# A Legal Reporter of the Mississippi-Alabama Sea Grant Consortium Volume 36, Number 2

## Alabama's Plan to Build Conference Center with Restoration Funds Hits Roadblock

#### Also,

Court Green Lights Regions Bank's Trespass Claim Against BP Initial Challenge to Red Snapper Regulations Falls Short Texas Drought Rules: Public Interest Exception Not Allowed



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Cover photograph of an oil spill on Orange Beach, Alabama; courtesy of David Rencher.

> Contents photograph of the Alabama coast; courtesy of Eric Lindsey.

### • UPCOMING EVENTS •

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> June 10, 2016 Sandestin, FL

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## Alabama's Plan to Build Conference Center with Restoration Funds Hits Roadblock

John Juricich

Oil spill on Orange Beach, Alabama; courtesy of David Rencher.

MAY 2016 • WATER LOG 36:2

The BP oil spill resulted in large-scale restoration efforts for the Gulf coast. These efforts are mostly governed by a lengthy, detailed restoration plan. Part of the plan dictates how restoration money is to be used. Not surprisingly, given the amount of funding on the table, litigation ensued as agencies began allocating the money to certain projects. In the recent case of Gulf Restoration Network v. Jewell, a federal judge in the Southern District of Alabama barred state and federal trustees (Trustees) from using \$58.5 million that was part of an early \$1 billion settlement with BP Exploration and Production Inc. to restore coastline along the Gulf of Mexico.1 The court ruled that the Trustees violated the Oil Pollution Act (OPA) and the National Environmental Protection Act (NEPA) by acting arbitrarily and capriciously when creating the plans for a lodge and conference center in Alabama.

#### **Early Restoration**

The BP oil spill damaged the natural resources of the Gulf Coast. Affected natural resources included ecologically, recreationally, and commercially important species and their nearshore and offshore habitats in the Gulf of Mexico and along the coastlines of Alabama, Florida, Louisiana, Mississippi, and Texas. Under the OPA, the disaster triggered action by state and federal agencies, known as "Trustees," to assess natural resource injuries and losses and to determine the actions required to compensate the public for those injuries and losses. In April 2011, the Trustees entered into an agreement with BP whereby BP agreed to pay \$1 billion to Alabama, Florida, Louisiana, Mississippi, and Texas (State Trustees), as well as the U.S. Department of the Interior, the U.S. Environmental Protection Agency,

Photo of a bulldozer cleaning the beach of tarballs from the BP oil spill on the coast of Baldwin, Alabama; courtesy of Judd McCullum.



the U.S. Department of Agriculture, and the National Oceanic and Atmospheric Administration (Federal Trustees), for early restoration of natural resources while the full injury assessment was ongoing.

Early restoration projects were planned to take place in three phases. Phases I and II cost a total of \$71 million and were approved in April and December of 2012. The lodge and conference center at issue in this case were part of the Gulf State Park Enhancement Project, which was finalized in June 2014 as part of the Phase III plan. At the time the plan was approved, however, the lodge and conference center were only theoretical and lacked any concrete architectural plans. As required by NEPA, the Federal Trustees prepared and submitted a Phase III Programmatic Environmental Impact Statement (PEIS) for public comment and held public meetings before adopting the final PEIS in June 2014. The PEIS was broad, covering all Phase III projects, and used a programmatic approach to assist the Trustees in evaluation of proposed projects.

The Alabama Gulf State Enhancement Project was designated a restoration project designed to make up for the loss of recreational use caused by the spill. According to the PEIS, the proposed lodge and conference center would make up for lost recreational use by creating approximately 120,000 new-visitor nights per year and a roughly comparable number of visitor-days at the park. The PEIS did not explore any potential alternative projects, but rather stated that the only alternative to the project is "no action." This led the GRN to file this lawsuit in 2015, contending that the federal agencies and their administrators violated the OPA and NEPA by failing to provide proper alternatives to the lodge and conference center. GRN sought an injunction barring the defendants from using the \$58.5 million.

#### **Alternatives Analysis**

The OPA requires, among other things, that if the Trustees determine that an oil discharge caused injury to natural resources and restoration is required, they must "identif[y] a 'reasonable range' of restoration alternatives, evaluating them against several factors, including cost, potential success, risk of collateral injury, and public health and safety."<sup>2</sup> NEPA also requires an

alternatives analysis. Under NEPA, any major federal action that would significantly affect the environment requires the preparation of an Environmental Impact Statement (EIS) that examines the adverse environmental impacts of the action and the alternatives to the proposed action.3 Specifically, the EIS must "present the environmental impact of the proposal and the alternatives [to that proposal] in comparative form ... providing a clear basis for choice among options by the decisionmaker and the public."4 In other words, the Trustees in this case were required to identify restoration alternatives to the lodge and conference center and provide clear evidence of evaluation of those alternatives. If the court finds that Trustees did not satisfy this requirement, thus acting arbitrarily and capriciously, the court may set the proposed action aside.

GRN argued that the PEIS was deficient due to its failure to include alternatives other than "no action." Specifically, GRN pointed to several reasonable alternatives that could have been addressed: purchase property for public access and conservation, restore wetlands and shoreline, build habitat, allow a private entity to fund or partially fund lodge construction and apply funds to restoration, or build a public education and trails component and forego the lodge/convention center. The Trustees argued that those alternatives were unreasonable because they could not have been implemented under the restoration agreement.

As the court pointed out, the Trustees essentially embraced a circular argument that only projects BP and the Trustees agreed to in the agreement could be funded, and therefore, only projects that could be funded reasonable alternatives were worth consideration in the alternatives analysis. The Trustees maintained that they fulfilled their duty to consider a reasonable range of restoration alternatives. According to the Trustees, no early restoration project could go forward without "an agreement with (and funding from) BP."<sup>5</sup> Therefore, there were only two reasonable alternatives to consider: the project and no action.

The court disagreed with the Trustees' position, labeling it "the paradigm of a self-fulfilling prophecy."<sup>6</sup> The court went on to note that the case "demonstrates the importance of providing a clear and meaningful analysis of alternatives."<sup>7</sup> The comparative analysis in the PEIS failed to satisfy NEPA and OPA because the Trustees did not properly consider alternatives to the construction of the building in a Phase III PEIS: "Clearly, the Trustees failed to evaluate whether there were reasonable restoration alternatives that would have conformed to the requirements of OPA and NEPA."<sup>8</sup>

... the Trustees in this case were required to identify restoration alternatives to the lodge and conference center and provide clear evidence of evaluation of those alternatives.

#### Conclusion

The requirement to consider reasonable alternatives to proposed actions, and provide evidence of a clear and meaningful analysis of those alternatives, is not a mere formality—it is a substantive requirement that can shut down a project if not completed correctly. The Trustees will now have to shelf the project or conduct a more robust alternatives analysis before moving forward.

John Juricich is a May 2016 J.D. Candidate at The University of Mississippi School of Law.

- 1. Gulf Restoration Network v. Jewell, 2016 WL 617461 (S.D. Ala. Feb. 16, 2016).
- Gen. Elec. Co. v. U.S. Dep't of Commerce, 128 F.3d 767, 770 (D.C. Cir. 1997) (citing 15 C.F.R. §§ 990.53-990.54).
- 3. 42 U.S.C. § 4332(2)(C).
- 4. 40 C.F.R. § 1502.14.
- 5. Jewell, 2016 WL 617461 at \*7.
- 6. Id.
- 7. Id. at \*8.
- 8. Id.

### Initial Challenge to Red Snapper Regulations Falls Short

**Amanda Nichols** 



**On January 5, 2016, the U.S. District Court for the** Eastern District of Louisiana handed down its decision in the case of *Coastal Conservation Ass'n v. United States Dep't of Commerce.*<sup>1</sup> This dispute—centered around the management of the red snapper fishery in the Gulf of Mexico—concerned an objection to the enactment of Amendment 40 to the Gulf Council's Reef Fish Fishery Management Plan and the related rule setting fishing quotas and seasons through 2017.

In response to these regulations, the Coastal Conservation Association (CCA) filed a claim alleging that its members would be harmed by Amendment 40 because it would reduce the maximum quantity of red snapper that individual recreational fisherman could catch. The court ultimately rejected this claim for several reasons.

#### Amendment 40

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the federal framework that governs fisheries management in the United States. The MSA requires region-specific fishery management plans (which are periodically amended) to help maintain healthy fish stocks. The MSA also establishes ten National Standards that must be followed with any of these plans in order to maintain sustainable and responsible fishery management.

Amendment 40 to the Gulf of Mexico Council's Reef Fish Fishery Management Plan attempts to reign in overages in the recreational fishing sector by providing for increased flexibility in the management of the reef fish, including red snapper. To allow for this flexibility, the Amendment divides the recreational sector into two parts: (1) the federal for hire component (which includes charter fishermen holding federal permits); and (2) the private angling component (which includes both private anglers and state-licensed charter fishermen). The final quota and season rule divides the red snapper quota between these two components and provides for separate season closures for each. More specifically, the rule allocates 42.3% of the recreational quota to federally licensed charter fishermen and 57.5% to the private anglers.

The CCA challenged Amendment 40 in several ways. Specifically, it set forth four arguments to support its general allegation that its members would be harmed by these regulations: (1) that the MSA prohibits the Gulf Council from regulating charter/headboat fishing separately from other recreational fishermen; (2) that the Gulf Council and the National Marine Fisheries Service (NMFS) failed to adequately "assess, specify, and analyze" the likely economic and social effects of Amendment 40; (3) that Amendment 40 makes an unfair an inequitable allocation of fishery resources in violation of National Standard 4; and (4) that Amendment 40 makes an improper delegation of the Council's authority by authorizing NMFS staff to set final allocation levels.<sup>2</sup>

#### **Regulating Charter Fishing Separately**

As to the first of the CCA's arguments, the court held that "Amendment 40 does not violate the Act by regulating charter/headboat fishermen separately from the remainder of the recreational sector."3 While the court found that Congress had not spoken directly to the issue, the MSA requires that the recreational sector include charter fishing. However, the MSA does not prohibit further subdivision of the recreational sector (such as the splitting of the sector into two components). The court found that the action was, in fact, permissible under the construction of the MSA. It reasoned that the Gulf Council had a rational basis for their decisionimproved management of the recreational sector. Therefore, the court held that regulating charter fisherman separately from the rest of the recreational sector was permissible under the MSA.

#### **Economic and Social Effects**

The CCA next argued that Amendment 40 failed to take into account economic and social impacts of Amendment 40. National Standard 8 relates to communities and requires that fishery management plans consider the importance of fishery resources to fishing communities. It also seeks to minimize adverse economic impacts on these communities when possible. Likewise, 16 U.S.C. §1853(a)(9) imposes "a duty to 'assess, specify, and analyze' the likely economic and social effects of a management plan or amendment, and include these findings in a Fishery Impact Statement (FIS)."<sup>4</sup> According to the CCA, these provisions impose an affirmative duty on NMFS to "collect and generate data on economic and social effects."<sup>5</sup>

The court rejected the CCA's arguments on this point noting that the requirements of § 1853(a)(9)were procedural and imposed no affirmative requirement that NMFS collect additional data. As to National Standard 8, the analysis is subject to a "rule of reason."<sup>6</sup> Information is not required to be utterly precise or complete. Because of this language, the court held that NMFS's FIS was, in fact, acceptable. The court went on to point out that the CCA failed to identify any "superior or contrary data" that NMFS failed to consider.

#### **Unfair Allocation of Fishery Resources**

The CCA also argued that Amendment 40 violated National Standard 4 because the recreational sector was divided without proper assessment of the impacts on the affected groups – specifically the non-charter recreational fishermen. Under National Standard 4, allocations must: (1) not discriminate between residents of different states; (2) be "fair and equitable," and (3) avoid allowing any particular entity an excessive share of the allocation. The CCA argued that Amendment 40 discriminated against private anglers, discriminated against residents of other states, and relied upon improper catch number averages.

The court rejected the CCA's claim of discrimination against private anglers, noting that the Gulf Council had provided a rational basis for making the distinction. In its final rule, NMFS stated that the allocation should be seen as fair because it considers both historic and present conditions in order to increase the total benefits to the recreational sector. In particular, the court noted the difference between federal and state seasons, with state seasons being longer. The reduction of the federal fishing allowance was offset by opportunities for private anglers to pursue longer options in state waters that were not available to federal charter operations.

Likewise, the court rejected the argument that Amendment 40 discriminates against residents of various states. Amendment 40 makes no allocation distinctions based on state and the varied distribution of federal charter fisherman across the Gulf is "merely incidental."<sup>7</sup>

Finally, the court held that the Gulf Council's selection of the data range used to calculate quotas was not arbitrary and capricious. The CCA alleged that the decision "to base quota allocations on an average of the 2006-2013 catch numbers and the 1986-2013 numbers" was improper.<sup>8</sup> The court disagreed, however, and held that the Council did, in fact, have discretion in selecting the appropriate data set as long as it could justify its selection. The Council provided such a justification by noting that it wished to balance historic and current figures because the more recent years "did not capture changes that [had] occurred in the fishery, such as changes in regulations and disruptive events such as hurricanes and oil spills that [had] affected how recreational fishing is prosecuted."<sup>9</sup>

#### **Improper Delegation of Authority**

As to the CCA's final argument, the court found that, "The Gulf Council did not unlawfully abdicate its decision-making authority by approving Amendment 40 without setting any allocation levels and by delegating that task to NMFS staff."<sup>10</sup> The CCA contended that the delegation of setting allocation levels to NMFS violated the MSA because NMFS does not have the power to change the substance of actions approved by the Council. The court held, however, that the CCA relied on inapplicable case law to support its allegation, and that there was no improper delegation of authority. In fact, the court noted that NMFS's mere application of a formula approved by the Council was acceptable and not at all improper.



#### **Conclusion and Appeal**

Because each of the CCA's challenges to Amendment 40 were deemed invalid, the court awarded summary judgment to the federal defendant. Accordingly, both regulations controlling red snapper management still stand. An appeal was filed for this case in the Fifth Circuit on February 19, 2016, so the validity of the regulation remains subject to legal challenge.

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- Coastal Conservation Ass'n v. United States Dep't of Commerce, No. CV 15-1300, 2016 WL 54911 (E.D. La. Jan. 5, 2016).
- 2. Id. at \*3.
- 3. Id.
- 4. *Id*.
- 5. Id.
- 6. Id. at \*6.
- 7. Id. at \*8.
- 8. Id.
- 9. Id.
- *.* 10.
- 10. *Id*.

## Court Green Lights Regions Bank's Trespass Claim Against BP

John Juricich

Following the Deepwater Horizon oil spill in April 2010, BP and others began an expansive clean-up and response operation along the Gulf coast. Litigation also ensued, including a trespass action by Regions Bank against BP.<sup>1</sup> Regions Bank (Regions) owns coastal property in Baldwin County, Alabama. Regions alleged that BP occupied Regions' property, without authorization, for its spill-response operation; that BP moved equipment and structures onto the property without permission; and that BP erected fences and barriers on the property—again, without permission. Regions also alleged that BP stored hazardous materials and waste damaged the property.

Around the same time that Regions filed its trespass action, the U.S. Judicial Panel on Multidistrict Litigation entered an order centralizing all federal actions relating to the Deepwater Horizon incident in the U.S. District Court for the Eastern District of Louisiana. Eventually, hundreds of cases with thousands of individual claimants were consolidated into the multidistrict litigation (the MDL). About a year later, BP and the plaintiffs in the MDL began discussions regarding a class-wide settlement. In early 2012, BP and the plaintiffs reached a settlement agreement relating to economic and property damage. The federal district court preliminarily approved the economic-andproperty-damage settlement and preliminarily certified a class for the purposes of settlement. Shortly thereafter, the court entered its final judgment approving the economic-and-property-damage class settlement.

Herein lies the issue for Regions and its trespass action: if Regions is a class member of the economicand-property-damage-settlement, then its trespass action is barred because the claim would have been released under the terms of the settlement. Over BP's objections, the Supreme Court of Alabama held that "[t[he language of the class definition clearly and unambiguously excludes Regions, a commercial bank, from the class."<sup>2</sup> To be included in the class, a party must (1) meet the geographic requirements, (2) meet one or more of the damage categories, and (3) not be subject to an exclusion listed in the agreement.

Regions is subject to an exclusion listed in the agreements. "Financial Institutions," which includes commercial banks, are a listed entity in the "Excluded Individuals or Entities" section of the settlement agreement. According to the court, Regions falls squarely within the "Financial Institutions" exclusion. The Supreme Court of Alabama rejected BP's arguments, which cited other sections of the settlement agreement, and allowed Regions to pursue its trespass claim against BP. The case has been returned to the trial court for further proceedings.

John Juricich is a May 2016 J.D. Candidate at The University of Mississippi School of Law.

- 1. Regions Bank v. BP P.L.C., 2016 WL 360700 (Ala. Jan. 29, 2016).
- 2. Id. at \*5.

## **Texas Drought Rules:** Public Interest Exception Not Allowed

Clayton D. Adams

Photo of the dry ground during a Texas drought; courtesy of Dasroofless Media.

Recently, the Texas Supreme Court refused a request to hear an appeal over Texas water rights, allowing the lower court opinion to stand. The case at issue, *Texas Commission on Environmental Quality v. Texas Farm Burean*, dealt with surface water rights along the Brazos River Basin and whether the Texas Commission on Environmental Quality (TCEQ)'s drought rules were valid.<sup>1</sup> The drought rules were devised to help TCEQ determine water allocations during times of shortage.

#### **Drought Rules**

When it comes to water management, Texas, like many Western states, has adopted a system of prior appropriation.<sup>2</sup> Under the doctrine of prior appropriation, the individual who is first in time to divert the water from its natural flow for beneficial use owns so much water as they can put toward that use.<sup>3</sup> In other words, that user has more senior water rights than those that come after him, with the later users having what are referred to as junior water rights. In Texas, the TCEQ is responsible for issuing water permits and enforcing water rights.

In 2011, the TCEQ was given legislative authority to adopt "drought rules" during times of drought or emergency water shortages. Under this authority, the TCEQ was allowed to suspend certain water rights in favor of a senior water holder. However, water rights that were held by cities and power generators, even if junior, could not be suspended. This exception was justified on the basis of public health, safety, and welfare concerns – also referred to as governmental police power.

In 2012, the TCEQ began applying drought rules to the Brazos River Basin. Dow Chemical Company (Dow) owned senior water rights on the lower Brazos, near the Texas Gulf Coast. In late 2012, Dow initiated a process known as a "senior call" on the Brazos River, whereby Dow sought the suspension of junior water rights.<sup>4</sup> As a result, the TCEQ suspended the rights of all upstream junior users, with the exception of municipalities and power generators. These excepted junior water rights holders were required to provide the TCEQ with additional information related to daily water use, efforts to obtain alternative water supplies, and long-term plans for alternate water supplies.

Several junior users whose water rights on the Brazos had been suspended, namely Texas Farm Bureau, challenged the TCEQ's action and the validity of the drought rules. They argued that the agency had misinterpreted, and thus exceeded, its power under the governing statute in formulating and executing the rules. The central issue was whether the Texas water rights doctrine of prior appropriation and its governing principles were to be determinative in how the TCEQ administered water rights.<sup>5</sup> The district court agreed that prior appropriation was paramount over any alleged police powers and ruled that the drought rules were invalid. Challengers appealed the decision to the Texas Court of Appeals, which affirmed.

#### First in Time, First in Right

The Court of Appeals first considered whether Texas statutory water law allowed the TCEQ to exempt certain junior water rights during a drought. The TCEQ argued that its interpretation of Texas Water Code was entitled to deference and was supported by legislative history. The court disagreed. The court noted that agency interpretation of a statute is only appropriate where the statute is ambiguous. In this instance, Texas law clearly indicates that prior appropriation must govern any agency rules related to droughts. Senior water rights cannot be suspended before those more junior, regardless of public interest. As the court noted, "[t]he mere fact that a policy seems unwise or inconsistent with other policies does not justify a departure from the plain meaning of a legislative mandate."<sup>6</sup>

In addition, the court pointed to a provision of the Texas Water Code that allows the TCEQ to "divert water to meet urgent public health and safety needs."<sup>7</sup> This provision allows the TCEQ director to grant an emergency request for diversion. Though similar to the drought rules at issue here, this provision does not give the TCEQ the authority to identify, on its own, what public health, safety, and welfare concerns exist and divert water without an emergency request. This emergency appropriations mechanism allows the TCEQ to address urgent safety issues, without the need for the challenged provisions of the drought rules.

#### **Police Power Basis for Exemptions**

The TCEQ argued that the police power authority to protect the public health, safety, and welfare was a sufficient basis for exempting the junior water rights holders that were municipalities and power generators. Like the lower court before it, the appellate court rejected this argument. Based on Texas law, all drought rules must comply with the prior appropriations doctrine. The court found no exceptions that would allow the TCEQ to alter the prior appropriations doctrine on the basis of the public interest. Therefore,



the TCEQ's police power authority was an insufficient basis for exempting certain junior water rights holders from the drought rules. In other words, municipal water supplies and power generators that have rights junior to Dow cannot be exempt from Dow's senior call.<sup>8</sup>

#### Conclusion

At the moment, the Brazos River is not under drought conditions. By refusing to hear this appeal, the Texas Supreme Court has essentially endorsed this appellate court ruling. Rather than allowing upfront exceptions for municipalities and power generators, all junior users will be subject to a senior call. In the future, the TCEQ will have to rely on the emergency provisions for diverting water when an urgent public safety need arises.

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- Tex. Comm'm on Envtl. Quality v. Tex. Farm Bureau, 460 S.W.3d 264 (Tex. Ct. App. 2015).
- 2. See, Motl v. Boyd, 286 S.W. 458, 463 (Tex. 1926).
- Charles J. Meyers, A Historical and Functional Analysis of the Appropriation System 4 (1971).
- 4. Tex. Farm Bureau, 460 S.W.3d at 267.
- 5. Id. at 267-68.
- 6. Tex. Water Code Ann. § 11.139.
- 7. Tex. Farm Bureau, 460 S.W.3d at 273.

## Green Infrastructure 2.0: Integrating Green and Grey Infrastructure

#### **Stephen Deal**

The move towards green infrastructure in local stormwater policy has been well received, but it can sometimes feel like there are two different conversations going on. In places where flooding and the protection of valuable real estate is a major priority, grey infrastructure tends to be the default solution. On the other hand, green infrastructure dominates where urban aesthetics or environmental causes take precedence. But why not combine the two approaches? Here along the Gulf Coast, the City of New Orleans is in the conception stage of exploring the creation of an integrated system of green and grey infrastructure with its Urban Water Plan.1 Efforts in other places, such as San Antonio's Riverwalk and Yonker's Saw Mill River Daylighting Project, offer hints into what this integrated approach might look like. These projects take a more contextual approach that recognizes the intrinsic natural value of urban waterways while retaining grey infrastructure elements that prioritize the protection of property.

#### The Value of Daylighting

Daylighting is a stormwater management technique that takes buried waterways and brings them back out into the open, restoring some of the natural hydrology.<sup>2</sup> One obvious benefit of daylighting is that the water flow is visible to everyone. There are a number of simple ways in which cities benefit from having more eyes on the water. Daylighted watercourses are less prone to blockage or sudden collapse, and it is always easier to assess water quality when you can see the water clearly.<sup>3</sup> Daylighting can also provide important recreational opportunities and be a valuable catalyst for revitalization, as demonstrated by one project in New York State.

The Saw Mill River runs through the town center of Yonkers, New York and was buried in the 1920s to accommodate additional urban expansion. By the 1990s, the river suffered from numerous environmental issues, such as illegal dumping and a high metal concentration. In response, the City of Yonkers, in conjunction with the environmental non-profit Groundwork Hudson Valley, devised a plan to uncover a portion of the river running through downtown. Completed in 2011 at a cost of \$19 million, the Saw Mill River Daylighting Project resulted in the creation of 13,775 square feet of aquatic habitat in downtown Yonkers. The project also enhanced local floodwater capacity by repurposing an existing U.S. Army Corps of Engineers' flume to serve as an overflow channel when flooding becomes a concern.

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The project has also provided an economic spark to the downtown area. Local developers who have bought real estate in downtown Yonkers have cited the city's daylighting project as a major reason for their interest in the neighborhood.<sup>4</sup> Overall, the future of Yonkers looks bright in part due to the daylighting initiative.



Future daylighting projects are planned downtown, which will effectively make the Saw Mill River an indispensable city asset.<sup>5</sup>

#### San Antonio's Riverwalk: Where Urban Design Meets Flood Control

Another unique approach to flood management can be found in San Antonio, Texas. San Antonio's Riverwalk is one of the great urban spaces in America and is prized for its aesthetic value and beauty. Few, however, appreciate its history as a flood control project for the San Antonio River. Flash flooding along the San Antonio River was a major problem in the early 20th century. During a flood in 1921, more than a thousand acres of the city were inundated, prompting the city to aggressively address the problem.<sup>6</sup> Over two decades, the city undertook a comprehensive series of flood mitigation measures, culminating in the creation of the City's riverwalk. The Olmos Dam was completed in 1926, and four years later a bypass channel was created to handle excess floodwater. The historic river bend around the downtown core of San Antonio was preserved, as two floodgates were installed on each end to protect this portion of the waterway from incoming floodwaters. With a newly stabilized river bend, the groundwork was paved for local architect Robert Hugman to propose an ambitious vision that would revolutionize the city's relationship with the water.

Originally conceived by Hugman in 1929, implementation did not begin until 1938 when the Works Progress Administration stepped in to bring the project to fruition. Architectural plans for the Riverwalk included 17,000 square feet of walkways, 31 stairways, 3 dams and countless benches, as well as more than 12,000 trees or shrubs.<sup>7</sup> The concrete walls of the manmade river channel were replaced with limestone, and the course of the waterway was curved more to mimic natural hydrology. The project was officially completed on April 1941. Though the success of the project would not be fully realized until the late 1960s, San Antonio's Riverwalk has become the central hub of activity for the city of San Antonio and has elevated stormwater management as an issue of central importance to the city's well being.

Far from being a passive tourist amenity, the Riverwalk continues to prompt additional investment in the city's stormwater infrastructure. In 1998, a threemile flood control tunnel was completed beneath downtown San Antonio, which offered additional protection from flash flooding and allowed for further expansion of the riverwalk. Water management within the Riverwalk is further supported by an extensive water recycling program, which keeps the riverwalk flowing even in dry months.8 Seeing the Riverwalk today, with its mature Cypress trees and dense vegetation, its easy to forget about the various types of grey infrastructure that keep the water levels stable and offer protection against flash flooding. In fact, one of the floodgates created for the riverwalk project was cleverly disguised as a pedestrian walkway and is still in use by visitors.9

#### From Highway to Riverway

Located in the bustling metropolis of Seoul, South Korea, the Cheonggyecheon Stream was essentially buried under a five-mile urban highway in the 1950s and 60s. By the 1980s, economic decline in the surrounding neighborhood and concerns with the aging concrete deck of the elevated highway made it apparent that something had to be done with the freeway. In 2002, the Seoul Metropolitan Government established an organization to demolish the freeway and restore the buried stream.<sup>10</sup> Over the course of 27 months, 3.4 miles of the elevated freeway were demolished, and some of the rubble from the demolition was used to construct the 3.5-mile long watercourse, which ran in its place. The \$380 million project (US dollars) was completed in 2005, and it was not long before a pronounced environmental impact made its presence felt on the site.



The Cheonggyecheon project is notable for its ability to function as an important piece of grey infrastructure. The restored stream provides protection for up to a 200-year flood event.<sup>11</sup> Though it effectively channelizes the water through a dense urban area, the project encapsulates a core tenet of daylighting by making the flow and management of water subject to community policing. Also, by restoring and improving flow within the previously covered Cheonggyecheon Stream, the project was able to reduce the urban heat island effect along blocks adjacent to the river. Temperatures run, on average, between 3.3 and 5.9° C cooler along the stream than on parallel roads 4-7 blocks away. There are also 29 willow marsh habitats located along the waterway, which provide valuable space for birds, fish and amphibians.



Though the Cheonggyecehon project is a large scale project, it serves as an instructive example in how a channelized stream can still provide environmental benefits while keeping the flow of water from impinging on dense, urban real estate. If daylighting represents the most environmental solution possible - a full restoration of a site's earlier hydrological footprint - the Seoul project presents us with another extreme on the green infrastructure continuum. The project may be an artificial flood channel, but it retains the core ecological functions of a healthy stream system. The success of this project is a powerful reminder that even when existing urban density precludes us from the pursuing the most environmental option possible, we still have techniques and options we can pursue that further the goals of water quality and sustainability.

#### Conclusion

Geographic context is the pivot on which all planning decisions turn, including local stormwater policy. Each project highlighted here works well for the general urban context in which it is presented. In Yonkers, a vacant parking lot was cleared for a daylighted stream, which provided a natural oasis in a downtown business district. In San Antonio, the Riverwalk preserves an historic river bend while doubling as important grey infrastructure for the city's urban core. In Seoul, South Korea, a very dense metropolitan area is kept high and dry by an artificial waterway, which handles excess floodwater while offering core ecological services. Though the scale and scope of the projects is not always attainable in other communities, the lessons and techniques applied are. They may prove useful in catapulting green infrastructure into urban scenarios and situations that have generally been reserved for traditional stormwater projects. 🎢

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- Dana Brown and Associates, Greater New Orleans Urban Water Plan, October 2013.
- Amy Trice, Daylighting Streams: Breathing Life into Urban Streams and Communities, American Rivers, July 2013.
- The Freshwater Blog, *Daylighting Urban Rivers*, The Freshwater Blog, July 8, 2014.
- 4. Elsa Brenner, Restored River a boon to Yonkers, New York Times, August 9, 2012.
- 5. Mike Spano, Facebook Post, City of Yonkers Facebook page, August 21, 2015.
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WATER LOG (ISSN 1097-0649) is supported by the National Sea Grant College Program of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration under NOAA Grant Number NA140AR4170098, the Mississippi-Alabama Sea Grant Consortium, the State of Mississippi, the Mississippi Law Research Institute, and the University of Mississippi Law Center. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Mississippi-Alabama Sea Grant Legal Program, the Mississippi-Alabama Sea Grant Consortium, or the U.S. Department of Commerce. The U.S. Government and the Mississippi-Alabama Sea Grant Consortium are authorized to produce and distribute reprints notwithstanding any copyright notation that may appear hereon.

Recommended citation: Author's name, *Title of Article*, 36:2 WATER LOG [Page Number] (2016).



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MASGP-16-003-02 This publication is printed on recycled paper of 100% post-consumer content. ISSN 1097-0649 May 2016



**WATER LOG** is a quarterly publication reporting on legal issues affecting the Mississippi-Alabama coastal area. Its goal is to increase awareness and understanding of

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