

FOUR SQUARE

Video Script

Title: San Diego Water

Draft: 1

Date: 7/12/04

Written By: Michael Jones

Page 1

VIDEO

Sepia/scratchy shot of rain coming down, animated over a forest landscape then historical still photo of SD

C/U rain being collected in bucket.

Reservoir and old dam.

Old time well hand pump, squeaking noise.

Another sepia shot of old SD with rain over.

Rain stops.

Cut to color-High energy montage of SD tourist attractions like: Zoo, Sea World, Legoland, Mission Bay, Mission Valley, Torrey Pines golf, the beach...all fun stuff

Montage slows but continues...

Ending on reservoir shot.

Aqueduct shots with water moving.

AUDIO

Scene 1

SDFX: Rain & Thunder

In the early days, everyone in San Diego got their water by collecting it...either in buckets, damming up runoff in lakes, or pumping it from underground wells fed by rain and snow run off.

Scene 2

But the whole area of San Diego could collect only enough water to serve just 100,000 people, so pretty soon... that didn't work any more.

Scene 3

High energy MX for montage

Scene 4

MX Under.

Ah, yes! This is our San Diego of today...that "just-right" mixture of culture, entertainment, weather, jobs and lifestyle...in a desert...and all made possible with water.

Scene 5

MX changes.

In order to keep up, San Diego began having to buy water from outside the area

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More Aqueduct shots of water moving.

Shots of cars MOVING on freeway not jammed.

Shots of chemical glassware in use, with pure water. Actual lab, tabletop, or stock-still.

Point Loma treatment plant.

Water coming out scruffy pipe (stock shot, or shot of drainage ditch)

Shots of North City Water Reclamation Plant.

Pink pipes at plant

Recycled water being used for irrigation.

(check fact) in the early 1900's. Today, we still import most of our water via aqueducts from the Colorado River, and the State Water Project in central California.

Scene 6

But because of the continuing regional drought, and competition from other states, that will not be enough water for the growth San Diego expects. So planners have turned to another alternative, one that was here all the time, but was not feasible because modern science had not found a completely safe and economical way to take advantage of this resource...until recently.

Scene 7

MX changes.

Since 1987??, San Diego has been prohibited by law from dumping treated wastewater into the ocean...as had been the practice for many years.

Scene 8

So, San Diego began processing this wastewater, and then distributing it through a separate pipe network for use in agricultural irrigation and industry.

Scene 9

But because of seasonal demands,

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Shots of signs. (Palomar Airport & I-5, on the fence at TGI Friday's on NE corner of freeway entrance going north)

Table Top Shot-Teakettle with steam condensing on glass held over steam spout.

Shots of a person looking out from a viewpoint on 101.

Over background of ocean
Super:

"Freshwater from seawater is 450% more costly to produce than freshwater from waste water"

(Note-please check my math here. Based on \$2K/AF for seawater, and \$540/AF for repurification water. 325,781 gal/af)

AUDIO

agriculture and industry were not able to use all this treated non-drinkable water, and some of it, which now met EPA standards, again was dumped into the ocean to become a wasted resource.

Scene 10 MX changes

OK, a little purification chemistry needs to be explained here. Since the dawn of man, we have been able to purify water by boiling it, capturing the steam and letting it cool back into distilled, absolutely pure water.

Scene 11

A natural assumption, as you look out from the 101, is that our beaches hold back literally trillions of gallons of water...but it tastes awful and is laden with salt. So you ask, why not just boil seawater to make it drinkable?

Scene 12

Well, that is a very expensive way to purify water because you have to apply \$7.80 worth of heat and distribution costs to 1200 gallons of seawater to get 1000 gallons of drinkable water. In contrast, the water we could repurify now would cost only \$1.70 for 1000 gallons delivered to the tap in your home.

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Still from animation to be used later showing "treatment train".

(Best diagram of treatment is left hand pg.22 of City of SD Water Reuse Study 2005-White Paper)

Aerials or street-level shots of SD and county areas.

Super: *Simple graph of population increase, against water demand increase*"

Aqueduct shot: (Best diagram of water sources is pg.25 of City of SD Water Reuse Study 2005-White Paper). But use a live shot here also in conjunction with .pdf map.

Super: Graphic of sources of water by percentages:

Imported 82%
Conservation 8%
Local Runoff 8%
Recycled 2%

AUDIO

Scene 13

This is where modern science comes in. Using a collection of new filtration and treatment processes lumped together into a "treatment train", wastewater, of which we have plenty, can now be turned into drinkable water for a reasonable cost.

Scene 14 MX changes

The population of the San Diego area is expected to increase by another 1 million people in the next 15 years. That's a 35% increase. That translates directly into a 30% increase in demand for water.

Scene 15

Today, 80-90% of the water San Diego uses is imported...two-thirds from the Colorado River, which will be important to remember later, and one third from the State Water Project. A decade-long drought, coupled with increased demands from Arizona and Nevada for their share of that water, is quickly making those sources unreliable. The remaining 10% of our water comes from rainfall runoff and recycled water. Incidentally, the voluntary conservation program developed and implemented by San Diego has reduced overall water use by

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Water in reservoir as B/G plate for Super:

“Recycled water-some treatment for use in irrigation and industry

Repurified water-substantially more treatment for eventual return to drink water supply”

Shots of landscape watering in SD. Pictures of PURPLE fixtures and valves.

Super: *“Recycled Water”*

Shots of business exteriors or logos

AUDIO

8%.

Scene 16 MX changes

Now, it's time for a few definitions. Recycled water is wastewater that is treated so it can be used for agricultural irrigation and various industrial uses, but not drinking. Repurified water is recycled water that has been treated significantly more with a variety of hi-tech procedures, so it can be reintroduced into the drinking water system.

Scene 17

For more than 30 years, recycled water has been used throughout San Diego in recreational lakes, sprinkler systems, crop irrigation, manufacturing and commercial buildings. Landscape irrigation uses the most recycled water. Recycled water is also used for industrial processes, cooling towers, soil compaction, dust suppression and commercial buildings. California state provides rules for this usage, but the most recognizable way to spot recycled water in use, is to look for the purple fixtures and signs.

Scene 18

Some of the area's largest businesses have

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Drinking water shots that are available.

Person at water fountain
Glass of water from tap at home
Showering
Cooking

Shots of reservoir with water moving

Super throughout this sequence:
"Repurified Water"

Alvarado treatment plant shots

Alvarado Plant shots continue, shots of
water pools.

Super: "*New Technologies*
Continuous Monitoring
Reservoir Natural Cleansing"

Change Super:

AUDIO

bought into the recycled water program.
Giants like General Atomics, CalTrans,
UCSD and the City of Poway to name just a
few.

Scene 19

Repurified water is recycled water that has
been treated with a completely new group of
complex chemical and light exposure
processes. After this additional treatment,
this water is blended with water from other
sources, like that we import from the
Colorado River and State Aqueduct. Then,
after natural cleansing for a year, it is
treated again as it enters the drinking water
pipeline on its way to our homes and
businesses.

Scene 20

The San Diego repurification process will
use technologies never combined before.
There will also be additional safeguards
added. These additions will include real-
time monitoring, where any problem water
can be quickly diverted to the ocean... and
injection of the repurified water into the
upper end of San Vicente Reservoir for
natural cleansing for one year.

Scene 21

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“Water will be 99.9999 percent pure”

Animation- hydrogen and oxygen atoms for a water molecule.

Animation-add RO filter with holes only slightly larger than water molecules. These holes are to 3 dimensional representing a cave that the water molecule must pass through. The larger molecules described at right of metals, organisms, viruses and plankton, fish, cars trucks etc, cannot pass through this molecule size labyrinth.

AUDIO

Intentionally redundant features called “multiple barriers” provide extra safety in this process. This treatment train will provide water that is 99.9999 percent free of all pathogens, which are the bacteria and other things that would affect public health. The water from the Colorado River is only about XX% pure when it reaches us.

Scene 22 MX changes

OK, a little more chemistry here. In general, everything is made up of atoms and those atoms come together to form molecules. Two hydrogen atoms and one oxygen atom make water, hence H₂O.

Scene 23

Now to relative sizes. Only H₂O molecules can pass through the multiple barrier treatment train for repurified water. The impurities in water that can hurt you are all larger than a water molecule, especially the harmful bacteria and protozoa, which are millions of times larger than a water molecule. This means that impurities from metal and inorganic compounds like calcium and lead, organic compounds like pesticides and sugar, viruses like polio and HIV, bacteria like coliforms and e-coli and

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Animation or Treatment train process.

(Best diagram of treatment is left hand pg.22 of City of SD Water Reuse Study 2005-White Paper)

Water emptying into reservoir
Animation drawing of water process.
(Best diagram of treatment is right hand of pg.22 of City of SD Water Reuse Study 2005-White Paper)

More Alvarado Treatment Plant shots

Water in reservoir

Super chart:
"Reused water 10%
Recycled 5%
Repurified 5%"

Water in reservoir

Super: 1 acre-foot contains 325, 781

AUDIO

protozoa like chryptosporidium and giardia just can't come close to making it through the filtration and treatment process.

Scene 24

The repurification process starts with recycled water, which is OK for use in agricultural irrigation and some industry. This water is then further treated with the "multiple barrier treatment train", which consists of: membrane filtration, reverse osmosis, ion exchange, ozone and hydrogen peroxide oxidation, and finally chlorination. This treated water then will be piped to the far end of the San Vicente Reservoir east of San Diego where it will be blended and further "cleaned by nature" for a year, before being treated again at the Alvarado Water Treatment Plant, and delivery into the drinking water pipeline.

Scene 25

MX changes
In the future, this reuse of water will fill 10-12% of the water needs of San Diegians. About half will be recycled water for agriculture and industry, and half will be repurified water for drinking.

Scene 26

Presently, the cost of imported water is

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gallons of water.

San Diego uses about 235,000 acre feet, or over 76 billion gallons of water each year”

Animation still from Repurification processes in scene 25, 2nd half.

Super: *“Project cost for multiple barrier treatment train plant, and pipeline to San Vicente Reservoir is \$150.00”*

Map of other areas around the country using Repurified water

(Best map in “Water Repurification Project brochure, pg. 9 bottom)

Maybe animate on cities to give some action.

AUDIO

\$439 per acre-foot. The cost of repurified water will be \$570 per acre-foot, but it is water we have reused, and will reuse again and again, lessening our dependence on outside and unreliable sources of water.

Scene 27

The repurification project will cost approximately \$150 million for the “multiple barrier, treatment train” plant, and the pipeline to San Vicente Reservoir. This cost would have been far more if the present North City Water Reclamation Plant, which provides recycled water to San Diego, hadn't already been built.

Scene 28 MX changes

Other areas of the country have used repurified drinking water with great success and no negative health effects. Places like Northern Virginia, which has used repurified water for more than 20 years, and our neighbors just north in Orange County, who have used it since 1976. Having been in operation that long, their processes started with less technologically advanced treatments than what San Diego is proposing, but their water still has had no reported health problems.

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Water running from tap

Super Graphic: *Water use starts at 90% @004, reduces to 75% (2010) and then to 57% (2030)*

Reprise of opening shots, emphasis on technical achievements like cell phones, PDA's, plasma screens, futuristic buses, trolleys, etc....

...ending in water running in fountains or from tap shot.

Reprise of anything mentioned with Repurified Water from previous shots.

AUDIO

Scene 29

With the implementation of San Diego's water reuse plans, which includes recycling and repurification, our dependence on outside water could go from 90% to roughly 75%. By the year 2030, that figure could go as low as 57%.

Scene 30

We have reached the age of the famous "George Jentson" in so many ways, lifestyle, electronic devices, automobiles, planes, trains...why not in water purification? The science is there, the proven viability in other cities is there, the oversight of independent agencies is there, the treatment train technology is there... the water is there, and it can be repurified many, many times.

Scene 31

It has been proven scientifically by many studies and supported by many agencies such as the State Department of Health and the National Water Research Institute, that repurified water compared with other sources of available water *exceeds the quality of current drinking water supplies in every measure available.* Repurified water

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Colorado River Aqueduct. Signs if possible. Emptying into our reservoir.

Hero water running shot

Super: *"It's Our Water...Re-use It!"*

AUDIO

provides a safe and economical supplemental drinking water supply. At \$150 million for a continuing supply of drinking water, we can't afford not to start this program.

Scene 32 MX stops and is replaced with the sound of wind and water in an aqueduct.

As we close, let us leave you with this thought. As you'll remember, the majority of our water comes from the Colorado River. In its journey from up north, the Colorado flows past thousands of miles of unprotected watershed, near uranium mines & chemical plants. But the interesting fact is that presently, 187 municipalities and agencies dump their treated sewage into the Colorado River...before it gets to us.

I

Scene 33 In San Diego, repurified water is a far better alternative.

NOTE **Note that no places have been left for interviews in the script. Those persons chosen to augment the copy should come from one of the following**

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agencies, as these agencies tested highest as having the most trust by a focus group of citizens.

In descending order

- 1) San Diego County Medical Society
- 2) San Diego County Health Department
- 3) University researchers and scientists
- 4) Sierra Club
- 5) Independent water purification engineers