

California Water and Infrastructure Report

Formerly, the “California Drought (and Flood) Update”



For December 7, 2017

by Patrick Ruckert

Published weekly since July, 2014

An archive of all these weekly reports can be found at both links below:

<http://www.californiadroughtupdate.org>

<https://www.facebook.com/CaliforniaDroughtUpdate>

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"Geopolitics, the idea that a nation, or group of nations, has the right to pursue their interest against another group of nations, has led to two World Wars in the 20th century. It should be obvious to anyone, that in the age of thermonuclear weapons, war can no longer be a method of settling conflicts, if we as a human species are not to bring about our own annihilation. Humanity is distinct from all other species known in the universe so far, in that we are capable of creative reason. This means, that we can, unlike the animal species, consciously change the mode of our existence, continuously discover new universal principles in science and culture, develop a deeper and more profound knowledge about the physical universe, of which we are the most important part. So in a certain sense it is lawful, that mankind would come up with the idea on how to overcome geopolitics, and establish a system of self-governance, which would guarantee the long term survivability of humanity.

"The concept of a 'community of a shared future of mankind' presented by President Xi Jinping, is exactly that idea. By putting the notion of the one mankind, defined from the standpoint of our common future, as the reference point as how to think about political, economic, social and cultural issues, President Xi has established a higher level of reason, a conceptual basis for a peace order on the whole planet."

President Trump has taken a small but crucial step in that direction through his historic Asian tour. While he must be defended from the British-directed coup attempt, he must also be moved by an inspired citizenry to fully join the New Paradigm which is now within our grasp.

All the Trees in the British Forest Could Fall

<https://larouchepac.com/20171205/all-trees-british-forest-could-fall>

A Note To Readers

Once again California is burning. Wildfires are sweeping through the southern part of the state this week, demonstrating once again that decades of not building infrastructure, not creating redundancy in depth to deal with “natural disasters” like wildfires, floods, hurricanes and earthquakes, leaves millions vulnerable.

We look back to the response of President Franklin D. Roosevelt to the great Mississippi flood of 1933, beginning serious and extensive flood control projects. Projects that still today protect us all.

While the people of Houston, Florida and Puerto Rico still live in tents, with the aid provided by Congress is slowly eked out, the mayor of Houston is heading to China looking for funding for the required projects to protect his city from future hurricanes.

Last week I reported on how China will be investing \$84 billion in West Virginia, creating as many as 100,000 jobs in mining, processing, manufacturing and construction.

Thus, the quote above from Helga Zepp-LaRouche, urging the Trump administration to really join with China's Belt and Road initiative. And, as she said two days ago, “Countries which do not cooperate with the Belt and Road Initiative are going to be sidelined to the detriment of their own populations.”

In This Week's Report

We begin with the weather and climate. Yes, it is changing and the affects of that change are becoming more dramatic and dynamic. But, I hope, most of the readers here are not led to the simplistic and wrong conclusion that grips too many, that it is all caused by mankind's activity. I explain that a little more in the introduction to the first section of this report. Most of the articles, both those I excerpt and others along similar lines, include the usual genuflection to the idea of “man-caused climate change.”

There is no question that a warmer and drier climate has lengthened the wildfire season and exacerbated the intensity and the destructiveness of those fires. The northern California fires of October and now the southern part of the state are unprecedented, as is the record for the entire state this year. Again, most of the authors include some reference to “man-caused climate change.”

The Oroville Dam Update includes reports and the plans on the ongoing work at the dam.

As is my usual practice, all the articles below are excerpted from the originals.

The final section of this week's report, my Feature on The American Credit System, begins with the report of how the city of Houston is turning to China to rebuild the city in the aftermath of hurricane Harvey. Why? Here is a short excerpt from a report by my friend Brian Lantz in Houston:

Thousands of families are still living in tents, either in their yards, garages, and even placed inside their homes, as they await assistance--or slowly attempt repairs on their own with few resources. It is roughly estimated that more than 200,000 homes were damaged or destroyed in the Houston area and Texas Gulf coast communities from Port Arthur to Corpus Christi. FEMA reports that volunteers have mucked and gutted more than 18,000 storm-damaged homes, but that number is hard to gauge, given the wide area--much of it rural--over which flooding occurred. Further, without Federal credits for financing, the area will not be protected against future hurricanes and flooding.

Weather, Climate and That Damn Ridge Again

The following articles are included in this week's report because they do have some value in understanding the weather and the affects that weather has on the water supply, precipitation, the massive tree die off over the past few years and the intensity and extent of wild fires.

But, for a proper view of such climatic developments, beginning at 54 minutes in Class 9 of the

LaRouche PAC economic class series: Science Driver Principle, which is posted below in the final section of this report, the question of climate change is situated in its proper context-- the hundreds of millions of years of the history of the Earth's climate and the impact of galactic processes on that climate. Yes, this is a dismissal of the idea that mankind is the driver of climate change.

High-pressure ridge settles along West Coast: Is it ever going to rain again?

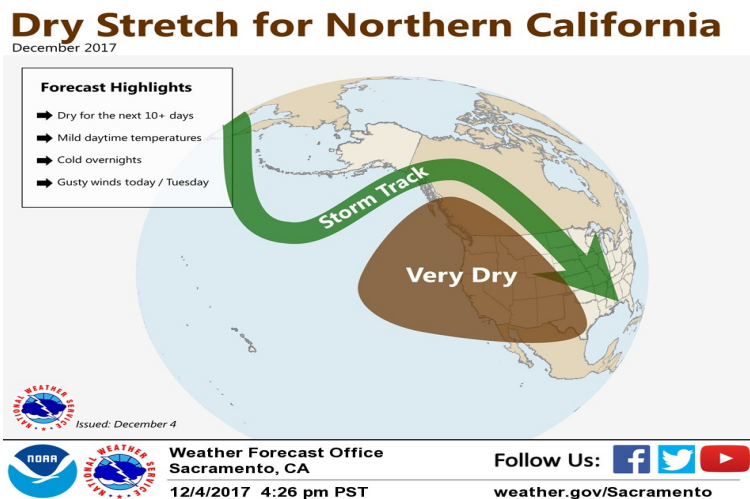
By [Amy Graff](#), SFGATE

December 4, 2017

<https://www.sfgate.com/weather/article/high-pressure-ridiculously-resilient-ridge-rain-12404417.php>

Like an invisible wall, a high-pressure ridge is stretching along the entire West Coast, from northern Washington to Southern California, blocking Pacific storms and keeping conditions dry.

Meteorologists, who can only predict weather with some accuracy about 10 to 14 days out, are forecasting the ridge will remain in place, likely preventing any rain until at least Dec. 15.



After that, they don't know what will happen, but they're watching the system closely as its trajectory plays into whether the Northwest, Northern California and Southern California see wet or dry winters.

"This sort of pattern is reminiscent of what we see during drought years," says Daniel Swain, a climate scientist at UCLA. "If it really does just last two or three weeks, it's not a big deal. The real question is whether it will continue to come back."

Only time will tell whether the ridge persists and returns, but Swain says there's some indication that this season could be marked by high-pressure systems on the West Coast based on the conditions in the tropical Pacific, including the presence of La Niña as well as other factors.

"We've know for a long time that cool water temperatures in the eastern tropical Pacific Ocean associated with La Niña can produce a ridge in the Gulf of Alaska, which often tilts the odds in favor of winter high pressure near California and drier than average conditions especially in Southern California," Swain said. "But there's new, emerging evidence that the tropical west Pacific is just as important — and that unusual warmth there can produce a rain-blocking high pressure pattern right over California."

"This year, we have both conditions in play: cool eastern and warm western tropical Pacific. That would suggest an increased likelihood of winter ridging this year, and an increased chance of drier than average conditions especially across the southern half of the state."

No rain ahead, Bay Area: The Ridge is back!

<http://www.mercurynews.com/2017/11/30/no-rain-ahead-bay-area-the-ridge-is-back/>

Following the coinage of environmental scientist Daniel Swain, weather watchers call it the “Ridiculously Resilient Ridge,” sometimes shortened to “Triple R” or “RRR.”

And once again, this stubborn and massive blob of atmospheric high pressure — the culprit in some of our driest recent years — is double-parked above the northeastern Pacific Ocean.

New insights into the Ridiculously Resilient Ridge & North American Winter Dipole

Filed in [Uncategorized](#) by [Daniel Swain](#) on December 4, 2017 • [575 Comments](#)

<http://weatherwest.com/archives/5982>

In the coming days, a remarkably persistent weather pattern will begin to develop across North America and adjacent ocean regions. Characterized by strong high pressure near the West Coast and low pressure over the Eastern Seaboard, this “quasi-stationary,” high-amplitude atmospheric wave pattern will [essentially become locked in place](#) for at least the next 2 weeks. Patterns like this have a tendency to [become self-reinforcing](#), lasting for much longer than more typical transient weather patterns and leading to prolonged stretches of unusual weather. This particular event will be no exception: California (and much of the West Coast) will almost certainly experience an extended, [multi-week warm and dry spell](#), while much of the East Coast [shivers through repeated blasts of cold, Arctic air](#).

As it turns out, these upcoming anomalous conditions provide [a timely example](#) of several atmospheric phenomena my colleagues and I have been studying over the past few years. In this post, I’ll explore the broader climate context of recent North American weather extremes, with a focus on insights gleaned from two recent scientific papers published by my colleagues and me.

What could cause California droughts? Melting sea ice

By [Lisa M. Krieger](#)

Bay Area News Group

December 5, 2017

<http://www.mercurynews.com/2017/12/05/what-could-cause-california-droughts-melting-sea-ice/>

A new study by Bay Area scientists concludes that Californians could face reduced rainfall — and worse droughts — by the continuing loss of sea ice.

Their computer analyses show a 10 to 15 percent average decrease in California’s rainfall in the coming decades. The culprit, scientists now believe, is a link between the melting ice and the buildup of massive high pressure systems that park off the California coast and block Pacific storms.

The Arctic is warming twice as fast as the rest of the planet — scientists say human-caused emissions of greenhouse gases are to blame — and the ice cover is retreating at a startling pace. Melting is expected to continue throughout the 21st century.

This in turn causes circulation changes in the deep tropics. A very narrow swath of air over the deep tropics, mostly above oceans, increases in humidity. Then the upper atmosphere starts behaving differently, sending waves of air in the North Pacific.

This boosts the buildup of a giant high pressure system — basically a big bunch of air piled up into a

ridge, like the famed “Ridiculously Resilient Ridge” of our five-year drought — off our coast. In normal winters, high and low pressure systems take turns, alternating between ridges and troughs. But when there’s a ridge, the wet and wintry Pacific storms instead slide north. That phenomenon led to the 2012-2016 California drought.

Wildfires: Now in Southern California

This year is a record year for fires in the state; the acreage burned is double of that of last year. The destruction is even greater. It is the first week of December, more than one month into the “rainy season,” and not only is there no rain, but the Santa Ana winds that drive the fires in southern California, are driving this week's fires, but instead of just lasting a day or two the winds are lasting about a week, and they are stronger than normal.

The article below, “*The Firestorm This Time: Why Los Angeles Is Burning*” By Adam Rogers, is very interesting on why southern California's fires are so intense and destructive, and discusses both the geography and the climate of the region. For example, he writes: “Southern California, on the other hand, is an 'ignition-limited ecosystem.' It’s always a tinderbox. The canyons that cut through the transverse ranges align pretty well with the direction of the Santa Ana winds; they turn into funnels. 'Whether or not you get a big fire event depends on whether humans ignite a fire,' he says.”

California wildfire locations



Updated 4:30 PM ET, Wed December 6, 2017

Source: Google Earth, [United States Geological Survey](#), [California DOT](#), [US Census TIGER/Line®](#)

The Firestorm This Time: Why Los Angeles Is Burning

By Adam Rogers

December 6, 2017

<https://www.wired.com/story/losangeles-wildfire-science/>

The Thomas Fire spread through the hills above Ventura, in the northern greater Los Angeles megalopolis, with the speed of a hurricane. Driven by 50 mph Santa Ana winds—bone-dry katabatic air moving at freeway speeds out of the Mojave desert—the [fire](#) transformed overnight from a 5,000-

acre burn in a charming chaparral-lined canyon to an inferno the size of Orlando, Florida, that only stopped spreading because it reached the Pacific. Tens of thousands of people evacuated their homes in Ventura; 150 buildings burned and thousands more along the hillside and into downtown are threatened.

That isn't the only part of [Southern California on fire](#). The hills above Valencia, where Interstate 5 drops down out of the hills into the city, are burning. Same for a hillside of the San Gabriel Mountains, overlooking the San Fernando Valley. And the same, too, near the Mount Wilson Observatory, and on a hillside overlooking Interstate 405—the flames in view of the Getty Center and destroying homes in the rich-people neighborhoods of Bel-Air and Holmby Hills.

And it's all horribly normal.

Southern California's transverse ranges—the mostly east-west mountains that slice up and define the greater Los Angeles region—were fire-prone long before there was a Los Angeles. They're a broken fragment of tectonic plate, [squeezed up out of the ground](#) by the Pacific Plate on one side and the North American on the other, shaped into the San Gabriels, the Santa Monica Mountains, the San Bernardino Mountains. Even the Channel Islands off Ventura's coast are the tippy-tops of a transverse range.

Santa Anas notwithstanding, the transverse ranges usually keep cool coastal air in and arid desert out. Famously, they're part of why the great California writer Carey McWilliams called the region “an island on the land.” The hills provided hiding places for cowboy crooks, hiking for the naturalist John Muir, and passes both hidden and mapped for natives and explorers coming from the north and east.

With the growth and spread of Los Angeles, fire became even more part of Southern California life. “It's almost textbook. It's the end of the summer drought, there has not been a lot of rain this year, and we've got Santa Ana winds blowing,” says Alexandra Syphard, an ecologist at the Conservation Biology Institute. “Every single year, we have ideal conditions for the types of wildfires we're experiencing. What we don't have every single year is an ignition during a wind event. And we've had several.”

Wildfires raging in Southern California cap most destructive season in state history. Here's why it's so bad

By [Susan Abram](#)

Daily News

December 5, 2017

<http://www.ocregister.com/2017/12/05/apocalyptic-conditions-lead-to-wildfires-destruction-across-southern-california/>

Fanned by cold, fierce Santa Ana winds and fueled by dead trees and dry brush, wildfires raced across Southern California communities Tuesday, burning through thousands of acres from Ventura to San Bernardino counties and likely destroying far more than 200 homes.

The [fires forced mass evacuations](#) that clogged area freeways from the north and south, east and west, and the conditions are expected to remain dangerous through Thursday.

California once again was under siege in a now all-too-familiar 2017 battle with walls of flames.

But even before the start of this week's fires, this year was going down as the most destructive wildfire season in California history, state officials said.

From Jan. 1 to Dec. 3, there were 6,762 fires that destroyed 505,391 acres. That's 43 percent more events for the same time period last year, when 244,297 acres were destroyed, according to Cal Fire.

“Fuel. Ignition. Meteorology. Each component of the formula are off the charts this year,” said Bill Patzert, a climatologist for the Jet Propulsion Laboratory. “When all three elements in the equation are supersized, you’re set up for apocalyptic conditions.”

The rains of late 2016 and early 2017 did little to quench the parched California landscape, Patzert and others said. In addition, more people live in homes built in the pathway of the Santa Ana winds, which are just as fierce in December as they are September; he added.

“Every year, we say we’re really having a horrible fire season. We’ve said over the years, this could be the worst fire season,” he added. But 2017 is different.

“It definitely went down as the most destructive in California’s history,” he said.

Hurricane-force gusts could cripple battle vs. Southern California wildfires

Dec 7, 2017

<https://www.cbsnews.com/news/hurricane-force-gusts-could-cripple-battle-against-southern-california-wildfires/>

"We're talking winds that can surface that can be 80 miles an hour," Pimlott said. "These will be winds that there will (be) no ability to fight fires."

Category 1 hurricanes have maximum sustained winds ranging between 74 and 95 mph.

Wildfires threaten Los Angeles: Evacuation orders issued for nearly 200,000

December 6, 2017

[CNN Wire](#)

<http://q13fox.com/2017/12/06/wildfires-threaten-los-angeles-evacuation-orders-issued-for-nearly-200000/>

Wind-whipped wildfires raged for a third day Wednesday in Southern California -- including a fresh blaze near the posh Bel Air area and Interstate 405 -- threatening further damage after burning more than 65,000 acres, torching scores of buildings and forcing tens of thousands of people to flee their homes.

The fires are burning extremely dry terrain along the northern and western edges of Los Angeles, and, more extensively, Ventura County, northwest of the nation's second-most-populous city.



Winds from hell: Notorious 'Santa Anas' fuel ferocious California wildfires

By Doyle Rice

USA TODAY

Dec. 6, 2017

<https://www.usatoday.com/story/weather/2017/12/06/winds-hell-notorious-santa-anas-fuel-ferocious-california-wildfires/926910001/>

The winds from hell have returned.

"Nowhere else do such winds impact so many people with so much force and possess such extensive opportunity for damage and destruction," the weather service said.

The winds, which occur most often in the fall and winter, push dry air from over the inland deserts of California and the Southwest. Santa Anas blow over the mountains between coastal California and the deserts. As the wind comes down the mountains, it's compressed and warms up.

As the air warms, its relative humidity drops, sometimes to less than 20% or even less than 10%. The extremely low humidity helps dry out vegetation, making it a better fuel for fires.

This year's wildfire season in California has been much worse than usual, with at least 1.1 million acres burned, about twice the average, according to CalFire.ave returned.

Santa Ana winds, one of the nation's most notorious wind events, have fueled the destructive wildfires across southern California that have already charred tens of thousands of acres.

This week's windstorm is "the strongest and longest Santa Ana event so far this season," the National Weather Service in Los Angeles said.

"Moderate to strong Santa Ana winds will likely continue to bring very dry conditions with extreme fire danger through Friday for much of Southwest California," the weather service warned.

Gusts between 40 and 50 mph in the canyons and passes and up to 70 mph in the mountains will be a daily occurrence this week, AccuWeather said.

This event differs from a normal Santa Ana windstorm, according to AccuWeather meteorologist Ken Clark. "Usually, there is a 12- to 24-hour period of the highest winds and then the winds decrease," he said. "This one will be a four-day event, which will make fighting ongoing fires much more difficult. The risk for additional fast-moving fires is quite high."

Santa Anas are an annual weather hazard in southern California.

'Out of Control' Thomas Fire in Ventura County Grows to 65,000 Acres After Jumping 101 Freeway

December 6, 2017

by [Cindy Von Quednow](#), [Eric Spillman](#) and [Mark Mester](#),

<http://ktla.com/2017/12/06/out-of-control-thomas-fire-in-ventura-county-grows-to-65000-acres-after-jumping-101-freeway/>

An erratic fire in Ventura County that has burned in several cities has grown to 65,000 acres after jumping the 101 Freeway, authorities said Wednesday.

As the "out of control" fire is being pushed by gusty east winds, about 12,000 structures continue to be threatened, [the Ventura County Fire Department reported](#).

Officials have estimated that at least 150 structures have burned, but as crews enter their third day of

the fire fight, that number is expected to grow.

UPDATE: California wildfires surpasses 100 square miles

<http://www.ky3.com/content/news/UPDATE-Brush-fire-breaks-out-in-Los-Angeles-462294743.html>

By Associated Press

Dec 06, 2017

The biggest and most destructive of several wildfires burning in Southern California has scorched more than 101 square miles.

State fire authorities say the fire burning in Ventura County about 60 miles northwest of Los Angeles is also considered a threat to 12,000 structures Wednesday.

Calfire: Wildfire season 'elongated by upwards of 40-50 days'

By [Kristen Sze](#)

Tuesday, December 05, 2017 04:32PM

<http://abc7news.com/calfire-wildfire-season-elongated-by-upwards-of-40-50-days/2743755/>

If you think California has seen more frequent and intense wildfires in recent years-- you'd be right. Thirteen of the largest 20 wildfires in California history have broken out since the year 2000.

Experts agree, while the wildfires are naturally occurring, they are trending bigger, longer, and more devastating.

Calfire Deputy Chief Scott McLean spoke with us on FaceTime about why this is happening. "Our, if you want to call it, seasons have been elongated by upwards of 40-50 days over the last 50 years and continues to do so," he said. "We had the five years of drought. A lot of trees died, over 102 million trees died."



In California fires, a starring role for the wicked wind of the West

By [Anne C. Mulkern, E&E News](#) Dec. 6, 2017 , 3:45 PM

[Originally published by E&E News](#)

<http://www.sciencemag.org/news/2017/12/california-fires-starring-role-wicked-wind-west>

Called the Santa Anas, the dry winds typically hit in late fall and are infamous in the Golden State.

California's biggest and deadliest fires have been propelled by Santa Ana winds, which can gust to 100 mph (161 km/h). That wind speed makes smothering fires nearly impossible, said Chief Daniel Berlant, assistant deputy director the California Department of Forestry and Fire Protection, which is best known as Cal Fire.

"It's the winds that spread the embers and fan the fire," Berlant said. "That makes the fire burn fast and jump ahead, as embers fly in the high wind."

Climate change factors also play a role.

Rain hasn't fallen in Southern California since spring, leaving vegetation as dry as in summer. Then, during the week of Thanksgiving, Los Angeles temperatures hit 95 degrees Fahrenheit. That set the stage to make the Santa Anas even more dangerous, UCLA climate scientist Daniel Swain said.

"It's sort of the worst of both worlds," Swain said.

Santa Anas occur when high pressure over the Great Basin — a vast swath of Nevada, Utah and California — compresses air, cooking it, Cal Fire Captain Mike Mohler said.

That hot air then pushes southwest toward the coast.

"Our temperatures skyrocket," Mohler said. "Humidity decreases down to single digits."

"Southern California fires are very, very weather-driven," said Alex Hall, one of the study researchers and a climate expert with UCLA's Institute of the Environment and Sustainability.

New blaze erupts in tony Bel Air area of Los Angeles

<https://apnews.com/70a3fe908e5e46719afe0c91274d548a/Winds-churn-California-wildfires%2C-keep-aircraft-from-helping>

VENTURA, Calif. (AP) — A dangerous new wildfire erupted in the tony Bel Air area of Los Angeles early Wednesday as firefighters battled three other destructive blazes across Southern California.

Flames exploded before dawn on the steep slopes of the east side of Sepulveda Pass, which carries heavily traveled Interstate 405 through the Santa Monica Mountains where ridge tops are covered with expensive homes. At least two could be seen burning.



A wildfire burns along the 101 Freeway. (AP Photo/Jae C. Hong)

Wine country wildfire costs now top \$9 billion, costliest in California history

By Dale Kasler

December 6, 2017 12:15 PM

<http://www.sacbee.com/news/state/california/fires/article188377854.html>

October's wine country wildfires are now the costliest in California history, with insurance claims pegged at \$9.4 billion.

Oroville Dam Update

Oroville Spillways Phase 2 Update November 30, 2017

[California DWR](#)

Published on Dec 1, 2017

Crews build forms and install rebar for the new spillway weir. Excavating continues for the emergency spillway. Work on the cut-off-wall progresses.

<https://www.youtube.com/watch?v=3VplFcGXb7c>

OROVILLE DAM: Spillways construction update

December 1, 2017

Today the Department of Water Resources (DWR) provided an update on construction activities on the Lake Oroville Spillways Emergency Recovery Project.

Construction on the Main Spillway

- *General site cleanup, concrete finishing, joint sealing and completion of drainage systems continues at the 3,000-foot gated flood control spillway, also known as the main spillway. This finishing work is expected to be complete by the end of 2017.*
- *As noted previously on November 1, the main spillway has been substantially reconstructed to handle flows of 100,000 cubic feet per second for the 2017/2018 flood season.*
- *The structural concrete sections of the main spillway have cured as anticipated. [FERC has agreed](#) with DWR that there are no repairs needed.*
- *Construction will resume on the main spillway in spring of 2018, likely in May. The exact date will be determined by hydrology and snowpack conditions.*

Construction at the Emergency Spillway

- *Work continues at the emergency spillway. The underground secant pile wall is on schedule for completion in January 2018.*
- *Crews have completed approximately 60 percent of the secant pile wall.*
- *Earlier this month, crews began excavation of bedrock to prepare the site for construction of the roller-compacted buttress and splash pad below the emergency spillway in 2018.*

Oversight Update

- *DWR [has posted memo #13](#) from the independent Board of Consultants recapping the 13th meeting. DWR is meeting with the BOC for the 14th time this week.*

Oroville Dam: Phase two of spillway construction may be more challenging, contractor says

By Risa Johnson

11/30/17

<http://www.oroillemr.com/general-news/20171130/oroillev-dam-phase-two-of-spillway-construction-may-be-more-challenging-contractor-says>

Oroville >> Phase two of construction at Oroville Dam — with work on both spillways — might prove more challenging than the first feat, the contractor's project director said in a media call Thursday.

Oroville Series, Part One: DWR says it's ready for winter rains

December 5, 2017

By Jake Abbott

http://www.appeal-democrat.com/news/oroillev-series-part-one-dwr-says-it-s-ready-for/article_bd3a2198-da35-11e7-bdac-0f417b78dddf.html

Editor's Note: Aided by respondents to an informal survey we conducted earlier this year, we have compiled a long list of concerns and questions about the Oroville Dam, the emergency there in February, the evacuations, etc. This is the first of several parts in which officials are asked those questions.

It might be another year or so until reconstruction of the main spillway at Lake Oroville is officially complete, but Department of Water Resources officials say the structure is ready for whatever this winter can throw at it, even if there are a few cracks here and there.

Q: What work is done, so far, and what is still needed?

Q: What about those reports of cracks in the spillway?

Q: Are you sure the dam is safe?

Oroville residents blast state over dam repairs

December 6, 2017

Associated Press

http://www.appeal-democrat.com/news/oroillev-residents-blast-state-over-dam-repairs/article_e78ead20-db1a-11e7-81d5-97f3340f5238.html

OROVILLE, Calif. (AP) — Northern California residents living in the shadow of the nation's tallest dam vented decades of frustration with state water managers Wednesday, telling officials they have no credibility when they say hairline cracks in a newly rebuilt spillway are nothing to worry about.

Feature: The American Credit System

Houston Delegation Off to China; Mayor Turner Speaks of Friendship and Investment for Recovery

Dec. 1, 2017 (EIRNS)--It is now official. Tomorrow, December 2, Houston Mayor Sylvester Turner leaves with a delegation to China. According to the Dec. 1 press release of the Mayor's office, "The Houston delegation of business leaders and government officials will conduct 'Houston Business and Investment Seminars,' and visit with their counterparts, in the dynamic cities of Shenzhen, Shanghai and Beijing. Shenzhen is a Houston sister city and a major financial center with ties to nearby Hong Kong; Shanghai is the most populous Chinese city and a major port location; Beijing is the nation's center for government and development. Their combined municipal population is 58 million."

In addition to the Mayor and business leaders, it is reported that the Houston delegation includes two Houston City Council members, community college representatives, and Texas state representative Gene Wu. Texas Governor Greg Abbott has requested \$61 billion from the Federal government, for infrastructure recovery and new, critical, flood- and hurricane-protection infrastructure projects in Southeast Texas. It is an open question, widely debated throughout the region, whether such money will be forthcoming.

In a separate interview with Xinhua, also dated Dec. 1, Mayor Turner was asked how China can participate in rebuilding Houston after the Harvey hurricane disaster; Mayor Turner said, "Investment and other forms of financial support, as well as good wishes and friendship, would play a positive role in our recovery."

Real Economics

The fourth law of LaRouche's Four New Laws is , *"Adopt a Fusion-Driver 'Crash Program.'"* Class number 9 of the ongoing economic class series focuses on that policy. Today, December 7 is the 45th anniversary of the Dec. 7, 1972, NASA launch of its last Apollo mission to the moon. The return to an aggressive space exploration program is also part of that fourth law. To quote from a summary of the class: "Fundamental scientific discovery comes before the technologies based on that scientific insight, making scientific revolutions an indispensable part of ensuring continual economic progress."

What follows demonstrates that we are beginning to head toward such a policy.

The LaRouche PAC economic class series:

Class No. 9: Science Driver Principle

<https://larouchepac.com/20171206/class-no-9-science-driver-principle>

Welcome to the ninth class in our 2017 Economic Class series! Register for archive classes, homework and access to teachers [here](#). Fundamental scientific discovery comes before the technologies based on that scientific insight, making scientific revolutions an indispensable part of ensuring continual economic progress. Where do we look for potential future scientific revolutions? What must the United States, China, Russia, and other leading nations do to pursue this?

And here are the links to the first eight classes:

Class No. 1: LaRouche's Science of Economics is the Basis for US Joining the New Paradigm

<https://www.youtube.com/watch?v=WTXCAPwfSAw>

Class No. 2: LaRouche's Physical Economic Metrics: Productive Powers of Labor

<https://www.youtube.com/watch?v=sWcFDt3yfiA>

Class No. 3: Physical Chemistry: Stages of Development

https://www.youtube.com/watch?time_continue=4&v=A_XCGAfNa2U

Class No.4: Qualitative Change: What Number Cannot Measure https://www.youtube.com/watch?time_continue=1&v=MHh8Ht5qShU

Class No. 5 Bernhard Riemann and the Shape of Economic Space

<https://www.youtube.com/watch?v=r2mQuAze838>

Class No. 6: LaRouche's Physical Economic Metrics, Part II: How to Define Value

<https://action.larouchepac.com/2017-econ-class-series-sixth>

Class No. 7: The True Meaning of Infrastructure: Physical Economic Platforms

<https://www.youtube.com/watch?v=cWjGr62d9HQ>

Class No. 8: Making it Happen: Money vs. Credit <https://larouchepac.com/20171129/class-no-8-making-it-happen-money-vs-credit>

The Four New Laws to Save the U.S.A. Now!

Not an Option: An immediate necessity

By Lyndon H. LaRouche, Jr.

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http://action.larouchepac.com/know_the_full_story

(4) "Adopt a Fusion-Driver 'Crash Program.'" *The essential distinction of man from all lower forms of life, hence, in practice, is that it presents the means for the perfection of the specifically affirmative aims and needs of human individual and social life.* Therefore: the subject of man in the process of creation, as an affirmative identification of an affirmative statement of an absolute state of nature, is a permitted form of expression. Principles of nature are either only affirmation, or they could not be affirmatively stated among civilized human minds.

Given the circumstances of the United States, in particular, since the assassinations of President John F. Kennedy, and his brother, Robert, the rapid increase required for even any recovery of the U.S. economy, since that time, requires nothing less than measures taken and executed by President Franklin D. Roosevelt during his actual term in office. The victims of the evil brought upon the United States and its population since the strange death of President Harding, under Presidents Calvin Coolidge and Herbert Hoover (like the terrible effects of the Bush-Cheney and Barack Obama administrations, presently) require remedies comparable to those of President Franklin Roosevelt while he were in office.

This means emergency relief measures, including sensible temporary recovery measures, required to stem the tide of death left by the Coolidge-Hoover regimes: measures required to preserve the dignity of what were otherwise the unemployed, while building up the most powerful economic and warfare capabilities assembled under the President Franklin Roosevelt Presidency for as long as he remained

alive in office. This meant the mustering of the power of nuclear power, then, and means thermonuclear fusion now. Without that intent and its accomplishment, the population of the United States in particular, faces, now, immediately, the most monstrous disaster in its history to date. In principle, without a Presidency suited to remove and dump the worst effects felt presently, those created presently by the Bush-Cheney and Obama Presidencies, the United States were soon finished, beginning with the mass-death of the U.S. population under the Obama Administration's recent and now accelerated policies of practice.

We Could Have Been Mining Helium-3 on the Moon by Now, and Still Can, Says Harrison Schmitt

Dec. 6 (EIRNS)—Apollo 17 astronaut Harrison Schmitt outlined what the U.S. could have been accomplishing in space by now, if the Johnson Administration had not cut NASA's budget and cut back production of Saturn V rockets, which decision was then confirmed by the Nixon administration. What that decision meant, New Mexico native Schmitt told the Albuquerque Journal in an interview posted Dec. 3, is that "we really gave up on deep space exploration." "No question we would have a settlement on the Moon and would seriously have a program going to Mars, if not already there." Journal Senior Editor Kent Walz interviewed Schmitt on the occasion of the 45th anniversary of the Dec. 7th launch of the final, Apollo 17 mission, which took Schmitt to the Moon.

Schmitt has been an ardent promoter of a return to the Moon (titled his book Return to the Moon), and has worked closely with scientists working on fusion energy using helium-3 fuel. There are many resources in the lunar soil, he said in the interview.

"One of those, helium-3, isn't readily available on Earth, but it is embedded in lunar soil. It is a nearly ideal fuel for fusion." Although we have not yet exploited this resource, which we have known about for many years, he said, "it's still there and it's not going anywhere." He explained that roughly 220 pounds of helium-3 "would provide the power necessary to serve Dallas for a year.... You would have to mine a fair amount of lunar soil to produce 100 kilograms, but it's certainly possible."

Although Schmitt poses competition from China as an overriding geopolitical rationale for a visionary U.S. space program, he concludes that, "Settlement off the Earth can be very important philosophically into the future. And it is one way in which the human species can perpetuate itself against the very remote possibility of a very large asteroid impact on the Earth."

ITER Director-General Is Lobbying the White House for Increased Fusion Funding

Dec. 6 (EIRNS)—ITER Director-General Bernard Bigot is appealing to President Trump to increase U.S. fusion funding so that the U.S. can meet its commitments to the International Thermonuclear Experimental Reactor (ITER). Bigot is in Washington, Reuters reports, to talk with the Administration about the budget. He is explaining that the 2017 U.S. ITER budget was cut from a planned \$105 million to \$50 million, and that the Administration's FY18 request, at \$63 million, is a cut from the previously planned level of \$120 million. In fact, the higher numbers are each tens of millions of dollars less than what is needed to meet U.S. hardware contributions to building the ITER tokamak, which needs minimally \$150 million per year.

Bigot said that French President Emmanuel Macron wrote a letter to Trump in August asking his administration to reconsider the fusion funding level. ITER is being built in France.

"We hope for a decision this weekend," Bigot said. He explained that when Trump cut the Energy Department's budget, the department reduced the funding for ITER.

Today, ITER released a statement by Bigot on the progress of the project. ITER has reached the milestone of completing 50% of the total construction work, Bigot reports. The statement summarizes

ITER's status, and then the Director-General says: "Looking ahead, we will need the commitment and support of every member to maintain this performance.... A shortfall in the commitment of any member, if it impacts the delivery of that member's components, will have a cascading effect in delays and costs to all other members."

Apollo 17: NASA's Last Apollo Moon Landing Mission in Pictures

By Christine Lunsford, Space.com Contributor | December 7, 2017 06:50am ET

On Dec. 7, 1972, NASA launched its last Apollo mission to the moon: Apollo 17. See photos from that historic mission, which landed astronauts Gene Cernan and Harrison Schmitt on the moon while Ron Evans orbited above. Shown Here: This official NASA image shows the prime crewmen for the Apollo 17 lunar landing mission in the Lunar Roving Vehicle trainer. In the background is the Apollo 17 Saturn V space vehicle standing on the Launch Complex 39 Pad A at Kennedy Space Center in Florida.



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