

WATER WARS - PART 2
A CLEAR AND PRESENT DANGER
(Threats to your SUSTAINABILITY)

PAAWWA CONFERENCE

MAY 8, 2014

BETHLEHEM, PA

DENNIS C. BECK

THREATS TO YOUR SUSTAINABILITY

DENNIS C. BECK

Master's degree – Environmental Pollution Control
Penn State

PA Rural Water Association Board

Cambria County Conservation District

W. PA Coalition for Abandoned Mine Reclamation

Trout Run Watershed Association

Central Mainline Sewer Authority

Adjunct Faculty – Mt. Aloysius College

ORSANCO

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“WHISKEY IS FOR
DRINKING”

“WATER IS FOR FIGHTING”

MARK TWAIN

GOLD IS NO LONGER THE MOST
PRECIOUS TREASURE

IT IS WATER!!!!!!

BRAHMA CHELLANEY

OCTOBER 8, 2013

THE COMING WATER WARS

BOOK TITLE

“WATER, PEACE AND WAR”

2013

CNN REPORT BY Jason Mike

MARCH 22, 2013

“THE COMING WATER WARS”

PACIFIC INSTITUTE LISTS 225

CONFLICTS IN HISTORY BUT

HALF HAVE BEEN IN THE

LAST 20 YEARS

NEXT GREAT CONFLICTS

WILL BE BASED ON WHO HAS
THE WATER

AND WHO WANTS THE
WATER!!!!!!

The Intergovernmental Panel on Climate Change predicts that by 2020 upwards of 1.5 billion people worldwide will be facing water stress, including anywhere from 7 million to 77 million in Latin America.

WEST VIRGINIA 2014

January 9, 2014

Elk River - Kanawha County –MCHM

Licorice smell – no significant study done on health effects

10, 000 gallons – 300,000 people

WHERE WAS THE WATER COMPANY???

February 2, 2014

Dan River North Carolina

82,000 tons (164,000,00 lbs.) Toxic COAL ASH

Pile was 75 feet long and 5 feet deep in river

Traveled down river and across state line

Kerr Lake, significant buildup on lake bed.

(similar to coal ash spill in 2008 in TN which resulted in
"tremendous fish kill")

Species affected – mussels, fish

Residents warned to avoid prolonged?? contact with parts
of the Dan River and do not eat the fish.

April 28, 2014

Alpha Natural Resources (Coal Co.)

Discharge from holding pond

Violated discharge permit on selenium

Arguments were “no specific limit on selenium”

But violated “Water Quality Standards”

VIRGINIA

MAY 1, 2014

CSX TRAIN PULLING OIL TANKERS DERAILED
AND OIL CAUGHT ON FIRE IN THE JAMES
RIVER

POSSIBLY 50,000 GALLONS OF CRUDE OIL
NEXT DAY

COAL CARS PULLED BY CSX IN BOWIE
MARYLAND DERAILED AND DUMPED AT
LEAST ONE CARLOAD OF COAL

MAY 7, 2014

CALIFORNIA

DISCUSSIONS ON REVERSING THE FLOW OF
WATER IN THE AQUADUCT AND PUSH THE

WATER **UPHILL** TO THE CENTRAL
VALLEY

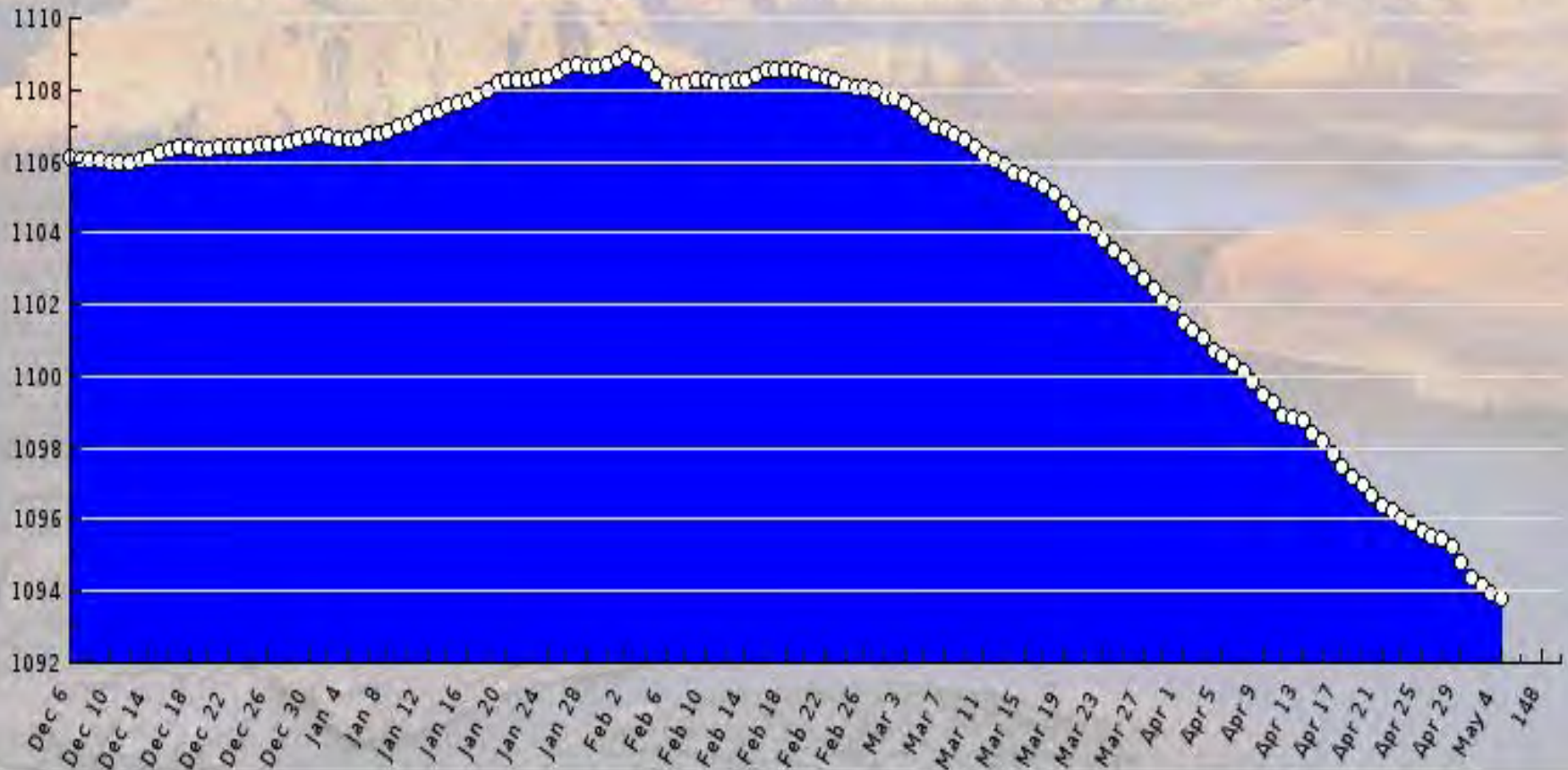
LAS VEGAS – AGAIN

GLEN CANYON DAM (LAKE POWELL)
VS LAKE MEAD

LAKE POWELL LEAKS WATER DUE TO
ROCK STRUCTURE UNDER THE WATER
SHOULD WE FILL LAKE MEAD FIRST
THEN WORRY ABOUT LAKE POWELL
PARTNERSHIPS WITH CALIFORNIA AND
ARIZONA AT RISK

Lake Mead Daily Water Levels: Last 150 Days

Min Elevation: 1093.77 on May 04, 2014 Max Elevation: 1108.96 on February 02, 2014



DATE MEASURED	ELEVATION	CHANGE	CONTENT	INFLOW (cfs)	OUTFLOW (cfs)	HIGH TEMP	LOW TEMP	WATER TEMP
Sun, May 06, 2014	<u>1093.77</u>	-0.14	<u>11185050</u>	<u>56</u>	<u>14892</u>	n/a	n/a	n/a
Sat, May 03, 2014	<u>1093.91</u>	-0.26	<u>11197320</u>	<u>88</u>	<u>18151</u>	n/a	n/a	n/a
Fri, May 02, 2014	<u>1094.17</u>	-0.23	<u>11220140</u>	<u>9575</u>	<u>18702</u>	n/a	n/a	n/a
Thu, May 01, 2014	<u>1094.40</u>	-0.44	<u>11240340</u>	<u>100</u>	<u>11306</u>	n/a	n/a	n/a
Tue, Apr 29, 2014	<u>1094.84</u>	-0.39	<u>11279040</u>	<u>8503</u>	<u>22442</u>	n/a	n/a	n/a
Mon, Apr 28, 2014	<u>1095.23</u>	-0.19	<u>11313280</u>	<u>8532</u>	<u>19081</u>	n/a	n/a	n/a
Sun, Apr 27, 2014	<u>1095.42</u>	-0.14	<u>11329940</u>	<u>9970</u>	<u>14961</u>	n/a	n/a	n/a
Sat, Apr 26, 2014	<u>1095.56</u>	-0.10	<u>11342230</u>	<u>9803</u>	<u>12771</u>	n/a	n/a	n/a
Fri, Apr 25, 2014	<u>1095.66</u>	-0.22	<u>11351010</u>	<u>9072</u>	<u>17005</u>	n/a	n/a	n/a
Thu, Apr 24, 2014	<u>1095.88</u>	-0.14	<u>11370330</u>	<u>9218</u>	<u>15462</u>	n/a	n/a	n/a
Wed, Apr 23, 2014	<u>1096.02</u>	-0.25	<u>11382630</u>	<u>8930</u>	<u>16672</u>	n/a	n/a	n/a
Tue, Apr 22, 2014	<u>1096.27</u>	-0.15	<u>11404630</u>	<u>8055</u>	<u>19102</u>	n/a	n/a	n/a
Mon, Apr 21, 2014	<u>1096.42</u>	-0.29	<u>11417830</u>	<u>8718</u>	<u>21839</u>	n/a	n/a	n/a
Sun, Apr 20, 2014	<u>1096.71</u>	-0.24	<u>11443380</u>	<u>9644</u>	<u>18478</u>	n/a	n/a	n/a
Averages of List	1095.20	-0.23	11310290.00	6970.77	17106.62	n/a	n/a	n/a



LAS VEGAS

PASSED A REFERENDUM TO
BUILD A NEW \$800 MILLION
PIPELINE AND TAP DEEPER
INTO LAKE MEAD BECAUSE OF
THE LOW LEVELS IN THE LAKE

LAS VEGAS

CITY IN THE DESERT

LAS VEGAS VALLEY HAS SUNK 6
FEET IN 50 YEARS DUE TO
GROUNDWATER WITHDRAWAL

PAT MULROY

HEAD OF SOUTHERN NEVADA
WATER AUTHORITY

(SNWA)

PROPOSED PIPING MISSISSIPPI
FLOOD WATERS TO REPLENISH THE
OGALLALA AQUIFER

BUT IT DIDN'T FLOOD THIS YEAR

OFFICIAL FOR LAS VEGAS WATER

ASKED WHY THEY NEED TO EXPAND THE
CITY IF THEY DON'T HAVE THE WATER

“IF WE DON'T GROW, THE TOWN WILL DIE”

NORTH LAS VEGAS

MAY 5, 2014

NEXT CITY TO DECLARE BANKRUPTCY
POPULATION HAS DOUBLED SINCE 2000

NOW AT 250,000

GLOBAL WARMING

WE SURE DIDN'T FEEL IT HERE THIS
WINTER BUT

CALIFORNIA AND TEXAS ARE FEELING

100 DEGREE TEMPS

NOW WITH FIRE SEASON IN FULL GEAR

APRIL 28 CORPUS CHRISTI HIT

100 DEGREES

OREGON vs CALIFORNIA

KLAMUTH RIVER

REMOVE DAMS

RESTORE SALMON RUNS

WATER FOR FARMERS

WATER FOR TRIBES

RESOLVED

UPDATE – JUNE 11, 2013

Klamuth Tribes and the Feds agreement

ADMIN LAW JUDGE – TRIBES HAVE
SENIOR WATER RIGHTS

WATER MASTER – OREGON DEPT. OF
H₂O RESOURCES WILL CHECK FLOWS
AND RESTRICT OR SHUT VALVES TO
KEEP FLOWS TO MEET TRIBE AND FEDS
KLAMUTH RECLAMATION IRRIGATION
PROJECT

BATTLE HAS BEEN ON SINCE 2001
DROUGHT

REMOVAL OF 3 HYDRO DAMS TO
RESTORE SALMON RUNS

RANCHERS DISREGARDED LIMITED
QUANTITY OF WATER AVAILABLE FOR
CATTLE AND OVER STOCKED – NOW
FACE WATER RESTRICTIONS AND CAN'T
WATER THE HERDS.

WHOSE FAULT?????

GEORGIA vs TENNESSEE

GEORGIA WANTS LAND ACCESS TO THE TENNESSEE RIVER

1796 TN admitted to Union-

Congress defined the border as the 35th
Parallel

Survey hindered by river and Indians -
Moved border 1 mile south of the river

If corrected – Memphis would be in MISS

Congress is not going to change it

GEORGIA – ALABAMA – FLORIDA

2/17/2014

COURT FIGHTS OVER ALLOCATION
RIGHTS, HYDROELECTRIC POWER,
SEAFOOD INDUSTRY IN
APALACHOCOLA BAY.

Montana – Flathead River

Confederated Salish and Kootenai Tribes filed for water rights and enter into a “Water Rights Compact” for access to water from the Flathead river for irrigation and water supplies for the reservation..

Ongoing

AWWA Journal June 2013

SEATTLE

LOTS OF WATER IN THE WINTER

BUT

SUMMER AND FALL –

CEDAR RIVER FLOW DROPS

WINDWARD SIDE VS LEEWARD SIDE

SEATTLE – 140" RAIN

SPOKANE - 10 – 30" RAIN

WYOMING

Too little SOURCE WATER PROTECTION PLANS

SHALE GAS EVERYWHERE

RARE MINERALS MINING

RADIOACTIVE DRILLING WASTE AND FILTER
SOCKS

DEEP WELL INJECTIONS OF WASTE WATER

TOO MUCH \$

FLORIDA
SALT WATER INTRUSION
DANIA BEACH
POMPANO BEACH
HALLENDALE BEACH
LATANA
LAKE WORTH

HAWAII

DRILLING NEW WELLS TO SUPPLY
TOURIST POPULATION

SALT WATER INTRUSION?? IF
OVERPUMPED

GALAPAGOS ISLANDS

Isabela – Salt water and Fecal Coliform intrusion

San Christobal – Water in Highlands, but not where the people are??

Santa Cruz – salt water intrusion, irrigation water in short supply

Floreana – depleted its springs due to human population

S. FLORIDA WATER DISTRICT

SPENDING \$1.34B

TO BUY 73,000 HECTARE

180,000 ACRES OF EVERGLADES
FOR RESTORATION OF STORAGE
CAPACITY

MITIGATE SALT WATER INTRUSION

MAINE

POLAND WATER (NESTLE)

700 MILLION GALLONS/YEAR

ABSOLUTE DOMINION RULE PUMP
GROUND WATER REGARDLESS OF
IMPACT

NO RESTRICTION ON LARGE
WITHDRAWALS

MICHIGAN vs NESTLE'S

250-400 GPM WOULD LOWER STREAM
FLOW BY 28% AND POTENTIALLY DROP
LAKE MICHIGAN SEVERAL INCHES

Nestle study – no effect on levels –
COURT BATTLES STILL ONGOING

REAL TEST CAN THEY EXPORT WATER OUT
OF WATERSHED

U.S. SUPREME COURT DECISION

CHAIRMAN OF NESTLE CORP.

Peter Brabeck-Letmathe

“IF YOU DECIDE TO LIVE IN AN AREA WHERE
THERE IS NO WATER, YOU DESERVE TO DIE”

BUT WE WILL SELL YOU WATER AT A
1000% PROFIT

WEB SITE

NESTLE CORP: WATER IS NOT A HUMAN RIGHT

ALASKA

BRISTOL BAY (not bristol palin)

Silver and Molybdenum Mine

PIT – 2 MILES WIDE AND 1700 FEET DEEP
HOLDING WASTE WATER FROM THE
MINE

PROPOSAL TO SELL WATER FROM
SITKA, AK TO ASIA??

FRAC FACTS

December 2010 Indiana County

CHEC (CENTER FOR HEALTHY ENVIRONMENTS AND COMMUNITIES)

WASTEWATER DISCHARGE

BARIUM – **14X** OVER STANDARD

STRONTIUM **746X** HIGHER

BENZENE – **2X** HIGHER

TDS – **373 X** HIGHER

FOODANDWATERWATCH.ORG

NYTIMES ARTICLE 2011

FRAC WATER TESTED IN PA AND
WVA

240 WELLS TESTED

116 HAD RADIATION **100X** HIGHER
THAN STANDARD

15 HAD RADIATION **1000X** HIGHER

PA - HIGHER DEMAND FOR WATER
10 BILLION GAL/DAY WITHDRAWN

BILLIONS NEVER RETURNED TO WATER
CYCLE OR RETURNED DEGRADED
COMMONWEALTH NOT COMPENSATED
FOR THIS

STATE CONSTITUTION – PA CITIZENS
HAVE A RIGHT TO CLEAN WATER

MARCELLUS SHALE COMPANIES
PLAN TO DRILL 20,000 WELLS IN
DELEWARE RIVER BASIN

5 MILLION GALLONS/WELL

25 % RETURN

3.75 MILLION IN GROUND

75,000,000,000 GALLONS

BRADFORD COUNTY

1142 WELLS DRILLED

5 MILLION GALLONS PER WELL TO FRAC

5.7 BILLION GALLONS

25% FLOWBACK STILL LEAVES

4.3 BILLION UNDERGROUND

INCLUDE 5 CONTIGUOUS COUNTIES

3677 WELLS

13.8 BILLION GALLONS UNDERGROUND

FRACING CHEMICALS

WHAT GOES DOWN

WATER 99.5

SAND - HOLDS CRACKS OPEN

HCl - DISSOLVE MINERALS AND INITIATE CRACKS

AMMONIUM PERSULFATE - DELAYS BREAKDOWN OF GEL

BORATE SALTS – MAINTAIN FLUID VISCOSITY AS TEMPS RISE

GLUTARALDEHYDE - ELIMINATES BACTERIA - DISINFECTANT

CITRIC ACID – PREVENTS PRECIPITATION OF METAL OXIDES

HYDROXYL CELLULOSE – THICKENS WATER TO HOLD SAND

PETROLEUM DISTILLATE – “SLICK” WATER TO MINIMIZE FRICTION

ISOPROPANOL – INCREASE VISCOSITY

ETHYLENE GLYCOL – PREVENTS SCALE

+ 3 MORE ON LIST

FRACING CHEMICALS

WHAT COMES BACK UP

ETHYL MERCAPTAIN

SODIUM CHLORIDE

XYLENE

CHLORINE DIOXIDE

FORMALDEHYDE

ETHYL BENZENE

BENZYL CHLORIDE

BORIC ACID

STYRENE

ANILINE

NAPHTHYLENE

KEROSENE

BROMIDES

NICKEL SULFATE

BENZYL CHLORIDE

FUEL OIL #2

METHANOL

AMMONIA

+ 57 OTHERS WITH AT LEAST 10 HEALTH
EFFECTS

Oklahoma earthquakes

Fracing increased dramatically in 2009

SEE CHART FOR RECORD OF QUAKE

OCTOBER 2013 – APRIL 2014

183 QUAKE OF 3.0 OR BETTER

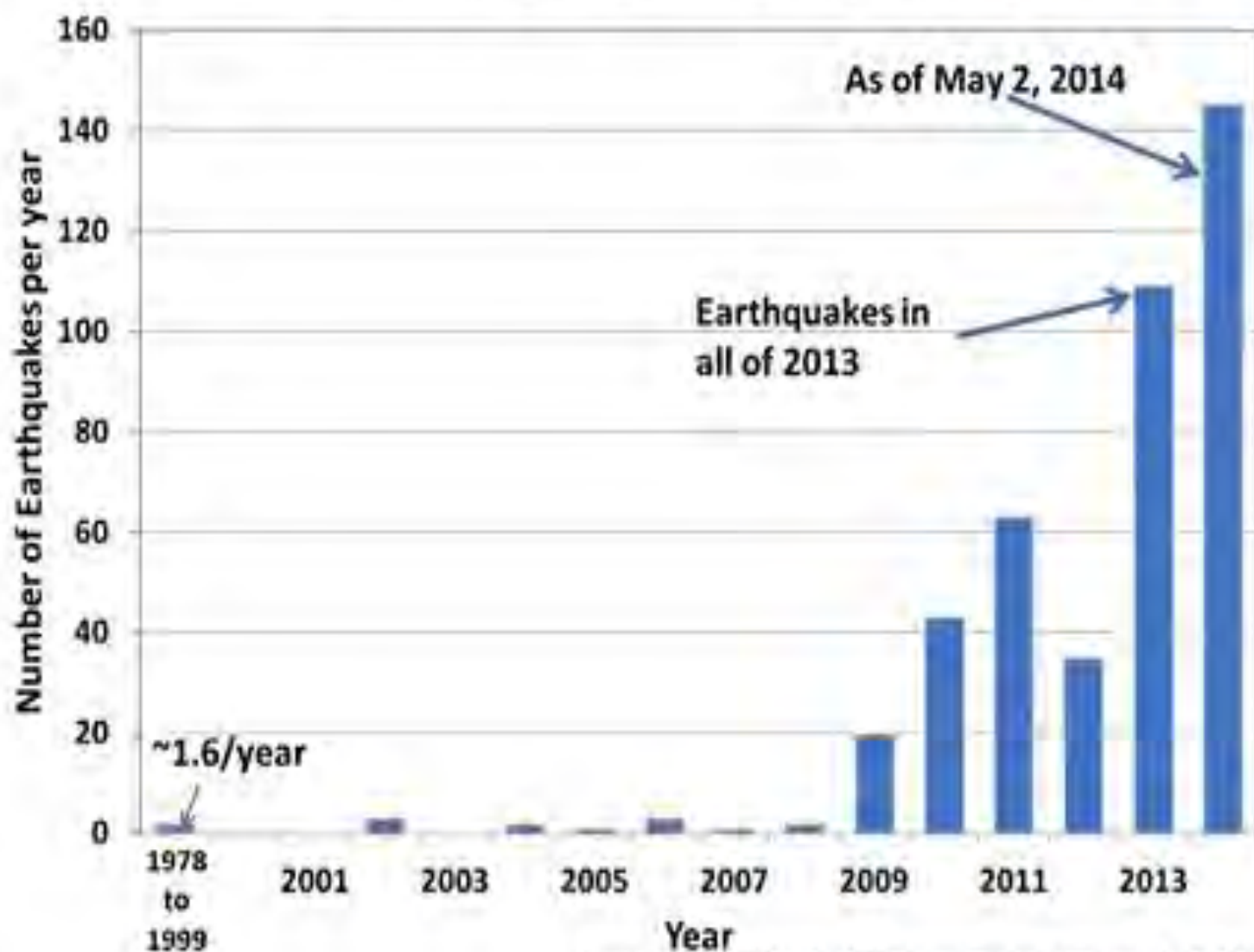
AVERAGE IS 2 PER YEAR

SINCE 2009 20 QUAKE OF 4.0-4.8

NOVEMBER 5, 2011 5.6

DEEP WELL INJECTIONS

Oklahoma Earthquakes Magnitude 3.0 and greater



Source: USGS-NEIC ComCat & Oklahoma Geological Survey, May 2, 2014

US HAS NO CENTRAL CONTROL OVER WATER ISSUES

6 CABINET POSITIONS

20 FEDERAL AGENCIES

13 CONGRESSIONAL COMMITTEES

23 SUB COMMITTEES

5 APPROPRIATION SUB
COMMITTEES

Los Angeles Department of Water and Power

Import most water from 200-400
miles north of the city

VALLEYS WHERE CA DEPT. OF WATER
AND POWER ARE MINING WATER

USGS REPORTED THAT SOME AREAS
HAVE DROPPED 30' DUE TO
GROUNDWATER MINING

(TAKING MORE WATER OUT OF GROUND
THAN IS REPLACED)

EAGLE POINT, OREGON
MAN SENTENCED TO 30 DAYS IN JAIL
FOR STEALING WATER FROM THE
MEDFORD WATER DISTRICT.

“COLLECTING RAIN WATER?????”

RAIN BARRELS AND AN “ILLEGAL
POND” DIVERTED WATER FROM THE
CROWFOOT CREEK

COLUMBIA

APRIL 5, 2014

LAST 3 MONTHS EXTREME DROUGHT
THOUSANDS OF WILDLIFE HAVE DIED,
RESERVOIRS DRIED UP

OIL EXPLORATION HAS INFILTRATED
SURFACE WATER AND DESTROYED
WETLANDS STREAMS AND LAGOONS

UNSUSTAINABLE LAND USE FOR
COMMERCIAL CROPS – RICE, AFRICAN PALM

Peruvian Mountains

August 6, 2013

8 people killed in protests over
losing water supply to mining
company

But plans to redistribute water by rerouting rivers or drilling through the Andes raise questions for which neither politicians nor scientists have easy answers.

How much water can be piped from reservoirs in the Andean highlands or Amazonian cloud forest without damaging those ecosystems?

Who has priority: thirsty cities or food producers? Subsistence farmers or export agribusinesses? Poor rural communities or revenue-generating mines?

Agriculture or Hydroelectricity

MIDDLE EAST

JORDAN RIVER

LEBANON vs ISRAEL vs SYRIA vs
WEST BANK

Israel facing Extreme Drought

Report on February 2, 2014

Kinneret (Sea of Galilee) water level dropped
2" in last 5 months of rainy season

Last year, same time – rose 5'

Farmers facing the greatest cuts

Israel has priority as to who gets any

water

ISRAEL VS PALISTINIANS

Israel controls the headwaters of the River Jordan and the aquifers that flow from the highlands of the West Bank

JUNE 12, 2013
EGYPT VS ETHIOPIA
(NEW YORK TIMES)

ETHIOPIA'S NILE RIVER DAM PROJECT
THREATENS WATER FLOW TO EGYPT

EGYPT DISCUSSED WAYS TO BLOW UP THE
DAM OR SUPPORT REBEL GROUPS IN
ETHIOPIA

EGYPT

HAS ONLY 6-7% ARABLE LAND

ETHIOPIA IS THE SOURCE OF ABOUT
85% OF THE NILE RIVER WATER

CHINA 1999

2 LOCAL GOVERNMENTS WENT TO
WAR OVER WATER

BETWEEN BEIJING AND SHANGHAI

BOMBED WATER CANALS FOR
WATER

100 PEOPLE KILLED
(THE RIPPLE EFFECT)

CHINA

JULY 8, 2013

50% SURFACE WATER TOO POLLUTED TO USE
NOW NORTH CHINA PLAINS GROUNDWATER –
SUPPLYING 18% OF THE WATER TO THE
COUNTRY IS ALL CONTAMINATED WITH
PESTICIDES, FERTILIZERS, PETROCHEMICAL
WASTES, IRRIGATION WASTE WATER
STUDY IN 2006 - GW ALMOST IRREPARABLY
CONTAMINATED

COULD THIS HAPPEN TO YOUR
STATE??

NOT IF, BUT WHEN!!!!!!

ARE YOU READY?????

QUESTIONS?

REFERENCES

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The Future of Water – Steve Maxwell

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supremecourt.gov

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National Association of Conservation Districts

National Rural Water Association

Johnstown Tribune Democrat

WE&T Magazine

AWWA Journal

Parade Magazine