



**California
Western**
*Environmental Law Society
Newsletter*

2014-2015

IN THIS ISSUE

California Trail-blazes on Banning Single-Use Plastic Bags

By: Matt Bertolucci
picture from revoltinstyle.com

On September 30, 2014, California Governor Edmund “Jerry” Brown, Jr., signed into law Senate Bill 270 (SB 270). In so doing, California became the first State in the United States to ban *single-use* plastic bags.

Among other provisions, the new law provides that certain retailers (e.g., particular grocery stores) may no longer provide *single-use* plastic bags to their customers effective July 1, 2015. The bill’s prohibition extends to other retailers (e.g., certain convenience food marts) effective July 1, 2016. A retailer subject to this new law may still sell *reusable* bags at checkout, but the sale of such reusable bags is subject to various conditions (e.g., they are composed of certain material; they contain selected, visible disclosures; they are sold for a minimum price; etc.).

A question that may be implicitly taken for granted with this legislation, but that, nonetheless, merits some explicit exploration is: why? In short, the unintended consequences of plastic bag production—pollution—have caused environmental and economic issues that have adversely affected the health and general welfare.

In the United States, per a University of Southern California publication, around 380 billion plastic bags are consumed on a yearly basis (on the global level, the number rises to somewhere between 500 billion to 1 trillion). Of this number, data extrapolations based on figures from the United States Environmental Protection Agency indicate that somewhere around one to three percent of consumed plastic bags end up outside of landfills.

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2014-2015 ELS Board

ELS promotes awareness of environmental issues and environmental law on campus. Thanks to everyone for keeping ELS active at California Western!

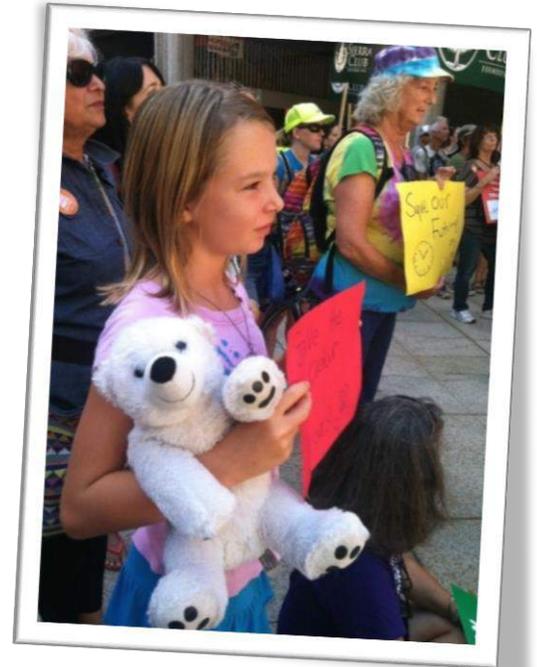
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Climate Change March

By: Maris Brancheau

Members of the California Western School of Law community, including Professor Richard Finkmoore, participated in a historic rally in San Diego on September 21, 2014. The San Diego People's Climate March took part in solidarity with similar marches across the United States to bring a renewed focus on the need for climate action, including sustainable climate action plans. San Diego has developed such a plan and Council Member Todd Gloria discussed its merits during a pre-march gathering of hundreds of people. The crowd then left the Civic Center by bicycle

and foot march with signs, puppets, and even a giant paper ice berg. The group stopped to hear a youth speaker at the San Diego Santa Fe Transit Station and concluded their march to the County Administration Building on Harbor Drive. The event brought out a diverse crowd, including families, participants in anonymous masks, and senior citizens. The event was sponsored by SANDIEGO350.org. The group is based on the national organization 350.org founded by climate activist, researcher, and writer Bill McKibbin. For more information on San Diego's Climate Action Plan or local climate change awareness and activist activities, visit www.sandiego350.org.



Young, old, and furry at the People's Climate March in San Diego. Front and center is Sita Adelaide Antel, 10, daughter of Maris Brancheau, 2014 graduate of CWSL. (Picture from Maris Brancheau)



When I began attending California Western School of Law (CWSL), I noticed that no solar photovoltaic (PV) panels were installed on the buildings. This notion seemed peculiar to me because of the school's location in sunny San Diego. To remedy this, I spoke to administration to determine how to facilitate the process. Ultimately, it seemed that a petition, signed by fellow students, would be the most effective way to take action. The petition includes various reasons to install solar panels on CWSL campus.

Petitioning for the Sun

By: Thao Pham

Picture from quietkinetic.wordpress.com

First, installing solar PV systems will reduce energy costs. The money saved can then be put back into the school for scholarships and academic programs. Second, CWSL can gain nationwide publicity as an environmentally conscious law school. This will appeal to certain demographics and may influence or encourage students to attend this school. Third, federal, state, and local grants or tax exemptions are available to fund or expedite building permits for the project. Finally, installing solar PV systems benefits not only the environment, but also our health. Because we are inextricably interconnected to our

environment, using cleaner sources of energy will reduce greenhouse gas emissions, thereby reducing the risks of respiratory and neurological problems as well as cancer.

Overall, the experience was quite revealing because I learned that fellow students not only agreed with my position, but also felt compelled to help. Now awaiting the school's decision, I hope that the CWSL community will also view this renewable energy source as an economically, equitably, and environmentally sound.

The Anthropocene: Are We There Yet?

By: Professor Richard Finkmoore

Pictures: Top right from rs.resalliance.org, bottom left from cwsl.edu



Geologists divide the 4.5 billion-year history of our planet into segments of time, such as epochs, periods, and eras. The prevailing scientific view is that we are now living in the Holocene epoch, the 11,700 years since the last major ice age. The Holocene is part of the Quaternary period which began about 1.6 million years ago, which in turn is part of the 65 million year-long Cenozoic era. (For reference, the rise of the Himalayas and the wide spread of mammals and flowering plants occurred during the early Cenozoic.) So far, the Holocene has been notable for its remarkably stable and hospitable climate.

The word anthropocene first gained attention at a scientific conference near Mexico City in 2000. The conference chairman kept referring to the present epoch as the Holocene which prompted Nobel laureate and atmospheric chemist Paul Crutzen to stand up and exclaim, "Let's stop it! We are no longer in the Holocene.



We are in the Anthropocene."

Crutzen recalls, "I just made up the word on the spur of the moment. Everyone [in the conference hall] was shocked."

The term (combining "anthro" meaning human with the standard suffix for epochs "-cene") reflects the belief of Crutzen and others that we humans – now numbering seven billion – have not only spread over the face of the Earth but now dominate the biological, chemical, and geological processes of our planet. Virtually all of Earth's ecosystems have now been dramatically transformed through human actions. We have erected more than 45,000 large dams which now hold in their reservoirs from three to six times as much water as do natural rivers. Humans have leveled many of the world's forests and converted huge areas of land to industrial agriculture through the uncontrolled use of synthetic fertilizers which has created many "dead zones" in the planet's oceans. Man has erected more than a score of sprawling megacities of steel and concrete, each with more than ten million inhabitants. We have burned enough coal and oil to alter our planet's carbon cycle. Those who favor official recognition of the new reality as a new "Age of Man" argue, in the words of Dr. Jan Zalasiewicz of the University of Leicester, "Simply put, our planet no longer functions the way that it once did. [The] atmosphere . . . oceans, ecosystems, they're all operating

outside of Holocene norms. This strongly suggests we've crossed an epoch boundary."

In recent years, the notion of the Anthropocene has received considerable scientific and popular attention. Last year alone, the term appeared in more than 200 academic papers. The Anthropocene has been featured on the covers of *The Economist* and *National Geographic*. But notoriety does not make a scientific fact. That will be determined by a group of specialized scientists that rules on issues of geologic time, the International Commission on Stratigraphy. Epochs must be distinguished from one another based on careful geological observations of layers of sediment usually millions of years old and groupings of fossils commonly found together.

Of course, the fossil and rock record of the present does not yet exist. So the question becomes, when the most recent hundred or several thousand years are reflected in sedimentary strata, will human impacts be "stratigraphically significant"? Has the human presence merely altered the face of the planet or has it, in the words of one observer, "cut to the bone of deep time"?

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The Anthropocene: Are We There Yet?

Picture from architectsandartists.com

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Among the multitude of human-caused alterations of the Earth, several are likely to be recognizable in the layers of mud that will eventually form rocks. While many cities will be obliterated by erosion and leave no trace, ones located on fast-sinking river deltas (such as New Orleans) or inundated by rising sea levels due to climate change will create distinctive sediments. Fossils of the myriad animals and plants that have been adapted for human use will be identifiable and extensive in recent layers. These will be all the more obvious because of the fossils that will not be found there. The planet has experienced five mass extinction events over its 4.5 billion year history. The world has now entered a sixth wave of mass extinction entirely caused by humankind, by some estimates losing 27,000 species *every year*, or 74 species *every hour*.

The most significant change from a geological perspective will be changes in the composition of the atmosphere. Planetary warming due to greenhouse gas emissions is already shifting some species to higher elevations and toward the Poles. This will be apparent in the fossil record. As average temperatures continue to increase, many species will not survive and their disappearance will be recorded in layers of sediments. Further, the many gigatons of carbon dioxide released in the production of energy today are already acidifying the oceans. Later this century, such acidification is expected to prevent corals from building reefs and this “reef gap” would provide another signal to future stratigraphers.

Official recognition of the Anthropocene will not come quickly. Dr. Zalasiewicz, who sits on the working group of the International Commission on Stratigraphy now considering whether to formally propose the new epoch, says, “All of the discussions about any unit in geology take an age, almost literally.” For example, it took sixty years of contentious debate before the Commission established the Quaternary period.

While the official deliberations proceed slowly and cautiously, scientists urge us not to wait to learn what it means to live in “the Age of Man.” Dr. Zalasiewicz says even if the Anthropocene is not officially validated, thinking about it as possibly something new under the Sun is still very worthwhile: “We’re trying to get some handle on the scale of contemporary change in its very largest context.” Dr. Crutzen adds, “What I hope is that the term Anthropocene will be a warning to the world.”

Teaching students we are living in the Anthropocene would call attention to “the enormity of humanity’s responsibility for the Earth,” according to Paul Crutzen and environmental journalist Christian Schwägerl. But it would also “highlight the immense power of our intellect and our creativity, and the opportunities they offer for shaping the future.”



ELS EVENTS



Beach Cleanup Spring 2015

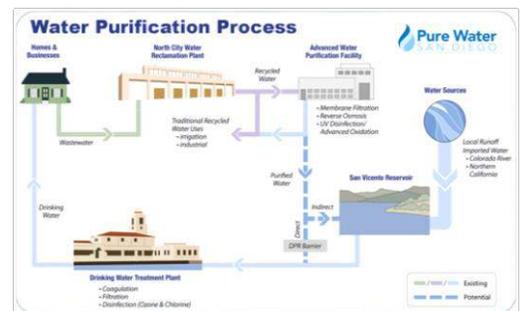
Environmental Law Society beach cleanup was a huge success! We partnered with USD and TJSJ Environmental Law Societies to make Ocean Beach a little cleaner. And of course to share snacks after all the hard work. It was a great day to be outside and do something to improve local water quality. A big thanks to San Diego Coastkeeper for providing the beach cleanup supply kit!

Picture from Sarah Gonzalez

Pure Water San Diego

For our last general meeting of the semester on April 14th we hope to have Pure Water San Diego come and share information on the City’s water recycling initiative. This program will take water used by local residents, which is currently being treated and dumped into the ocean, and will instead treat it and add it back to our clean water supply, helping San Diego’s water shortage problems. For more information go to www.sandiego.gov/water/purewater or email purewatersd@sandiego.gov.

Picture from sandiego.gov



Earth Day 2015

This year, Earth Day falls on Wednesday, April 22, 2015. Earth Day is an opportunity for all of us to think about ways to protect our earth. Acts of Green could include turning off your lights, playing a board game or spending time with friends instead of watching TV, replacing your lawn with drought-resistant landscape, planting a tree – the list goes on! Think about something you can do to make our planet a better place.

Environmental Justice Close to Home

By: Mia Bolton



Low-income communities of color have long struggled with racist land use policies and practices that diminish their health, safety, and quality of life. Resulting in incompatible community development due to the permitting of industrial facilities next to homes, schools, and open spaces. At the root of this all-too-common pattern are discriminatory land use regulations, such as zoning, that do not protect the community's health.

The community of Barrio Logan, one of San Diego's oldest neighborhoods, currently contains an unhealthy mix of homes, schools, and industries, turning it into a microcosm of environmental racism, including:

- A community of color created by racially discriminatory real estate covenants
- Encroachment of industry into residential areas
- Destructive effects of highways and bridges
- Failure of government to provide services, provide protective zoning, and keep their promises, and ultimately
- The conversion of a once vibrant community into a land of junkyards, poverty, and substandard housing

Much of this transformation took place from the 1920s to 1950s, but the community was physically torn apart in the 60s. In 1963, Interstate 5 was built through the middle of Logan Heights – the area to the northeast of the freeway retained the name of Logan Heights, while the area to the southwest became known as Barrio Logan. In 1967, the Coronado Bridge was built over the new community, dissecting the new

area of Barrio Logan. Thousands of homes were destroyed and families displaced by these events.



This period also sparked the birth of San Diego Chicano Park. The land that was promised as a park under the bridge was instead to be turned into a highway patrol station but people revolted. Eventually Chicano Park was created, an iconic area now home to world-famous murals. A free health clinic was also established, many of the junkyards were eliminated and in 1978 the Barrio Logan/Harbor 101 Community Plan was adopted.

Since 1978, this neighborhood has not seen a community plan update, making it the most outdated community plan in San Diego. Imagine for a moment the changes in your community since the late 70s; the technology, innovations and new businesses that have come to be. Then think about your neighborhood. Do you have metal-plating industries on your street? How about petroleum distributors or major metal recyclers?

Barrio Logan suffers from the outdated land-use zoning in its current 1978 community plan which

allows polluting industries to operate across the street and next to homes, schools, and parks. Without areas designated for commercial, homes and industries, the residents of Barrio Logan continue breathing the toxic fumes of the factories next door and children visit the emergency room three times more than the counties average due to asthma incidents.

Environmental Health Coalition (EHC) along with community residents have fought for decades for a new community plan and zoning in the community, spending the last five years coming together to develop a new, healthier plan that works for residents and businesses. In October of 2013 the San Diego City Council approved the plan but after billion-dollar, out-of-state corporations launched a referendum to mislead San Diego voters, which resulted in placing the new adopted plan to a citywide vote. In June of 2014 the Barrio Logan community plan was overturned by citywide voters, but more than 75 percent of voters surrounding the Barrio Logan community supported the plan, making a strong and clear statement that Barrio Logan wants a healthy and safe neighborhood.

With our ever-growing community voice, we know Barrio Logan will earn a new community plan to make the neighborhood a healthy, safe place for families to thrive and grow just like the rest of San Diego. Until then, we continue standing up for what we know every community deserves: environmental justice and a toxic-free future.

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Environmental Justice Close to Home (Continued from page 5)

If you are interested in learn more about getting involved in your region's community planning, check out our inspirational video that empowers real people to become leaders for health and justice in their communities, just the way EHC community members have. This video shows the impacts of toxic pollution and discriminatory land use policies in ways that anyone can understand, empowering everyone to become involved in planning and policymaking.

You can sign watch the video at www.environmentalhealth.org by searching "creating healthy neighborhoods"

The Good in Being Green

By: Morgan Duffy

"Water and air, the two essential fluids on which all life depends, have become global garbage cans."

—Jacques-Yves Cousteau,
Oceanographer

How much plastic do you use in a day? Maybe you wake up to your plastic phone going off, where you will then be prompted to switch on your plastic light switch to visit your bathroom where you will squeeze a plastic tube over your plastic toothbrush.

Your morning ritual is one plastic device after another: hair products, brushes, make-up, razors, deodorants, plastic yogurt containers, plastic to-go cups, plastic spoons, plastic bottles, to name a few. You jump in your car and turn it on with your plastic key. You roll down your windows with their plastic knobs. If it's raining, no problem—you've got plastic windshield wipers to keep your windshield clear. Arguably the first thing you pick up at work/school is a plastic pen to start taking notes from your computer, where you will start frantically tapping away at its plastic keys. I could go on, but we are only at eight o'clock in the morning and

this article would get terribly boring (and redundant) fast, if it hasn't already. I consider myself a fairly environmentally conscious person, but I can tell you (yes, I'm embarrassed to say) that I probably use twice that much plastic by eight o'clock each day. My use of plastic is out of control, and I bet you might agree that yours is too. Here's why. The North Pacific Ocean has become one of the world's largest floating landfills—it is the resting place for massive amounts of human-generated trash—from microscopic plastic particles to lighters, bottle caps, toys, plastic bags, flip-flops, and plastic appliances to name a few. It has been aptly named the Great Pacific Garbage Patch with some reports claiming it to be twice the size of Texas. Also in the North Pacific Ocean is Midway Atoll (also known as Midway Islands). Littering the beaches of these wildlife-rich islands is a colorful array of unnatural items—tons (literally) of plastic.

Unfortunately, these remote islands are experiencing a substantial decline in their animal population: thousands of dead baby and adult albatross carcasses line the beaches.

An astonishing array of plastic remains in a heap where each bird laid down to die: Barbie doll shoes, bottle caps, needles, combs, a piece of plastic from a World War II seaplane shot down in 1944, and much more.

Albatross mothers attempt to feed their young, and themselves, pieces of plastic mistaken for nutrient rich invertebrates and fish found in the ocean and on shores.



Picture from animals.howstuffworks.com

When the birds swallow the bits of plastic, the rough edges or bulky, stiff pieces, perforate their stomachs or block their esophagus. They are unable to eat, and ultimately starve.

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The Good in Being Green

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A two-year study funded by the U.S. Environmental Protection Agency found that of the 500,000 baby albatross chicks born on the atoll each year, about 200,000 starve or die of dehydration caused by consuming plastics. One study estimated that baby chicks that hatch on the island are fed five tons of plastic each year. The only culprit for this unfortunate mess are humans who are thousands of miles away, dumping their garbage into the oceans without regard for its environmental ramifications. I am one of these humans. These facts are startling considering the islands are mostly uninhabited and the closest human populations to these areas are

hundreds, if not thousands, of miles away. The prolific amount of non-biodegradable debris exemplifies the inordinate human consumption and improper disposal of plastic products. There is no doubt that human’s use of plastic items is having an adverse effect on the natural environment, and also on themselves. The presence of plastic in the oceans is harmful, if not lethal, to the flora and fauna in the ocean’s natural ecosystem. Animals accidentally ingest plastic or become entangled in it, causing deformities or death. Humans are impacted economically when they need to clean up the debris, and also physically when they ingest poisonous plastic particles indirectly by consuming seafood.

This singular geographic example makes it clear that recognition and responsibility for human consumption and disposal is not being carefully considered and monitored. Unfortunately, it must be pointed out that a clean-up solution for the existing garbage in the North Pacific Ocean, Midway Atolls and

other areas around the world is not viable.

The amount of effort, resources and hours it would take to successfully remove these plastic masses from the waters is not economically or physically possible. Furthermore, we have nowhere to put several Texas-sized “bags” of trash. Instead, we must focus on curbing our plastic consumption and creating solutions for the future. As busy law students, you may think you don’t have the time to save the environment (at least not yet) and you may not even be that interested, but there are a few ways that you can contribute substantially towards shrinking the GPGP and saving a baby bird or two. In the meantime, you can also pad your sad law school wallet with a few extra bucks with these few tricks:

For more information or advice on how to take action to curb your plastic consumption email morganavaduffy@gmail.com.

<i>Item</i>	<i>How to reduce your use</i>	<i>Benefits</i>
<i>plastic bottles:</i>	Invest in a reusable bottle (or reuse an old one) and fill it up at the fountains or at home. If you do buy bulk bottles or cans, make sure to cut up the plastic that holds the cans together to prevent animals from getting strangled.	-An extra few bucks—every bottle you buy adds up! -For every bottle you don’t purchase you have the potential of saving another bird or preventing another turtle from thinking your disposed bottle is dinner. -You’ll save animals from being strangled by avoiding cans that are held together by plastic “yolks” or “rings”.
<i>plastic bags:</i>	Invest in a few reusable bags or use your old shopping bags. At the very least, ask for paper, it’s biodegradable!	-Yes, your pocket book! In July 2015 California grocery stores will credit you 10 cents for every reusable bag you bring in. -Turtles, fish, whales, dolphins and many other marine animals have been found with plastic bags in their stomachs.
<i>pens:</i>	Invest in recycled or long-lasting pens (or re-use your old ones).	-Well first of all, you’ll look classier with a nice pen. -You’ll save money if you can manage to hold onto a good pen and purchase ink refills as opposed to constantly buying cheap plastic pens. -Marine animals will have less to be confused about at meal-time.
<i>food:</i>	Pack it in: pre-pack your meals. Use plastic or glass reusable containers	-There are so many benefits to packing your lunch, but you’ll definitely save money from eating out. -Eat healthier because you know what’s in your food. -Save on countless plastic products that harm marine animals by using reusable containers.
<i>Beauty products</i>	Buy bulk beauty products at places like Costco and refill your smaller bottles.	-Money in the bank! -Again, the fewer plastic bottles you can put into the debris pile, the more potential animal life has at living.

Waters of the US: What Are They, What's the Controversy and Why Should We Care?

By: Brian Felton

Picture from secure.sierraclub.org

This article is not intended to provide a detailed history of either the federal Clean Water Act (CWA) or federal jurisdiction over surface waters. You could write an entire book on the subject and people have. Rather, this article provides a brief statutory, regulatory, and judicial history regarding the term “waters of the U.S” and addresses the current controversy over the U.S. Environmental Protection Agency’s (EPA’s) proposed redefinition of the term.

The CWA is a statutory scheme legislated “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Administrative authority over the act was granted to the EPA. The CWA’s purview extends to “navigable waters.” The CWA defines navigable waters as “the waters of the United States including the territorial seas.” The definition of waters of the U.S. (i.e., federally jurisdictional waters) is further refined in the Code of Federal Regulations (CFR).

33 CFR §328.3 and 40 CFR §230.3(s) define waters of the U.S. to include traditional navigable waters, interstate waters, tributaries of navigable and interstate waters, and adjacent wetlands. Promulgation and application of the regulatory definition has been shaped by three

landmark U.S. Supreme Court cases: *U.S. v. Riverside Bayview Homes, Inc.* (1985), *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (2001), and *Rapanos v. U.S.* (2006).

Each case addressed a unique issue regarding whether certain wetlands were waters of the U.S, and each case helped to further refine and guide application of the definition. However, many feel that the *Rapanos* opinion (a plurality opinion with no majority holding) muddied the waters of federal jurisdiction rather than cleared them up. In *Rapanos*, Justice Kennedy authored a concurring opinion where he developed the “significant nexus test” to define the outer limits of federal jurisdiction over surface waters. To mitigate confusion over the *Rapanos* opinion and how to apply the significant nexus test, EPA and USACE issued a 2008 joint memorandum. The “memorandum provides guidance to EPA regions and [USACE] districts implementing the Supreme Court’s decision in [*Rapanos*], which addressed the jurisdiction over waters of the United States under the [CWA].”

The memorandum identifies types of waters categorically delineated as

waters of the U.S. and provides guidance on applying the significant nexus test to waters not categorically defined. Justice Kennedy’s significant nexus test and the joint memorandum expanded the purview of CWA jurisdiction from its historical limits. However, although the memorandum provided EPA and USACE staff guidelines to determine the extent of their jurisdiction, it is not legally binding. Therefore, to resolve the post-*Rapanos* confusion and codify the procedures outlined in the memorandum, EPA published a proposed rule re-defining waters of the U.S. in the Federal Register on April 21, 2014.

The comment period on the proposed rule ended November 14, 2014. The main issue regarding the proposed definition of waters of the U.S. revolves largely around states’ rights. Opponents of the rule believe the new definition expands federal jurisdiction over waters historically only subject to state regulation. Along the same line, opponents believe that the definition imputes CWA purview over groundwater even though it has long been recognized that the CWA does not regulate groundwater.

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Waters of the US: What Are They, Who Regulates Them, What's the Controversy and Why Should We Care?

Picture from wolpy.com

(Continued from page 8)

Notwithstanding the federal Safe Drinking Water Act, groundwater regulation is left to the individual states. Many opponents also believe that the proposed definition will create new types of regulated waters that did not exist historically. Opponents claim the proposed definition will assert jurisdiction over non-aquatic features like ditches. Opponents believe the proposal will increase business costs resulting from over-regulation and infringement on states' rights. Essentially, opponents support shrinking the extent of federal jurisdiction over surface waters leaving the fate of these natural resources to the states.

Naturally, proponents of the rule argue that none of these fears will come to fruition and the new definition is essentially codifying the practice already implemented by the federal regulatory agencies pursuant to *Rapanos*' significant nexus test and the EPA/USACE 2008 memorandum.

Contrary to the opponents' fears, proponents argue that the rule will actually assist states in protecting the quality of their waters. Proponents also argue that the proposed rule will reduce confusion by clarifying the types of waters covered under the CWA, thereby saving businesses and industry time and money. Additionally, proponents contend that the public will benefit economically and non-economically through

increased water quality, reduced flooding, and increased hunting and fishing opportunities. But why should we care? Don't we trust the states to responsibly regulate discharge of pollutants into our waters? What happens if we shrink the extent of CWA jurisdiction?

Fifty-three percent of U.S. stream miles are considered headwater streams and 59% are considered intermittent or ephemeral. These are the very types of waters that risk losing CWA protection if the proposed rule is not codified, in turn leaving current EPA and USACE jurisdictional delineation practices subject to challenge in the courts. Forty percent of CWA §402 regulated point source pollutant discharges are discharged into headwaters. CWA §402 statutes and associated regulations impute a myriad of water quality protective measures on dischargers substantially reducing the impact of point source discharges on our nation's water quality. Now, what if we succumb to the arguments of the proposed rule opponents and reduce the extent of CWA jurisdiction so that these headwaters were left to be regulated by the states?

Some states have established at least some level of aquatic resource protection programs for waters within their boundaries. However, many of these programs are less protective than the CWA regulatory regime and many of these state statutes are regularly attacked by industry supported proposed state legislation. Additionally, unlike the CWA which

contains a citizen suit provision allowing citizens to file claims against polluters and regulatory agencies alike for CWA violations, most state statutes do not contain citizen suit provisions. More importantly, 25 states do not have any state waters protection programs. Therefore, if the headwaters discussed above were precluded from CWA jurisdiction, point source discharges into these waters would go largely unregulated severely degrading downstream resources and substantially reducing surface water quality throughout the nation.

Excluding these waters from CWA jurisdiction would also strip citizens of their right to enforce the CWA against the polluters, and the states that allow them to pollute.



For more information and access to all documents related to the proposed rule visit EPA's website at <http://www2.epa.gov/uswaters>.

Cruise the web and read the news stories regarding challenges to state water protection programs to more fully understand the dangers faced by the nation's waters if federal jurisdiction is reduced. Get informed and join the debate. Our waters of the U.S. need your support.

The Hydrokinetic Turbine Debate

By: Dana Tomasevik

Picture from teeic.indianaffairs.gov

When it comes to renewable energy sources, most of us have heard of solar and wind energy, but have you heard of hydrokinetic energy? Hydro, of course, means water, and kinetic means motion; so hydrokinetic energy comes from the motion of water, such as waves and tidal currents. The U.S. Department of Energy is supporting research on innovative turbine technologies to capture kinetic energy from waves and tidal currents in order to produce electricity, much like wind turbines generate electricity from wind. It's estimated that hydrokinetic technologies could power up to 67 million homes in the U.S., the equivalent of displacing 22 coal-fired power plants.

Tidal turbines look a lot like wind turbines, and are often placed in rows, as in some wind farms. The difference of course is that they are placed on the ocean floor or river bed instead of on land. The currents spin the blades, which then generate electricity via an attached generator. The electricity moves through a cable to shore, where the electricity can then be distributed throughout the electrical grid.

Tidal turbines have a few advantages over wind turbines. In this increasingly crowded planet, they don't take up space on land. Another advantage is that they can produce the same amount of energy as wind turbines with less effort. Water is much denser than air, so tidal turbines can move at slower speeds over less area while producing the same amount of energy. The third advantage is that the tides are way more predictable than wind. The moon creates predictable high and low tides twice a day, every day.

But lest you get too excited about the prospect of hydrokinetic energy as a clean and renewable energy source, let me remind you that we don't fully understand yet how these tidal turbines will affect marine ecosystems. Giant spinning blades are a weapon, and we don't want to slice and dice fish trying to pass through the turbines. We also don't want to negatively impact fish behavior and migration patterns.

The Electric Power Research Institute (EPRI) has conducted preliminary laboratory studies on these issues. Using rainbow trout and largemouth bass that EPRI released just upstream from the turbine, it found that the fish actively avoided the turbine blades and overall fish survival was over 98%. However, this was using only one turbine.

In another lab study using downstream-migrating Atlantic salmon and upstream-migrating American shad, no injuries occurred,

but there were behavioral responses. Though all of the salmon made it downstream, some of them appeared disoriented, perhaps because of the velocity of the water from the turbine. The turbine also affected the shad in that the velocity of the water flowing downstream from the turbine impeded the shad's ability to swim upstream past it. Many more shad in the control group (without the turbine) were able to swim upstream than the group with the turbine. Again, however, this was a laboratory-controlled study using an artificial flume (constricted passageway with walls on either side), one turbine, and a relatively small sample size (a few hundred fish). In short, more field studies need to be conducted in rivers and tidal areas, using more turbines, in order to get a more accurate picture of the potential for injuries and changed behaviors.

