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LEGAL TOOLS FOR CLIMATE ADAPTATION ADVOCACY:

CLEAN WATER ACT

PERMITTING AND FUNDING

PROGRAMS

By Channing Jones

November 2015

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I. INTRODUCTION

Climate change imperils the quality of water resources and aquatic ecosystems by introducing or exacerbating supply challenges and pollution threats. Existing legal frameworks, including permitting and grant programs, can incorporate climate change adaptation into the way we protect water. In particular, the Clean Water Act—the primary tool used nationwide to protect surface waters from pollutant discharges and fill activity—can be used to promote climate change adaptation in a number of ways.

The Clean Water Act was enacted in 1972 and amended in 1977 and 1987. The statute is principally administered by the U.S. Environmental Protection Agency, which issues regulations, brings enforcement actions, awards grants, and more. Clean Water Act permitting is often administered by the states, subject to EPA oversight. At the same time, states are able to enact their own water protection laws beyond the scope of federal law. In order to use the Clean Water Act to encourage adaptation to climate change, both federal and state authorities can reconsider how permits are issued and how grants are pursued and awarded.

For instance, as climate change renders clean freshwater resources scarcer in many places, authorities can respond by imposing stricter pollution limits through the Clean Water Act where necessary to protect an increasingly stressed water supply, accounting for both current conditions and future trends. Furthermore, as climate change creates new or increased pollution threats for some waterways, Clean Water Act authorities can respond through permitting processes or strategic funding opportunities.

II. BACKGROUND

A. WATER QUALITY AND CLIMATE CHANGE

Climate change threatens water quality through water supply shortages, ecosystem challenges, and increased runoff pollution. Adapting to these threats will require both stronger overall protections and targeted regulation of threatened waterways and new pollution sources.

Water supply problems created by climate change increase the importance of limits on pollution entering waterways, especially for susceptible waterways and regions. Challenges might include changes that reduce precipitation or snowmelt and result in lower water levels in

particular seasons.¹ Climate change is also causing decreased annual precipitation in some places—even as it causes increases in others—as well as reduced water levels due to increased evaporation amid warmer average temperatures.² As less water flows through specific waterways, pollution levels in the remaining water will increase unless discharges are limited proportionally.³

Furthermore, as certain water sources become altogether unavailable, greater protections for remaining sources of water may be necessary to maintain levels of clean water sources for human populations and ecosystems. For example, sea level rise can cause saltwater intrusion in coastal freshwater bodies and aquifers, straining the resources that remain available.⁴ In addition, with climate change increasing average air temperatures, the resulting rise in water temperatures can affect ecosystem health by decreasing dissolved oxygen levels, harming cold-water aquatic organisms, expanding the range of invasive species, and increasing the likelihood of pathogen growth and algae blooms.⁵ Adaptation to such strains on clean water resources will require greater preservation efforts, including through the decrease of pollution discharges.

Besides straining available water resources, climate change can also lead to increased levels of pollution entering waterways. One major cause of such pollution discharges is more frequent and severe precipitation and storm events.⁶ Heavy precipitation can overwhelm sewer systems' or

¹ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY 236, 1443, 1456–57 (2014); ARIS GEORGAKAKOS ET AL., CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 71–72 (J. M. Melillo et al. eds., 2014), <http://nca2014.globalchange.gov/report/sectors/water>.

² GEORGAKAKOS ET AL., *supra* note 1, at 71–72; ² INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 240; *Water Impacts of Climate Change*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/scitech/climatechange/Water-Impacts-of-Climate-Change.cfm> (last visited August 5, 2015).

³ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 252; U.S. ENVTL. PROT. AGENCY, NATIONAL WATER PROGRAM 2012 STRATEGY: RESPONSE TO CLIMATE CHANGE 55 (2012) [hereinafter U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY].

⁴ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 1457; GEORGAKAKOS ET AL., *supra* note 1, at 86.

⁵ *Water and Climate Change*, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/global_warming/science_and_impacts/impacts/water-and-climate-change.html (last visited August 5, 2015); *Water Impacts of Climate Change*, *supra* note 2; U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 40, 50.

⁶ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 240.

water treatment plants' abilities to limit discharges,⁷ and also tends to increase runoff pollution from surfaces such as pavement, lawns, construction and industrial sites, and agricultural land, by washing sediment, nutrients, chemicals, and debris into waterways.⁸ This polluted runoff can harm the ecosystems and people that rely on affected waterways.⁹ This runoff problem can be addressed by reducing impervious surface area, decreasing pollutants present on these surfaces, creating vegetative barriers, and preventing the discharge of untreated runoff where possible.

Though it is largely beyond the scope of this chapter, it should be noted that increased carbon dioxide in the atmosphere is absorbed into the ocean, causing ocean acidification, which can adversely affect marine ecosystems.¹⁰ To the extent that ocean habitat and water quality are under threat in myriad ways, including from acidification, reduced pollution into marine ecosystems can somewhat ameliorate overall strain.

B. THE CLEAN WATER ACT

The Clean Water Act (the "CWA") limits pollution by regulating discharges of pollutants and dredged or fill material into "waters of the United States," a term chiefly encompassing those waterways which are navigable, those which are adjacent to or tributaries of navigable waterways, and those which affect the "chemical, physical, or biological integrity" of navigable waterways.¹¹ The CWA regulates discharges from "point sources," i.e. discrete conveyances such as pipes or man-made ditches, as well as from "nonpoint sources," e.g., farm land or paved areas.¹² The CWA's point source regime is more exacting and effective than its strictures on discharges from

⁷ GEORGAKAKOS ET AL., *supra* note 1, at 89.

⁸ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 237; *Water Impacts of Climate Change*, *supra* note 2.

⁹ *Stormwater Discharges from Construction Activities*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Discharges-From-Construction-Activities.cfm> (last visited August 5, 2015).

¹⁰ See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE WORKING GROUP II, *supra* note 1, at 1673–75.

¹¹ 40 C.F.R. 230.3(o) (2015). The term "waters of the United States" has been a matter of considerable legal uncertainty, prompting the Environmental Protection Agency and the Army Corps of Engineers to promulgate new regulations defining the term, published in the Federal Register on June 29, 2015.

¹² The Clean Water Act specifically provides that "[t]he term 'point source' . . . does not include agricultural stormwater discharges and return flows from irrigated agriculture." 33 U.S.C. § 1362(14). "Point source" does, however, include "concentrated animal feeding operation[s]." *Id.* See also Part III.C below regarding agricultural runoff.

nonpoint sources. The CWA also provides for certain grant and financing programs to support the states' independent pollution control efforts.

The main pollution control mechanism of the CWA is the National Pollutant Discharge Elimination System ("NPDES") permit program. Under the CWA, it is unlawful to discharge pollutants from a point source into a water of the United States without a NPDES permit, or a state-level equivalent in those states authorized to administer the program.¹³ These permitting requirements apply to pollution sources such as industrial facilities, concentrated agricultural operations, wastewater treatment plants and other systems, and certain stormwater management systems.

The other major Clean Water Act permitting program is governed by Section 404, which serves in large part to protect wetlands, and applies to the discharge of dredged or fill material into waters of the United States.¹⁴ Such activity includes, for example, the filling of certain wetlands by land developers. Few states administer Section 404 programs, with most permits issued by the U.S. Army Corps of Engineers ("Corps").¹⁵

Decision Points for Regulators (and Pressure Points for Advocates)	
<i>Point Sources</i>	<i>Nonpoint Sources</i>
<ul style="list-style-type: none"> • Setting water quality standards • Determining effluent limitations • Issuing General Permits • Issuing ("MS4") muni separate storm sewer system permits 	<ul style="list-style-type: none"> • Monitoring TMDL compliance and updating loading limits
	§ 404 Permits
	<ul style="list-style-type: none"> • Issuing dredge and/or fill permits

III. USING THE CLEAN WATER ACT FOR CLIMATE CHANGE ADAPTATION

The Clean Water Act can be used to address three general sources of water quality degradation related to climate change. First, the NPDES permitting program can be used to limit point source discharges in a way that responds to ongoing changes in weather patterns and their

¹³ 33 U.S.C. § 1311(a). Most states are now authorized to administer the NPDES program. For the purposes of this paper, "states" also refers to territories and tribes.

¹⁴ See 33 U.S.C. § 1344. The common term "Section 404" refers to the location of these provisions in their uncodified section in the Statutes at Large. However, all federal statutory citations in this paper are made to the U.S. Code.

¹⁵ *State or Tribal Assumption of the Section 404 Permit Program*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/type/wetlands/outreach/fact23.cfm> (last visited August 5, 2015).

effects on water quality, such that existing standards and uses can be maintained wherever possible. Second, the NPDES program can address certain types of stormwater runoff, while Clean Water Act grant and financing programs can help states address nonpoint source pollution more broadly. Finally, the Section 404 permitting program can be used to limit fill activity where it may threaten wetlands vulnerable to climate change impacts or important for climate change resiliency strategies, while also allowing remedial activity or infrastructure development in service to climate change adaptation.

A. POINT SOURCE DISCHARGES

As climate change threatens water quality, Clean Water Act regulators can respond by tailoring pollution limits in NPDES permits in response to or anticipation of climate change impacts on waterways, including through the determination of water quality standards. The NPDES permitting regime covers point source discharges from sources like industrial facilities and wastewater treatment plants.¹⁶ However, agricultural discharges are in significant part not considered statutory “point sources.”

A NPDES permit authorizes a permit holder to discharge specified amounts of particular pollutants into a waterway. Permits may be individual or general. The EPA or authorized state agency reviews and may issue an individual permit upon receipt of an application, setting specific terms based on the underlying activity, the nature of the discharge, and the water quality of the receiving waterway. For activities that are common and have largely uniform water quality impacts, EPA or the responsible state agency often issues “general permits.” A construction general permit, for instance, pertains to entities planning to clear a parcel and build structures on it—activities with predictable types and volumes of discharge. An entity whose activities are covered by a general permit can discharge pursuant to that permit after notifying the administering agency of its impending activity and of its intention to abide by the requirements of the permit.¹⁷

¹⁶ The NPDES program also covers certain stormwater discharges, addressed in Part III.C.1 below.

¹⁷ Office of Wastewater Management, *Water Permitting 101*, U.S. ENVTL. PROTECTION AGENCY 7, available at <http://water.epa.gov/polwaste/npdes/basics/upload/101pape.pdf> (last visited August 5, 2015).

1. Water Quality Standards and Effluent Limitations

The pollution limits in a NPDES permit, known as “effluent limitations,” build on technology-based standards; if these limitations are not sufficient to maintain “water quality standards” in the receiving waterway, the CWA requires further steps to be taken.¹⁸ EPA develops technology-based standards based on the pollution control technologies available for given types of discharging activity, while states (subject to EPA approval) establish water quality standards sufficient to protect specified uses of given waterways.¹⁹ If the technology-based standards are insufficient to maintain water quality standards for a waterway, the effluent limits contained in the NPDES permits for discharges into that waterway may be tightened accordingly.

The development of water quality standards and establishment of effluent limitations are separate agency actions and thus are both opportunities to incorporate climate change adaptation into the Clean Water Act scheme.

Water quality standards may become increasingly important as technology-based standards become less effective for protecting waterways and regions that are particularly sensitive to climate change impacts.²⁰ For example, where pollutant levels become concentrated in waterways facing lower water flow, pollution control technologies alone may no longer be able to maintain water quality, and discharges may need to be limited to a greater degree. The CWA requires a state to set water quality standards for waterways within its borders and to update these standards at least every three years.²¹ The standards take the form of numeric criteria (e.g., threshold pollutant levels, temperature, pH), and narrative criteria (e.g., “free from nuisance aquatic growths”) deemed necessary to protect a given waterway’s quality for designated uses.²² Such uses might be recreational, agricultural, or industrial.²³

¹⁸ 33 U.S.C. §§ 1311(b)(1), 1313(d).

¹⁹ *Id.* §§ 1314, 1316(b), 1313.

²⁰ See Robin Kundis Craig, *The Clean Water Act on the Cutting Edge: Climate Change and Water-Quality Regulation*, 24-FALL NAT. RESOURCES & ENV’T 14, 17–18.

²¹ 33 U.S.C. § 1313(a), (c).

²² 40 C.F.R. § 131.3(b), (f).

²³ See generally 40 C.F.R. § 131.10. A use is “attainable” if, at minimum, it can be achieved through a combination of required effluent limits on point source discharges and the implementation of “cost-effective

Water quality standards will serve as a crucial point of reference for state permitting authorities as climate change impacts put pressure on existing approaches to pollution control. Swimming, for instance, may be made less safe by the runoff or algae growths that result from changing precipitation levels, and certain types of fishing may be impaired by changing water temperatures. In such circumstances, water quality standards will guide regulators to see where water quality criteria need to be reviewed and adjusted to ensure these uses remain available in spite of climate change impacts.²⁴

As noted above, an agency specifies effluent limitations in a NPDES permit so that discharges into a given waterway do not cause that waterway to fall below the level specified in the previously determined water quality standard. Effluent limitations are thus the instructions to polluters about how exactly to comply, for the five-year duration of a NPDES permit, with the broader scheme for achieving water quality standards. Crucially, in addition to being instructions, they are also a form of shield: if effluent limitations are not tight enough to maintain water quality, the polluter operating under the NPDES permit containing those limitations cannot be challenged for discharging in compliance with them.

In short, if the effluent limitations in NPDES permits are to be effective in spite of climate change, they must offset increasing pollutant concentrations due to altered precipitation, stormwater runoff, or other sources of impacts. Therefore, permitting authorities should base

and reasonable best management practices” to control nonpoint source pollution. 40 C.F.R. 131.10(d). An example of an unattainable use is swimmability in a swamp.

²⁴ U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 58–59. At the same time, however, some have suggested that regulators should acknowledge inevitable changes that will occur in some waterways due to climate change, making some existing water quality standards no longer achievable. For example, temperature and pH increases or water volume reductions may impair certain uses in ways that cannot be reversed through CWA regulation. However, the rollback of standards to accommodate such changes would run afoul of the “antidegradation policy” codified by EPA at 40 C.F.R. 131.12, which requires that all existing uses be maintained for any waterway. See Robin Kundis Craig, “Stationarity Is Dead” — Long Live Transformation: Five Principles for Climate Change Adaptation Law, 34 HARV. ENVTL. L. REV. 9, 63–64 (2010).

water quality standards and effluent limitations not just on current conditions, but on the conditions expected to affect the interaction between discharges and water quality.²⁵

2. EPA Review of State Agency Proposals

The EPA will play a central role in CWA administration amid a changing climate. This is true not only in those states where the EPA administers the NPDES program directly, but also as it reviews and approves—or disapproves—administrative determinations in states to which it has delegated CWA administrative authority. Although it rarely makes use of the power, the EPA has the authority to promulgate water quality standards when a state fails to do so adequately.²⁶ The agency will no doubt be called upon to use various aspects of its oversight authority to ensure that water quality criteria remain equal to the task of protecting waters’ designated uses in spite of climate change impacts. The EPA can also help to maintain water quality standards indirectly pursuant to the CWA, which directs the EPA to develop, publish, and update water quality criteria that reflect the “latest scientific knowledge” on the ecological and health effects of pollutants in waterways, as well as information on the protection and restoration of waterways.²⁷ Recommendations to states based on the latest research can foster their adoption of appropriate standards and criteria amid the impacts of climate change on waters in their jurisdictions.²⁸

B. POLLUTED RUNOFF

Stormwater runoff, whether it flows from a point source or a nonpoint source, merits special attention with respect to use of the Clean Water Act as a climate change adaptation tool. As noted above, the NPDES program generally governs point sources more effectively than the largely state-led programs that control nonpoint source pollution. Practically, this means that fewer measures prevent pollution from flowing off of agricultural fields, suburban lawns, parking

²⁵ *NPDES Permit Writers’ Manual*, U.S. ENVTL. PROTECTION AGENCY, ch. 6, at 19 (2010); U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 57.

²⁶ 33 U.S.C. § 1313(b).

²⁷ 33 U.S.C. § 1314 (a).

²⁸ *See Craig, supra* note 20, at 16–17.

lots, among other areas. This may be of particular concern as climate change makes precipitation events more variable and severe.²⁹

Some stormwater runoff is addressed by the NPDES program, including discharges from municipal stormwater systems. The CWA also provides some tools for controlling nonpoint source pollution, chiefly by setting limits on the pollution that may be discharged into impaired waterways and by working with and sometimes funding states to help them achieve water quality standards by controlling nonpoint source pollution.

1. NPDES Stormwater Permitting

The NPDES program regulates stormwater discharges from three types of sources, considered statutory “point sources” under the CWA: municipal separate storm sewer systems (“MS4s”), construction activities, and industrial activities.³⁰

The program for MS4s focuses on public stormwater collection systems that carry pollution from city streets and other paved surfaces. MS4 permits for medium and large municipal systems require local governments to develop priorities and controls that limit pollution and prevent unauthorized discharges.³¹ NPDES permits for small MS4s are often general (as opposed to individual permits), and call for implementation of best management practices (BMPs) to achieve measurable goals.³² BMPs under MS4 permits may focus on requirements for development and construction, system maintenance, applications of pollutants to surfaces (e.g. road de-icing), flood control efforts, and more.³³

Certain industrial facilities and construction activities also require stormwater permits, often through a general permit, because runoff from these sites is likely to pick up sediment,

²⁹ Whether permitting programs are the best way to address agricultural and other stormwater runoff—versus other regulatory mechanisms, such as incentive-based schemes—is not addressed in this chapter. What is clear, however, is that the absence of many agricultural and stormwater discharges from Clean Water Act permitting leaves a clear gap in its pollution control regime, especially given climate change impacts on water quality. Unfortunately, as noted elsewhere, political opposition and inertia pose significant challenges to addressing these issues through federal legislation.

³⁰ 33 U.S.C. § 1342(p)(2).

³¹ 40 C.F.R. § 122.26(d).

³² 40 C.F.R. § 122.34.

³³ *NPDES Permit Writers' Manual*, *supra* note 25, ch. 2, at 9.

debris, and chemicals and may end up in a MS4 or directly in a waterway.³⁴ Industrial facilities covered by the program include certain manufacturing, mining, and recycling operations, as well as hazardous waste and landfill sites.³⁵ Construction sites requiring a permit are generally those which disturb one or more acres of land area.³⁶ NPDES permits for industrial and construction sites generally contain pollution limits and call for particular BMPs, and also require permittees to develop a site-specific stormwater pollution prevention plan (“SWPPP”).³⁷

The implementation and enforcement of NPDES stormwater permits is especially important as climate change exacerbates runoff pollution problems. As with other permits under the NPDES program, stormwater permits set effluent limitations that may interact with water quality standards set by the states. Accordingly, it is important in addressing stormwater runoff that water quality standards are appropriately tailored to account for climate change.³⁸ Furthermore, because stormwater permits employ many qualitative standards and methods, it is important for permitting authorities to develop and employ management practices that minimize the effects of climate change impacts, such as heavy precipitation events.

2. Total Maximum Daily Loads

Setting total maximum daily loads (“TMDLs”) on the discharge of particular pollutants into particular waters represents a further opportunity for climate change adaptation.

States are required by the Clean Water Act to list impaired waters that fail to meet water quality standards notwithstanding the NPDES program’s technology-based effluent limitations on point source pollution.³⁹ For each relevant pollutant in such a waterway, states must establish a TMDL, which represents the maximum amount of the pollutant that the waterway can receive

³⁴ See *Stormwater Discharges from Construction Activities*, *supra* note 9; *Industrial Activities*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/polwaste/npdes/stormwater/Industrial-Activities.cfm> (last visited August 5, 2015).

³⁵ 40 C.F.R. § 122.26(b)(14)(i)–(xi).

³⁶ 40 C.F.R. § 122.26(b)(14)(x), (15)(i).

³⁷ 40 C.F.R. § 122.26(c).

³⁸ See Part III.A above.

³⁹ 33 U.S.C. § 1313(d).

while still meeting water quality standards.⁴⁰ The EPA develops a TMDL when agreed to by a state, or when a state fails to adequately establish one.⁴¹

TMDLs do not directly compel remedial action to protect a waterway, although they do provide a framework in which the EPA and states can coordinate action to achieve water quality goals, particularly through state programs that target nonpoint source pollution beyond the scope of the NPDES program. When setting TMDLs, states and the EPA can anticipate how climate change will likely affect the health of an impaired waterway and can factor that effect into limits on pollutant load capacity.⁴² Taking climate impacts into account will affect both TMDLs themselves and strategies to achieve water quality standards that they shape and support.

3. Funding State Programs

Clean Water Act grant and financing programs provide opportunities for the federal government to address the impacts of climate change on water quality by addressing pollution sources not directly regulated by the CWA. Furthermore, because Clean Water Act permitting programs are limited to protecting waterways from pollution, grant programs under the CWA can serve to supplement water quality improvements by funding efforts to actively restore waterways as part of a comprehensive climate change adaptation strategy.

Clean Water Act Section 319 provides one opportunity for funding. Also called the “Nonpoint Source Management Program”, it focuses on state projects addressing runoff pollution—a longstanding threat to water quality that now is increasing due to climate change.⁴³ Section 319 grants can, for example, help states protect and restore watersheds threatened by nonpoint source pollution. Not only is nonpoint source management more critical given climate change impacts, but projects funded under this program can specifically target watersheds most vulnerable to climate change.⁴⁴ In fact, the EPA considers “climate change planning” to be one feature of successful grant applications.⁴⁵

⁴⁰ *Id.*

⁴¹ 33 U.S.C. § 1313(d)(2). *See also* American Farm Bureau Federation v. EPA, No. 13-4079, 19–22 (3d Cir. 2015).

⁴² *See* U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 57–58.

⁴³ *See* 33 U.S.C. § 1329; U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 60.

⁴⁴ U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 37–38.

⁴⁵ *Section 319 Program Guidance: Key Components of an Effective State Nonpoint Source Management Program*, U.S. ENVTL. PROTECTION AGENCY (2012), http://water.epa.gov/polwaste/nps/upload/key_components_2012.pdf.

The Clean Water State Revolving Fund, another Clean Water Act program, provides loans rather than grant money. This financing can be used to build publicly owned treatment works, implement conservation management plans, and implement estuary conservation and management plans.⁴⁶ Currently, a portion of that financing must go toward green infrastructure, water efficiency, or other environmentally innovative projects, many of which are aimed at climate change adaptation.⁴⁷

Some other Clean Water Act funding opportunities include:

- Section 104 provides funding specifically for wetlands program development.⁴⁸ Among various other criteria, EPA grant makers have considered whether grant applications factor in climate change.⁴⁹
- Section 106 provides grant funding to support water pollution control programs.⁵⁰
- Section 604(b) provides funds to states specifically for water quality planning.⁵¹ These funds can be used by states to address climate change as part of a comprehensive approach to water quality.

While the EPA often considers climate change impacts and adaptation in making grants under these programs, such efforts could be strengthened if either EPA or Congress acts to earmark amounts specifically for climate change adaptation measures. The EPA could also codify climate change adaptation as a grantmaking consideration in either Clean Water Act regulations or guidance documents. Notably, the EPA has published a grant guidance urging National Estuary Programs to incorporate climate change resiliency into estuary conservation management plans.⁵² Perhaps most importantly, whatever happens at the federal level, states themselves can actively pursue Clean Water Act funding for projects that directly address climate change impacts or that incorporate climate change adaptation principles.

⁴⁶ 33 U.S.C. §§ 1292, 1329, 1330.

⁴⁷ See *Green Project Reserve Guidance*, U.S. ENVTL. PROTECTION AGENCY, <http://www2.epa.gov/cwsrf/green-project-reserve-guidance-clean-water-state-revolving-fund-cwsrf> (last visited September 16, 2015).

⁴⁸ 33 U.S.C. § 1254.

⁴⁹ See, e.g., Request for Proposals for FY15 and FY16 Region 9 Wetland Program Development Grants, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/region9/funding/pdfs/wetlands/wetland-rfp-2015.pdf> (last visited August 5, 2015).

⁵⁰ 33 U.S.C. § 1256.

⁵¹ *Id.* § 1384.

⁵² U.S. ENVTL. PROT. AGENCY, 2014 HIGHLIGHTS OF PROGRESS: RESPONSES TO CLIMATE CHANGE BY THE NATIONAL WATER PROGRAM 9 (2015), <http://water.epa.gov/scitech/climatechange/upload/FINAL-2014-NWP-Climate-Highlights-Report2.pdf>.

C. FILL ACTIVITY

Section 404 of the Clean Water Act prohibits the addition of dredged or fill material into waters of the United States, including wetlands, unless one receives a permit from the Corps.⁵³ Dredging and filling tend to serve the purposes of land development, dam or levee construction, infrastructure development such as highways and airports, and mining.⁵⁴

Section 404 is especially important to climate change adaptation because its provisions limit the filling of wetlands, which are critical to maintaining watershed health and to reducing the impacts of flooding and, in coastal zones, abating storm power.⁵⁵ In considering permit applications for the addition of dredged or fill material into waters of the United States, the Corps and authorized states are required to anticipate reasonably foreseeable “cumulative impacts” of the fill activity.⁵⁶ Accordingly, in considering Section 404 applications to discharge fill into a wetland or other waterway, permitting authorities should consider two particular factors with respect to climate change: (a) increasing stresses the waterway may face due to changes in regional precipitation or other climate change impacts; and (b) how that waterway is playing or will play a role in ameliorating the impacts of climate change in its watershed and for nearby communities and ecosystems.⁵⁷

The Corps and other actors that must comply with Section 404’s directives to avoid, minimize, and offset permitted fill activities can—and should—readily integrate climate change-related considerations into the permitting and implementation process. The EPA regulations under Section 404 provide that permits may generally be issued only where no practicable alternative exists to the fill activity, and where significant waterway degradation will not occur.⁵⁸ They also

⁵³ 33 U.S.C. § 1344.

⁵⁴ U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 41.

⁵⁵ Thomas M. Gremillion, *Setting the Foundation: Climate Change Adaptation at the Local Level*, 41 ENVTL. L. 1221, 1239–40 (2011).

⁵⁶ 33 C.F.R. § 320.4(a)(1).

⁵⁷ U.S. EPA, NATIONAL WATER PROGRAM 2012 STRATEGY, *supra* note 3, at 42. *See also* Alyson C. Flournoy & Allison Fischman, *Wetlands Regulation in an Era of Climate Change*, GEO. WASH. J. ENERGY & ENVTL. L., Summer 2013, at 77–78.

⁵⁸ 40 C.F.R. § 230.10.

require steps to be taken to minimize impacts of fill on a waterway or wetland.⁵⁹ Further, even where Section 404 allows for the destruction of a particular water body or wetland, it also requires “compensatory mitigation” to offset the ecological loss.⁶⁰ This could entail restoration, enhancement, establishment, or preservation of another wetland. Any compensatory mitigation effort “should be located . . . where it is most likely to successfully replace lost functions and services” of impaired wetlands.⁶¹ In coordinating these efforts, the Corps should consider where compensatory mitigation could be most valuable in promoting climate change adaptation and resiliency.⁶²

Finally, certain fill activities may feature in climate change adaptation efforts. For example, to protect coastal areas from storm surges, certain infrastructure projects requiring the dredging and filling of coastal wetlands, like levees, may be advantageous.⁶³ In general, when reviewing applications for Section 404 permits for infrastructure projects, the Corps should consider climate change-related costs and benefits as well as other environmental factors.

IV. TAKE ACTION

A. PUBLIC PARTICIPATION

Members of the public have various means to support the measures recommended in this chapter. This may involve formal engagement in administrative processes, or direct advocacy and political action to advance policy goals. The appropriate form of action may depend both on strategic considerations and, in the case of formal public comments, on what opportunities are available. The following subsections walk through the steps of selecting a target appropriate for a given issue, understanding the advocacy forum, and crafting a message.

⁵⁹ See generally 40 C.F.R. §§ 230.70–77.

⁶⁰ 40 C.F.R. § 230.93(a)(1).

⁶¹ 40 C.F.R. § 230.93(a)–(b).

⁶² Flournoy & Fischman, *supra* note 57, at 79.

⁶³ See J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363, 425–26 (2010).

1. Issue and Target Selection

The following table lists Clean Water Act oriented climate change adaptation measures described in this paper, and identifies possible decisionmaking targets⁶⁴ and means of advocating such measures to these targets. Possible strategies noted here are not exhaustive, but they should give climate adaptation advocates a good starting point.

⁶⁴ As noted elsewhere, the EPA has delegated authority over NPDES permitting to most states; contrastingly, the Corps has retained Section 404 permitting authority in most states. The exceptions are not noted in the table. See following subsection on confirming appropriate permitting authorities in your state.

OBJECTIVE	DECISIONMAKER				POSSIBLE ACTIONS <i>and cross-reference to relevant section of this report</i>				
	EPA	Corps	State Agency	Local Authority	Comment on proposed rule or decision <i>Part IV.A.2.b.ii</i>	Comment on proposed NPDES permit <i>Part IV.A.2.b.i</i>	Proactive advocacy <i>Part IV.A.2.c</i>	Urge EPA to act where a state fails to do so <i>Part IV.A.2.c</i>	Other
1. Ensure water quality standards under the NPDES program account for predicted climate change impacts.	X		X		X	X	X	X	
2. Expand designated uses in water quality standards to account for impaired waterways elsewhere.			X		X	X	X		
3. Ensure water quality criteria reflect the latest scientific knowledge on climate change and water quality.					X	X	X		
4. Consider climate change risk and resiliency value of waterways in assessing "cumulative impacts" in Section 404 permitting decisions.		X				X	X		
5. Consider climate change adaptation value in making compensatory mitigation decisions.		X				X	X		
6. Permit fill activity for infrastructure projects whose climate adaptation value will result in cumulative benefits.		X				X	X		
7. Ensure that NPDES stormwater permits for municipal systems utilize best management practices that consider climate change impacts.			X			X			Work with local authorities to develop MS4 permits with climate-ready management practices.
8. Ensure that TMDLs are in place for impaired waterways, and that they reflect climate change impacts.	X		X		X	X	X	X	
9. Urge the adoption of policies to achieve TMDLs.			X			X	X		
10. Call for Clean Water Act funding opportunities to consider climate adaptation strategies.	X					X	X		Urge state authorities to consider opportunities for climate adaptation work via CWA funding programs.

2. Understanding Your Forum

Knowing where and how to get involved with Clean Water Act implementation is not easy: the statute itself was enacted by Congress; regulations are promulgated by the EPA and the Corps; and it is administered in varying parts by the EPA, the Corps, and states—which themselves have state-level implementing statutes and regulations governing the way they comply with the CWA.

a. Identifying permitting authorities, if applicable

If you would like to engage in either public comment or political action related to the local use of the NPDES or Section 404 programs or the local pursuit of grant opportunities, you will need to figure out who is the appropriate contact in your state:

- For NPDES Permits: In all likelihood, a state agency with authority to regulate the environment and natural resources will be responsible for administering your state's NPDES program. In a few cases, the program is administered by the EPA.
- For Section 404 Permits: In a handful of cases, state agencies are authorized to administer Section 404 permitting; in most states, however, this program is administered by the U.S. Army Corps of Engineers.
- For Clean Water Act grants: The state agency is most likely in charge of this program.

You can determine the appropriate permitting authorities in your state with a phone call to your local EPA region or Corps division office. NPDES contacts by state can be found at <http://water.epa.gov/polwaste/npdes/NPDES-State-Contacts.cfm>. A list of which states are authorized to administer NPDES and Section 404 may be found at http://www.ecos.org/section/states/enviro_actlist/states_enviro_actlist_cwa.

b. Commenting on agency actions

Agency decisions taken pursuant to the Clean Water Act generally require the acting agency to seek public comment. Submitting written comments and speaking and offering written comments at public hearings are good opportunities to raise the profile of climate change adaptation concerns. Moreover, to subsequently challenge an agency-issued rule or permit in court, you must have participated in its comment and hearing process.

i. Engagement in the permitting process⁶⁵

Permitting authorities generally seek public comments for NPDES and Section 404 permits, both individual and general. They post notices of pending applications on their websites, in the relevant register of regulations (e.g., the *Federal Register*, the *Virginia Register of Regulations*, etc.), and using mailing lists and newspaper announcements. Some state environmental agencies publish bulletins listing permit applications. Note that these permits may use terms other than “NPDES” and “Section 404” when issued by a state agency (Virginia, for instance, issues VPDES permits). Comment periods are open for only limited periods of time (usually 30 days), and agencies may ignore late submissions.

Public comments related to climate change adaptation may be most appropriate where the permit in question applies to a waterway that is stressed by climate impacts or plays a role in ameliorating the effects of climate change, such as a coastal wetland. Helpful comments might identify, say, important or opportune runoff management strategies omitted from a proposed municipal stormwater permit, or point out the damage a given construction project will likely do to a local trout stream. For stormwater permits, the opportunity for public involvement may also begin earlier and precede any draft language as municipalities solicit interested parties for ideas.

ii. Comment on rules and determinations

EPA and state agencies generally seek comment on proposed Clean Water Act rules and determinations, such as which water bodies to list as impaired, what limits to impose in TMDLs, and how to set water quality standards and criteria. EPA publishes proposed rules and determinations in the *Federal Register* and on the EPA’s website, and accepts comments through the

⁶⁵ See generally *Public Participation in the NPDES Permit Issuance Process*, U.S. ENVTL. PROTECTION AGENCY (2013), <http://water.epa.gov/polwaste/npdes/basics/upload/publicparticipation.pdf>; *Permitting Process Information*, U.S. ARMY CORPS OF ENGINEERS, <http://www.lrl.usace.army.mil/Portals/64/docs/regulatory/Permitting/PermittingProcessInformation.pdf>; *Stormwater Phase II Final Rule—Public Participation/Involvement*, U.S. ENVTL. PROTECTION AGENCY (2005), <http://water.epa.gov/polwaste/npdes/stormwater/upload/fact2-4.pdf>.

regulations.gov website.⁶⁶ State agency proposals are often similarly available, but through the state agency's website.

Good places to start when exploring how to get involved in the regulatory process are with local environmental organizations and legal practitioners.

c. Proactive advocacy

In addition to or apart from responding to agency actions, proponents of climate change adaptation can advance their goals by pushing decisionmakers to take affirmative steps using the Clean Water Act. Such advocacy can take many forms, including meetings with decisionmakers or their representatives, media-based campaigns and other public outreach, and targeted letters, emails, phone calls, or petition signatures.

3. Crafting Your Message

Whatever advocacy approach may be most effective in a given situation, it will generally be necessary to develop both talking points and an appropriate “ask,” or desired policy commitment. Always keep your audience in mind, and remember that both climate change and the Clean Water Act can be complicated; technical detail may be more appropriate in comments or outreach to agency experts than state legislators, or (to an even greater degree) the general public. The nature of your comments will also of course vary based on your own experiences and expertise.

The following may all be important to your message, depending on your audience:

Set the local scene

Especially in outreach to the public and to elected lawmakers, you should describe why you care—and why your audience should too—about the climate change impact that concerns you. Even when discussing national-level issues, mention the ways in which climate change can affect you, your family, and your neighbors, and why people in your community care about taking action.

Some concise examples:

1. *Here in [TOWN NAME], we use [LOCAL WATERWAY] for fishing, swimming, or boating. Every summer, my children and I turn out for [ANNUAL OUTDOOR EVENT].*

⁶⁶ See 5 U.S.C. §§ 553–57 (providing where a “notice and comment” process is required for federal agency actions). “Notice and comment” is often still undertaken where not required, especially for more consequential actions.

2. *Almost everyone in [LOCAL AREA] is somehow connected to the [LOCAL AGRICULTURAL PRODUCT] industry. My own family has been in the business since my great-grandfather moved here in the twenties.*
3. *[POLLUTED RIVER] in [URBAN AREA] has come a long way since my parents' generation, but there are still days that I hold my nose on the morning walk to the subway.*
4. *[BIRD SPECIES] is a valuable asset to [COASTAL AREA]. Not only is it a beautiful species, but it plays a critical role in the local ecosystem.*

Describe the problem

Make sure to describe the problem posed by climate change and connect it to the solution you are calling for, tailoring details to your audience. Especially if the issue is local, make sure to describe how climate change affects water quality in your area. Refer to Part II.A of this paper for a general overview, and access online resources such as <http://www.epa.gov/climatechange/impacts-adaptation> to learn more about specific impacts in your region and on your local waterways.

Continuing the examples above:

1. *I hope my grandchildren can have the same access to [WATERWAY] that I enjoy now, but the expected impacts of climate change—including upstream runoff from increased storm events—may threaten [WATERWAY] in the future.*
2. *Unfortunately, polluted runoff (or “nonpoint source pollution”) entering local waterways threatens the irrigation water we rely on. This will only get worse as climate change reduces rainfall and increases evaporation in [REGION], concentrating pollutants in our water supply.*
3. *Unfortunately, stormwater from weather events like [RECENT MAJOR STORM] are washing more pollution into [POLLUTED RIVER]—and these storms will only increase in frequency and severity as climate change continues.*
4. *Coastal wetlands such as [LOCAL WETLAND] provide critical habitat for [BIRD SPECIES]. However, some of these wetlands are poised to disappear as climate change raises the sea level and saltwater encroaches on freshwater habitat.*

Present the Clean Water Act opportunity

Next, describe the role the Clean Water Act can play in addressing the problem you identified. As noted earlier, this may be more or less technical depending on the expertise of both you and your audience. If you can, emphasize the broader context of climate change adaptation.

Continuing the examples above:

1. *The good news is that the federal Clean Water Act gives [STATE] the tools to adapt to a changing climate by anticipating future stress to waterways like [WATERWAY] in regulating pollution.*

2. *However, there are many steps we can be taking to address runoff pollution in [REGION]—and luckily, the EPA gives Clean Water Act grants to states for nonpoint source pollution management projects.*
3. *Using the Clean Water Act, states set total pollution limits (called “TMDLs”) for threatened waterways. TMDLs can play an important role in cleaning up and protecting [POLLUTED RIVER].*
4. *We need to plan for the future scarcity of wetlands in [COASTAL AREA], for the sake of [BIRD SPECIES] and the broader ecosystem. Fortunately, the Clean Water Act allows authorities to consider climate change impacts in the way it protects wetlands.*

Policy ask

Ultimately, you should hone in on the particular request you are making of the target decision maker.

Continuing the examples above:

1. *In its proposed new regulations for determining water quality standards in [STATE], [ENVIRONMENTAL AGENCY] should include a requirement that these standards be set using the latest scientific knowledge accounting for climate change impacts.*
2. *[STATE ENVIRONMENTAL AGENCY] should take advantage of these “Section 319” grant opportunities and apply for funding to manage runoff in [REGION].*
3. *Because [STATE] has not accounted for climate change in setting TMDLs for [POLLUTED RIVER], the EPA should step in to promulgate more accurate pollution limits that anticipate climate impacts like increasing storms.*
4. *That’s why the Army Corps of Engineers should reject [DEVELOPER]’s application to discharge fill into [LOCAL WETLAND]. With climate change poised to reduce our wetland habitat, the cumulative future impact of [DEVELOPER]’s proposal will pose to great a risk to [BIRD SPECIES] and other wildlife.*

B. PETITIONING AND LITIGATION

Under the federal Administrative Procedure Act, a citizen may petition a federal agency to issue, amend, or repeal an agency rule.⁶⁷ Pursuant to this provision, climate adaptation advocates may file a “rulemaking petition” with the EPA or the Corps to issue or modify relevant Clean Water Act regulations, and the agency must respond.⁶⁸ Examples of rulemaking petitions may include:

⁶⁷ 5 U.S.C. § 553(e).

⁶⁸ *Id.*

- Requesting the EPA to issue water quality criteria that reflect the latest scientific knowledge on climate change and water quality.
- Requesting the Army Corps of Engineers to issue regulations requiring consideration of the climate change risk and resiliency value of waterways in assessing “cumulative impacts” in Section 404 permitting decisions.

There are no specific requirements for what a rulemaking petition must contain or how it should be submitted, but at minimum it should include a specific proposal and detailed justification; petitions are often submitted by mail and addressed to the agency head, e.g. EPA Administrator.⁶⁹ While such petitions can be submitted by any citizen, they may be most effective when prepared by legal and scientific experts. Furthermore, with legal counsel, the denial of a rulemaking petition may be challenged in court.⁷⁰

Participants in comment processes for agency-issued rules or permits⁷¹ may also be able to file suit in court seeking judicial review of agency actions, subject to applicable state or federal administrative procedure laws. Again, legal counsel is essential.

Citizens or organizations with resources to litigate may also want to consider options available through the Clean Water Act’s citizen suit provision. Under this provision, citizens with an interest at stake may file suit in federal court against (i) any entity discharging without a permit, discharging in excess of effluent limitations, or otherwise violating orders relating to permit; or (ii) the EPA or a state agency for failure to carry out the CWA as required by law.⁷² Success may come in the form of either a favorable judgment or a settlement compelling the desired result.

This litigation must be pursued by licensed lawyers; citizens cannot effectively do this on their own. Before filing a citizen suit, the potential plaintiffs must also typically file a formal notice letter with EPA and other entities specifying the nature of their complaint, and in most instances 60 days must then pass before the suit is filed.

Examples of citizen suit opportunities include:

⁶⁹ Some examples of petitions to the EPA can be viewed at <http://www2.epa.gov/aboutepa/petitions-rulemaking>.

⁷⁰ See, e.g., *Massachusetts v. EPA*, 549 U.S. 947 (2007).

⁷¹ See Part IV.A.2.b above.

⁷² 33 U.S.C. § 1365.

- Compelling the EPA or a state agency to develop a TMDL for an impaired waterway, or to update a TMDL to account for climate change impacts.⁷³
- Taking action against a municipality where sewer overflows after major storm events result in violations of effluent limitations in NPDES permits.⁷⁴

⁷³ See, e.g., *Conservation Law Found. v. U.S. Env'tl. Prot. Agency*, No. 1:13-cv-12704-MLW (D. Mass. Oct. 24, 2013).

⁷⁴ See, e.g., *Natural Resources Defense Council v. Metropolitan Water Reclamation Dist. of N. Chicago*, Case No. 11-CV-2937 (N.D. Ill. 2011).