Transfers re-written from www.acwanet.com/waterfacts/colorado.html

SECTION 3

The Beginnings of Environmental Consciousness

Through the mid 1900's, American people were focused on controlling the environment and how the land could provide for the growing needs of Americans. There had been a trust by the general public toward the scientific community and the government and did not commonly question what was being produced, or how it was affecting the environment and the people living in it. However, in 1962, Rachel Carson wrote *Silent Spring*, which was the first book that opened the eyes of Americans to the negative affects of scientific products. Carson's book alarmed Americans by exposing the harmful effects of chemicals that were poisoning our lakes, rivers, oceans, including the people and animals that live in or around them.

This new awareness that the American people possessed grew and became the beginning of a nationwide movement to protect the environment, which would allow man and nature to exist simultaneously in present and future times. There became a growing concern of how Americans were exploiting the land to provide for themselves. This movement that spread across the nation carried enough weight that legislation soon became a tool in protecting the environment.

In 1969, the National Environmental Policy Act passed and the Environmental Protection Agency was created. This was the first major U.S. environmental legislation in which Congress declared, "that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." This act signified the concerns of Americans for the environment and what actions were needed to preserve it.

In 1973, another act was passed that further supported the mindset of the times, the Endangered Species Act. In 1977, the U.S. Supreme Court upheld the 1973 Endangered Species Act and stopped construction of the Tellico Dam. In 1975, Law professor Zygmunt Plater and student Hiram Hill filed the first petition under the Endangered Species Act. They called on the Department of the Interior to list the snail darter as an endangered species. The snail darter is a small fish that lives in the Little Tennessee River below the Tellico dam site. In 1976, zoologist David Etnier, who discovered the snail darter, joined Platner, Hill and others in filing a lawsuit to stop construction of the dam.

On May 25, 1976, a judge ruled that it was too late to stop the project. The government had already spent $80 million and the dam was almost finished. But the plaintiffs appealed and on June 15, 1977, in the case of Tennessee Valley Authority vs. Hill et al., the Supreme Court ruled to suspend construction. Chief Justice Warren Burger wrote in his opinion, "It is clear that Congress intended to halt and reverse the trend toward species extinction whatever the cost." With this victory for the environment, progress

and development now had to consider the thought, "should we do it" instead of "could we do it".

Ecology Hall of Fame-Environmental Movement Timeline

REC DEV MIX

Boom

The 1950's saw the "Boom" of Salton Sea recreation. The introduction of the sport fish Corvina to the Sea started a sport fishery that attracted large amounts of fishermen. Boaters soon followed and the Sea quickly became a major tourist attraction. California in the fifties was all about a growing population and huge land developments. The biggest and most successful developer at that time was M. Penn Phillips. His success ran up and down the Pacific Coast with developments as far south as Mexico and as far north as Oregon. Phillips saw the Salton Sink as the "Salton Riviera" and was determined to build the jewel of this Riviera, Salton City. Phillips said his company would provide everything that Salton City would need to compete with such places as Palm Springs. This new paradise would have marinas, a country club, championship golf courses, a recreation complex, shopping centers, a private airstrip, resorts hotels and much more. "Some $20 million (in 1958 dollars) would be invested in roads, sewers, water mains, telephone lines and other infrastructure." In 1955, the Salton Sea State Park was dedicated and became the second largest State Park in California. In 1962, the expansion of the North Shore Yacht Club made it the largest marina in Southern California. Celebrities flocked to the Sea including Bing Crosby, Sonny Bono, The Beach Boys, Jerry Lewis, and the Marx Brothers. Championship golf courses were built in 1963 and attracted the likes of Desi Arnaz, Tommy Bolt, Harry James, and Johnny Weismuller. In its hay day the Salton Sea was a home to over 400,000 boats and 16 campgrounds. People from all around came out to the Sea for various activities such as camping, water skiing, fishing, jet skiing, hiking, bird watching, windsurfing, and boating. The mid-seventies saw park attendance average over 500,000 visitors per year, rivaling the mighty Yosemite State Park. The Sea was now seen as a promising desert oasis and attracted many developers who wanted to be part of California's newest recreational hotspot.

Bust

Unfortunately, the dreams and promise of the Salton Sea were about to come crashing down. Towards the end of 1960, M. Penn Phillips bailed out on the entire Salton City project and proceeded to sell all interests in this project. After a while, the Texas based Holly Corporation bought the Salton City project and promised to accelerate the pace of construction. Promoting the city project, Holly brought a giant 500-mile boat race to the Sea hoping that the publicity would create more interest into the Sea and its expansion. Shortly after, Holly realized that Salton City could not succeed just as a resort town so they tried to lure industry plants to the area. Holly managed to land one plant, but after several years of headaches and shoddy construction, the plant left town. The dream of a wonderful Salton City paradise was dwindling very quickly. Between 1975 and 1976, two 500 year storms, hurricanes Kathleen and Doreen, pounded Southern California and dropped a massive amount of water on the lower basin which caused local businesses, homes, and Yacht Clubs at the Sea to be flooded over. The remaining developers pulled out of their contracts because the inconsistency of the Sea's shoreline. Another reason for the decline of the Sea was the creation of local, freshwater lakes such as Lake Perris and Lake Silverwood, which lured boaters away from the Sea. The final component in the Sea's downfall was that people began to fear

the Sea. Reports of pollution, pictures of massive fish and bird die-offs and a horrible smell emulating from the Sea, were more than enough to drive people away. Things became much worse for the Sea when selenium was discovered in fish, which caused a large bird die-off and mutated offspring. Soon after, the Sea hit its lowest point since its inception, when it recorded only 87,000 visitors for the 1994/1995 fiscal year.

Recreation Rebirth at the Sea

There is some good news in the recreation venue. For the last four years visitation at the Salton Sea has increased significantly. The park has been humming along at around 250,000 visitors each year. Currently there are several areas where visitors can enjoy the Salton Sea. The Salton Sea State Recreation Area offers a visitor center, trails, camping, day use, hiking, fishing, boat launch and wash facilities, and plenty of beaches to stroll upon. At the park they provide educational seminars, interpretive programs, kayak and jet boat trips, they host school groups and teachers bent on learning about this great lake. The Sea also has one of the most productive fisheries in the world, as many as 200 million fish may exist in the Salton Sea. The Sonny Bono Memorial U.S. Fish and Wildlife Service Refuge on the south side of the Sea offers a visitor center, trails, bird watching towers, and some of the best birding available at the Sea. Wister Game Reserve, a California Fish and Game facility managed for waterfowl hunting, is available for the sports enthusiast. Wister also offers a unique opportunity to view some of the thermal and tectonic seeps known to exist along the shore, and even now under water. These are mud pots that fuss and bubble and continuously build cones, very interesting and fun to watch. But use caution, some are hot! On the West Side of the Sea there are some pleasant trailer parks, and hiking trails. Some services are available in the small cities along the shore of the Sea, restaurants, service stations, grocery and all-purpose stores can be found. Interesting day and half day trips from the Salton Sea include the Bradshaw trail, the 1800s stage route that carried travelers into California from points east still exists and can be traveled upon via four wheel drive. There are also the Salvation Mountains east of Niland or the post apocalyptic looking half submerged towns, and facilities, or the picturesque vistas, and soothing sounds of playful birds. California State Parks is happy to announce a face-lift for the Salton Sea State Recreation Area, including new fishing jetties, boat launch and harbor facilities. Upgraded campgrounds and day use areas, improved and more pleasing parking areas, expanded trails and visitor centers are all in the planning.

Authors?...

SECTION 4

Growing Urban Populations

In the past, California has depended on the surplus water from Arizona and Nevada to supply the extra water needed to support the rapid growth in Southern California. However, Arizona and Nevada are also experiencing rapid growth and need their entire amount of allocated water, thus putting more stress on California.

In 1996, California was instructed by Interior Secretary Bruce Babbitt to decrease its dependence on the surplus water from Arizona and Nevada and to create a means to stay within its 4.4 allotment. Since that time the seven stakeholders been involved in negotiations to create a plan for California to live within its 4.4 MAF entitlement.

Water Values – Shifting from Agriculture to Urban (Water Transfers)

One solution to meet the increasing demand on water is to transfer water from one stakeholder to another under a contractual agreement. Water transfers, however, take time and money to refine agricultural conservation methods to be able to have the extra water to transfer. Nevertheless, there is still substantial controversy over this approach.

Today, there is discussion of two proposed transfer agreements. One is the selling of conserved water from IID to San Diego by way of the Metropolitan Water District, and the other is the Arizona Groundwater Bank, in which California cities would store groundwater in the Arizona desert. Both of these transfers require major changes from current methods and may have many economic and environmental impacts.

Many authorities are concerned with the cost of transferred water. In some cases stakeholders do not pay for the initial water they receive from the Colorado River and they are selling the water at a low price to their local customers, as low as $15.00 per foot. Whereas, the water user at the "bottom of the barrel" receiving the transferred water may have to pay as high as $300.00 per foot.

Environmental impacts are also a great concern. For example, if the transfer agreement is approved between IID and San Diego the Salton Sea intake will decline because of the lack of agriculture run-off into the sea. This action could lower the level of the sea, thus, posing a threat on all living things along the shoreline as well as affecting local agriculture with seafloor dust blowing into the fields.

These transfers also promote a change in water values from agricultural use to urban use. Nevertheless, the agriculture to urban water market is a becoming a more common solution to the growing demand of water.

Conservation in the Salton Basin

The Imperial and Coachella Valleys use some of the most advanced methods of conservation. Water conservation measures have included concrete lining canals, construction of reservoirs and interceptor canals, implementing canal seepage recovery programs and additional irrigation management measures. Water transfers and conservation agreements with other agencies have also proved to be a valuable approach in water conservation.

California 4.4 Plan and Water Transfers re-written from www.acwanet.com/waterfacts/colorado.html

Conservation – Walker, IID