

“State-Reinforced Self-Governance and Institutional Change: The Evolution of the New York City Watersheds Governing Arrangement”

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Abstract: How does the larger institutional context support the emergence of polycentric governing arrangements? Can the design of an intergovernmental agreement crowd in or crowd out cooperation among member governments? Institutional and survey data on the New York City Watersheds Governing Agreement are used to explore enabling institutional contexts and changes in institutional design and cooperation among governments.

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Introduction

Why do governments and civil society actors cooperate to address regional scale common pool resource dilemmas? What conditions enable such cooperation and how does the design of institutional arrangements support its persistence? One approach for addressing these questions emerges from literatures on federalism and explores how the design of federal systems supports compliance with the federal bargain. For instance, Bednar (2009) argues that federations are robust if they include a series of safeguards that allow member governments and their citizens the means of holding one another accountable for opportunistic behavior. Allowing actors with different but overlapping authorities to monitor and penalize opportunistic behaviors is central for maintaining compliance and avoiding the collapse of the federal bargain. Or to put it a different way, this line of argument explores how governing systems can be designed so as to make non-compliance or non-cooperation costly. But, there is another side to the federalism coin, that is, why cooperation?

This is a related, but different question because cooperation is different from compliance. Cooperation represents problem solving -- actors creating desired public goods and dampening down public bads.¹ The paper builds from two lines of research to examine cooperation among governments and organizations. One is the literature on crowding in and its focus on individual behavior, norms, and institutional design. The other is state reinforced self-governance, initially proposed by Sarker (2013), and further developed by DeCaro, et. al. (2017). The focus is on whether larger scale governments provide enabling conditions for jurisdictions and organizations to engage in collective action to address regional problems.

Crowding In

Over the past fifteen years a literature on crowding in and crowding out of cooperation has rapidly developed (see Bowles 2008 for a brief review). The focus is on interactions between individual behavior and institutional arrangements. It serves as a corrective to the mechanism design literature in economics that focuses on developing incentive systems that seek to align agents' choices with their principals' preferences (Shiraishi and Tsuru 1989). The assumption is that agents are singularly motivated by material incentives.

In contrast, the crowding in/out literature assumes that individuals act on material and moral considerations. As Bowles (2008:1605) notes, "policies designed to harness self-interest to public ends may be counter productive". Relying exclusively

¹ Reducing opportunistic behavior creates the space for cooperation to emerge, but limiting opportunism is not the same as cooperation. Admittedly, without compliance, cooperation would not be possible; but without cooperation, compliance would be extremely costly to realize.

on material incentives to motivate desirable behavior may lead to unintended outcomes as material incentives crowd out moral sentiments that encourage cooperative behavior.

Bowles (2008:1606) proposes four mechanisms that crowd in/out cooperative behavior: 1) material incentives frame a decision situation, suggesting self-interest is appropriate, and inadvertently pushing out other regarding behavior; 2) incentives affect the long term development of preferences, and over time people may act less cooperatively; 3) incentives compromise an individual's sense of autonomy or intrinsic motivation, and people engage less in the action just for the pleasure of it, and 4) incentives provide information about people and their behavior, for instance, a penalty may signal that the person imposing it cares more about their own interests. Bowles (2008: 1609) concludes "Good policies and constitutions are those that support socially valued ends not only by harnessing selfish preferences to public ends but also by evoking, cultivating, and empowering public-spirited motives".

How public-spirited motives are consistently cultivated is not entirely clear. How to crowd out cooperation appears to be easier than crowding in cooperation. In a recent article, Agrawal, et al (2015) report on a natural experiment. The empirical setting was the mid-Himalayan Watershed Development program that provided a combination of private and public goods (payments for ecosystem services) and environmental awareness training. The purpose of the program was to protect watershed forests while also supporting economic development. Agrawal et al (2015) find that over all the development program crowded out intrinsic motivations. Residents of panchayats who did not participate in the development program expressed greater environmental motivations than residents of panchayats who were covered by the program. However, the types of benefits individuals and communities received under the program affected motivations. Program participants who received informational benefits and/or private material benefits experienced crowding out effects, that is, they were less likely to express environmental protection motivations. However, program participants who received collective goods, such as concrete footpaths or irrigation water tanks, expressed greater environmental protection motivations. As Agrawal, et al (2015) note, and this is also suggested by Bowles and Polania-Reyes (2012), crowding in appears to be more common in public goods and common pool resource settings.²

² Related literatures that could contribute to this line of argument are 1) the common pool resource experiments that have focused on norms, and 2) policy feedback theories (Mettler 2002; Mettler and Sorelle 2013). Like crowding in, the starting point is a policy treatment, but unlike crowding in, which focuses on material choices, the emphasis is on political behavior of mass publics and policy elites, exploring how policies (i.e., institutional arrangements) affect politics and political behavior.

One avenue for relating crowding in/out theorizing to relations among governments (as opposed to individuals) may be through the concept of “federal culture” (Elazar 1987). Elazar (1987:76) provides a succinct definition of this complex concept:

This is the idea that a society is made up of a series of interrelated covenants and compacts, which allow the parties to then unite for common purposes while retaining their respective integrities, is deeply embedded in the national cultures in authentic federal systems. In this respect, federalism implies a posture and an attitude toward social as well as political relationships, which leads to human interactions that emphasize coordinative rather than superior-subordinate relationships, negotiated cooperation, and sharing among parties.

Federal culture values coordination, cooperation, and “sharing among parties”. It reflects a problem solving orientation as opposed to an orientation of domination and control (V Ostrom 1991).³ It applies to relationships among public officials and how they view and treat their counterparts in other local, state, and national governments. Values representing federal culture are likely supported in the design of institutional arrangements devised and adopted by public officials, especially intergovernmental agreements. However, intergovernmental agreements emerge from institutional settings that provide authorities, responsibilities, and capacities that enable local governments and private and non-profit organizations to engage in collective action to address regional problems.

State Re-enforced Self-Governance

How public-spirited motives are consistently cultivated is likely related to the larger institutional setting in which intergovernmental agreements and governing arrangements are devised by public officials. DeCaro, et al (2017) build off of the theorizing of Sarker (2013) and his concept of state re-enforced self-governance. Sarker’s (2013) essential insight is that self-governing arrangements for common pool resources emerge in settings characterized by well developed legal systems, well resourced governments, and technological infrastructure. Thus, the role of the “state” is not one of coercion or neglect, rather it is one of being an active participant in supporting and enabling self-governance.

DeCaro, et al (2017) identify several legal design principles capturing state re-enforced self-governance that complement E Ostrom’s (1990, 2005) design

³ Recent work on federal culture has focused on citizens, and not public officials. Bednar (2009) applies the concept to citizens. If citizens have internalized the values of a federal culture then they are more likely to demand that their representatives uphold the federal bargain and punish opportunistic behavior. Kincaid and colleagues have tracked changes in federal culture among citizens of the North American federal systems through opinion polling.

principles for long-enduring self-governance by resource users. The legal design principles include:

- 1) legal authority: “recognized authority to make decisions, carry out plans, and otherwise self-govern” (DeCaro, et al 2017:9). Authority includes the ability to contract with multiple jurisdictions and to engage in intergovernmental agreements that are enforceable. In other words, authority is not simply substantive, addressing a particular common pool resource dilemma, or protecting or enhancing an ecosystem service, but also engaging in governance together with a variety of entities.
- 2) legal responsibility to contribute to the resolution of a common pool resource dilemma. The duty to attempt to address or resolve an issue is distinct from the powers to address the dilemma. For instance, New York State’s Public Health Law places the responsibility of meeting the requirements of the US Safe Drinking Water Act on the Department of Health.
- 3) tangible support: technical and financial support or authority that allows actors to carry out their duties and responsibility; this can include intergovernmental transfers of resources, or the authority to collect and spend revenues (user fees, taxes, bonds, etc).
- 4) accountability mechanisms: actors that share authority and responsibility for addressing common pool resource dilemmas may hold one another to account; accountability mechanisms may take a variety of forms, such as third party review, or selecting actors for official positions, for instance.

The legal design principles are linked and interact. The effects of one are a function of the presence or absence of the others as well as their specific institutional structure. This is most clearly seen in the interactions of authority and responsibility. Having the responsibility to address a dilemma without the authority to take appropriate action to do so places actors in an untenable position. They do not have the authority to implement plans and actions, even though they are responsible for accomplishing specific outcomes. In contrast, authority without responsibility provides few incentives for actors to take potentially costly actions to realize outcomes for which they have no obligation.

A classic example of authority without responsibility and responsibility without authority was the State of Nebraska’s system of water administration pre-2000. Natural resources districts, organized by river basin, held the exclusive authority to manage and regulate groundwater whereas the Nebraska Department of Natural Resources held the exclusive authority to manage and regulate surface water (Schlager and Blomquist 2008; Suggs, et al 2017). In the 1990s, groundwater pumping began to interfere with surface water flows creating conflicts between surface and ground water users. The State was helpless to respond as it lacked the authority to realize its responsibility to protect surface water users. It took close to a

decade before the Nebraska Unicameral finally succeeded in adopting LB962 in 2004, which granted the Nebraska Department of Resources the authority to declare river basins overappropriated, which then triggered a moratorium on new wells, and a requirement that the Department and the natural resource districts develop integrated water management plans for the basin. Responsibility and authority were brought together.

Tangible support provides the fiscal wherewithal to realize authority and responsibility. In many settings resources are required to properly exercise authority. Investment in infrastructure, or modeling of resource dynamics, or developing regional plans requires money, technologies, and expertise. Without adequate resources, the exercise of authority may be compromised, and responsibilities may not be fully realized.

The legal design principles, if appropriately structured, support cooperation among actors. If authority and responsibility overlap, and if combined with resources that allow some actions to be taken cooperation may emerge, and it may be sustained if actors can hold one another accountable. In other words, as Elazar (1987:76) posited, “a series of interrelated covenants and compacts, which allow the parties to then unite for common purposes while retaining their respective integrities” may be created, based on mutual respect, that allow for regional scale common pool resources to be sustainably governed.

The legal design principles and how they provide an enabling context for the crowding in of cooperation among local jurisdictions is explored in the context of the New York City Watersheds Governing System. The setting is briefly introduced before turning to a description of data and methods.

The Empirical Setting

The New York City Watersheds Governing System is the means by which New York City delivers 1.4 billion gallons of largely unfiltered (but disinfected) water daily to 9 million people (Finnegan 1997:579). The New York City Bureau of Water Supply is the largest to operate under a Filtration Avoidance Determination (FAD) granted by the US Environmental Protection Agency. The City sources its water from three watersheds, Croton, Catskills, and Delaware, covering two thousand square miles.⁴ The watersheds are populated with over 100 waste water treatment plants; hundreds of farms, many of them dairy; 128,000 septic tanks, and some manufacturing (Finnegan 1997:581; National Research Council 2000).

The goal of the governing system is to protect and maintain the high quality of water from the watersheds while allowing for environmentally sensitive development. The

⁴ New York City sources its drinking water primarily from the Catskills (40%) and Delaware (50%) Watersheds, with a smaller amount from the Croton Watershed (10%).

governing system, which is centered around an intergovernmental agreement, was created by the City, the watersheds' jurisdictions, the State, and the EPA in response to a change in the US Safe Drinking Water Act.

In 1986, Congress amended the 1970 Safe Drinking Water Act (SDWA), requiring additional treatment of surface water sources prior to delivery of water to end users (Gray 1986). In response, the EPA completed a rule specifying criteria that if not met triggers enhanced filtration requirements for surface water sources, otherwise known as the Surface Water Treatment Regulations (SWTR), 1989 (EPA 2002). Under the SDWA, the EPA was granted the authority to issue Filtration Avoidance Determinations if a water utility met the SWTR criteria and demonstrated long term control over its source watersheds.

Shortly thereafter, New York City began developing an application for a filtration avoidance determination, which it submitted in 1992 (EPA 2002). In 1993, the EPA issued a conditional and then a final Filtration Avoidance Determination (FAD), lasting until the end of 1996 (EPA 2002).⁵ By 1995, in part due to lawsuits filed by jurisdictions in the New York City watersheds over the City's planned exercise of eminent domain to acquire land in order to meet FAD requirements, concerns arose in the EPA and among a number of stakeholders, that New York City would not meet its FAD requirements and filtration would be required (EPA 2002). New York Governor Pataki convened the primary jurisdictions and interested parties to develop a long term watershed governance approach that resulted in the 1997 Memorandum of Agreement (MOA) – essentially the constitution that created a polycentric system of watershed governance. How New York State laws create enabling conditions for the MOA and its implementation and how the design of the MOA resulted in the crowding in of cooperative behavior will be examined through the analysis of legal texts and a survey of MOA participants.

Data and Methods

Qualitative and descriptive data are used to explore the state reinforced self-governance and crowding in/out behavior. As this is a more exploratory and theoretical argument, rather than setting out hypotheses to be empirically tested, I set out broad expectations. First, the MOA will reflect state reinforced self-governance by drawing upon and applying the authorities, responsibilities, and fiscal capacities of state agencies and local jurisdictions as reflected in state laws. That is, the State, New York City, and the watershed jurisdictions don't create the MOA out of thin air. Rather, they draw upon the existing institutional tools the State of New York provides for engaging in collective action among jurisdictions.

⁵ New York City disinfects its water using chlorine and ultra violet disinfection. Beginning in 2015, it began filtering water from the Croton Watershed (10% of its water) using a new plant costing \$3.2 billion (Rueb 2016).

Second, does the MOA crowd in or crowd out cooperative behavior among jurisdictions? There are two institutional patterns that I would expect if the MOA leads to the crowding in of cooperative behavior. First, over time, the governing arrangements continue to grow and develop, keeping existing programs and developing new programs. In their most recent book, Baumgartner and Jones (2015) discuss broadening and thickening. By broadening, they mean that new activities and programs are adopted, that is, the reach of the governing arrangement is extended. By thickening (which I sometimes refer to as deepening) they mean that governments continue to invest in and pursue existing programs.

Second, cooperation is likely to appear in how institutional designs change over time. If a federal culture is activated then over time institutional arrangements are likely to allow officials to exercise greater discretion. Institutional arrangements become less prescriptive as actors come to believe that their counterparts will cooperate. Furthermore, options to impose sanctions or penalties may become less common and opportunities for appeals of decisions or third party reviews may be more often used.

The data used for the state reinforced self-governance legal design principles are drawn from the laws of the State of New York. The MOA is analyzed for the authorities, responsibilities, and fiscal capacities it draws on and those in turn are traced back to state laws.

The evidence regarding crowding in/out of the New York City Watershed governing arrangements is organized by the three main categories of activities – land acquisition, water quality protection, and economic development, as discussed below. The governing arrangements/documents interlock around these three programs. That is, the FADs, the MOA, and the New York City Water Supply Permit, create and provide for the implementation and enforcement of the land acquisition programs. The FADs and the MOA, and to a lesser degree, the Catskills Watershed Corporation (CWC) programs (discussed below) provide for water quality programs. Economic development programs are created by the MOA and CWC programs. The final piece of evidence is from a survey of the MOA participants. The survey questions on participants' perceptions of trust, fairness, and responsiveness as well as the performance of the arrangement will be used to assess the levels of trust and reciprocity. See Appendix A for an in-depth discussion of the coding of the programs and the survey questions.

State Reinforced Self-Governance, the 1997 MOA, and Filtration Avoidance Determinations

Prior to EPA's adoption of the Surface Water Treatment Regulations, New York City was the dominant water and land decision maker and regulator in its source

watersheds. It could acquire land through eminent domain⁶, it had the authority to permit and regulate actions that may affect water quality⁷, and it deployed a police force to monitor and protect its lands, from which it forbid recreational uses. It used these authorities to build the dozens of reservoirs and hundreds of miles of aqueducts and tunnels to capture and deliver potable water to its citizens and industries. The watershed jurisdictions had little authority and only blunt accountability mechanisms – costly and time consuming lawsuits to contest eminent domain actions, or lobbying the legislature, but no real decision making authority. However, the EPA’s Safe Water Treatment Regulations provided the watershed jurisdictions with an opportunity to have their needs and concerns addressed.

New York City, in developing a watershed plan as part of its initial application for a FAD, relied heavily on its eminent domain and regulatory powers, proposing an active land acquisition program and strict regulation of activities that would affect water quality (National Academy of Sciences 2000). Watershed jurisdictions, alarmed by the plan, came together and formed the Coalition of Watershed Towns⁸, using authority granted to them by the New York General Municipal Law.⁹ Following the issuance of the initial short term FAD by the EPA and New York City’s steps to acquire land, the Coalition filed a lawsuit, which led to Governor Pataki convening the primary stakeholders of the New York City water supply system and watersheds (National Academy of Sciences 2000).

The purpose of the gathering was to develop a long term water management plan so that New York City could demonstrate “control” over its source watersheds, but what emerged was a long term, polycentric governing arrangement. What made the creation of a complex governing arrangement possible is the home rule tradition of New York, beginning with the State’s constitution. As Article IX states, "Effective local self government and intergovernmental cooperation are purposes of the people of this state." Home rule impulses are laced throughout the State’s laws. For instance, the Municipal Home Rule Law grants extensive authorities to local jurisdictions to manage their own affairs. More specific to water, the Local Water and Sewer Authority Act encourages local jurisdictions to work together. Section 1196-a (policy and purposes) states:

It is further declared that cooperation among local governments in the provision of both water supplies and sewerage service may result in economic and service benefits and should therefore be facilitated. It is

⁶ Act of May 2, 1834, ch. 256, 1834 N.Y. Laws 451, and Act of June 11, 1895, ch. 985, 1895 N.Y. Laws

⁷ Act of June 3, 1905, ch. 723, 724 1905 N.Y. Laws 2022

⁸ The process of forming the coalition was somewhat contentious as this quote from the Coalition’s website suggests “Building consensus among the watershed communities is like herding cats.”-Dennis Lucas, Sr. see

<https://coalitionofwatershedtowns.org/>

⁹ Section 119-o of the New York General Municipal Law “municipal cooperation”

further declared that the provision of water supplies and sewerage service may be independently supported by charges therefor, and that revenue financing of the capital costs of improvements to systems therefor should also be facilitated.

It is further declared that the availability to local governments of locally organized public benefit corporations for the provision and improvement of water supply and sewerage systems would facilitate inter-local cooperation and revenue financing while maintaining local responsibility and control and thereby promote the public health and welfare.

Thus, turning to a Memorandum of Agreement to bring the State, New York City, and watershed jurisdictions together to provide for water quality while also allowing for environmentally sensitive economic development was one of several institutional paths made available through the State's laws.

The MOA draws upon a variety of authorities to create a complex governing arrangement. It consists of six articles. As the first article includes definitions, the actual spelling out of the governing arrangements begins with Article 2, titled NYC Watershed Land Acquisition Program. New York City's exercise of eminent domain in the watersheds was one of the most contentious issues to be addressed. It was dealt with in the following way: 1) New York City's water supply permit, which is issued by the New York Department of Environmental Conservation¹⁰ is conditioned on the City complying with the MOA land acquisition program and properly funding economic development and water quality programs in the watersheds (Article 2, Sections 56 and 85); 2) the parties to the MOA agreed not to contest the issuance of the water supply permit in court, and thereby not contest the land acquisition program (Article 2, Section 58); 3) in turn, the City agreed not to exercise eminent domain to acquire land (Article 2, Section 59); 4) rather, land acquisition may only occur through a willing buyer/seller process (Article 2, Section 60). In addition to willing buyer/seller, local jurisdictions participate in the program by exempting parts of their jurisdictions from being acquired, and by reviewing, monitoring, and ensuring that New York City complies with the conditions of the land acquisition program (Articles 68 and 70). Finally, the City committed to pay \$250,000,000 for land in the Delaware and Catskills watersheds (Article 2, section 74)¹¹.

¹⁰ Article 15, Title 15 of the New York State Environmental Conservation Law authorizes the New York Department of Environmental Conservation to issue water supply permits.

¹¹ New York City Municipal Water Finance Authority Act of 1985 created the New York City Water Board, which is authorized to set water and sewer rates that raise revenues sufficient to meet the system's financial obligations; and the New York City Municipal Water Finance Authority, which issues investment bonds that finance the system's capital improvement program.

In sum, Article 2 created power sharing arrangements, requiring the City and watershed jurisdictions to collectively determine which lands are eligible for purchase by the City through a willing seller, willing buyer program instead of via eminent domain (NYC Watershed Memorandum of Agreement, Article 2, Section 60). It also made the land acquisition program the locus of enforcement. If the City does not fund the economic development and water quality programs spelled out in Article 5 (described below), the land acquisition program may be suspended through the water quality permit.

Article 4 created two organizations to implement the MOA, the Watershed Protection Partnership Council and the Catskills Watershed Corporation.¹² The Watershed Protection Partnership Council, consisting of 27 members from state agencies, watershed counties, environmental organizations, New York City, and the Catskills Watershed Corporation, to “serve as a forum for the exchange of views, concerns, ideas, information, and recommendations relating to Watershed protection and environmentally responsible economic development.”(Article 4, Section 101(a)). A subset of the Council constitutes the Executive Committee and it is authorized to serve as a forum to settle disputes among the Parties to the MOA, as well as review the implementation of the Watershed Regulations, and to monitor compliance with the MOA (Article 4, Sections 97 through 116). In contrast, the Catskills Watershed Corporation (CWC), is a local, non-profit organization¹³ created to develop and implement programs that provide for the provision of public goods, such as environmentally sensitive general economic development assistance for watershed communities, wastewater treatment facility upgrades, stream corridor restoration, educational programs, storm water and septic system improvements and upgrades, and road and bridge improvements (Article 4, Section 117; Article 5, Section 118). Its board consists of elected public officials from the watershed towns (Article 4, Section 117). Article 4 created two governing organizations, populated by state and local officials, as well as environmental groups. The WPPC and its executive council provide a venue for the Parties to share ideas, resolve disputes, and monitor the performance of the MOA. The CWC devises and implements public goods programs, many of which are spelled out in Article 5.

Article 5 established water quality and economic development programs and their financing. The water quality programs focus on infrastructure, such as the upgrading or building of wastewater treatment plants, community septic systems, sewer extensions, stormwater projects, and the like. Economic development programs are not entirely spelled out, that comes later with the establishment of the CWC. However, the program funding is specified, with New York City agreeing on specific dollar amounts to provide each program. For instance, the City agreed to pay \$68 million for East of Hudson water quality funds and \$59,745,241 for the

¹² Article 3, New York City Watershed Regulations, incorporate the regulations into the MOA, and will not be addressed in this paper.

¹³ The CWC was created under the New York State Not-for-Profit Corporation Law.

Catskill Fund For the Future, for qualified economic development programs (Article 5, Section 135).

Article 6 is a grab bag of different studies and pilot programs as suggested by its title “Miscellaneous Provisions”, with a couple of notable exceptions. One is the relationship between New York State and the EPA. EPA agreed to delegate primary enforcement responsibility of the Surface Water Treatment Regulation in the Catskills and Delaware watersheds, and by implication the issuance of FADs, to the Department of Health¹⁴ by 2007 (Article VI, Section 160). While the EPA retains oversight of FADs, the Department of Health becomes the primary agency for ensuring the potability of New York City’s water supply. The other exception is the Parties’ waiver of future legal challenges (Article VI, section 176). The Parties to the MOA agreed to forego any legal challenges to the validity or enforceability of the 1997 FAD, the MOA, the Watershed Regulations, the land acquisition program and the water supply permit. In other words, they agreed that they would not attempt to unravel the governing arrangements by seeking to invalidate them. Rather, the governing arrangements, as spelled out in the MOA, are enforceable among the Parties (Section 181).

In assessing the MOA and the governing arrangements it creates, the authorities, responsibilities, and fiscal capacities that it is designed around are clearly specified in New York State laws. As a home rule state, New York supports local governance and interlocal cooperation, providing numerous options for designing complex governing arrangements that allow local jurisdictions to address regional scale problems. How the New York City Watersheds governing arrangements has crowded in cooperation is explored next.

The Crowding in of Cooperation

Evidence of crowding in cooperative behavior is organized around the major categories of activities structured by the governing arrangement -- the land acquisition programs, the water quality programs, and the economic development programs. Evidence from the FADs and the MOA, Water Supply Permit, and CWC programs is drawn upon. How the program content of the FADs has changed over time is explored. In addition, as noted above and as detailed in the Appendix, the grammar of institutions (Crawford and Ostrom 1995) was used to code the rules for the sixty water quality and economic development programs. The coded statements were then used to construct a series of institutional design variables. The variables are used to explore how program designs have changed over time.

Land Acquisition Programs

¹⁴ Article 11 of the Public Health Law grants the Department of Health the authority to implement the Safe Drinking Water Act.

The four FADs, and one revised FAD (2012), consistently exhibit the broadening and the deepening of the land acquisition programs. The time period that each FAD covers is extended, with the land acquisition programs driving the time extensions. The first FAD issued in coordination with the MOA covered a five-year time period, 1997-2002, with a mid-course review in 2000. The second FAD, 2002-2007, also covered a five-year time period but with no mid-course review. The third FAD covered 10 years, 2007-2017. This FAD extended the land acquisition program for a decade, but not the water quality programs. The water quality programs were covered for five years with a planned review at the midway point in 2012. Because of extenuating circumstances – the Great Recession and two tropical storms – the land acquisitions program was revised and extended in 2012, as discussed below. The 2017 FAD has a 10-year time horizon, however, the land acquisition programs are envisioned to extend out to 2033. Major reviews of the land acquisition programs by a National Academies of Science committee and the renewal of the WSP in 2023 will likely lead to revisions.

In each of the FADs, the land acquisition programs were either deepened or broadened. Examples of deepening are continuing the land acquisition program, including speeding up its pace of acquisition. The 2007 FAD, for the first time, established targets for solicitation, with the City required to solicit 50,000 acres per year. In addition, the City committed \$241 million for land acquisition over the course of the FAD. The 2012 revised FAD further deepened the program because the Great Recession led landowners to accept the City's purchase offers at a much more rapid pace than initially envisioned. By 2012, the City had spent more than \$200 million on acquisitions, and agreed to spend an additional \$50 million to purchase land offered for sale through its solicitation of 350,000 acres (2007 Revised FAD). In the 2017 FAD the goal of soliciting 350,000 acres is maintained along with funding.

Broadening of the land acquisition programs occurred through the development of new programs. In 2011, two tropical cyclones hit the watersheds causing extensive flooding and destruction, with cars, buildings, and other debris washing into reservoirs (Hanlon 2015). Two distinct flood buy out programs were created. In the first, the City provided the matching funds for properties participating in federal and state flood buy out programs. In the second, the City funded a watersheds program in which properties that did not qualify for or did not participate in federal and state programs could be purchased, the buildings removed, and the land placed in the City's portfolio. These programs are notable because one of the major points of contention between the City and the watershed jurisdictions was the City's condemning and purchasing of properties with homes and businesses, thus undermining economic development. The MOA's land acquisition programs specifically forbid the City from acquiring land with structures. The flood buy out programs represent an important, and significant exception to the acquisition of built up property.

In addition to evidence from the FADs, the institutional design of the land acquisition programs changed over time. In comparing the design of the 1997 MOA

created land acquisition program with the 2010 WSP program, several differences present themselves. First, the condition scores of the two programs differ. The condition score is based on the number of conditions in each rule constituting the programs, measures how prescriptive, or how constrained, the rules are (see the Appendix for details). The 2010 WSP program condition score is lower, meaning that the rules constituting the program contain fewer conditions, on average than the 1997 program (MOA Land Acquisition Program = 1.93, WSP Land Acquisition Program = 1.78). In addition, there are less than half as many aggregation rules in the WSP program (four compared to nine). In the MOA program supermajority decision rules predominated, with 6 of the 9 rules. In the WSP program the aggregation rules were evenly divided between super majority rules and consultation. This suggests that actors were granted somewhat more discretion in carrying out their activities, and that joint decision making requirements were eased.

The further deepening of the land acquisition programs is suggested by the compliance, consequence, and monitoring mechanisms that were created as a part of each program. While the number of monitoring mechanisms did not change between 1997 and 2010, remaining at five, the number of compliance and consequence mechanisms did change. The WSP land acquisition programs have two additional compliance mechanisms, which allow participants to call upon third parties to review the decisions and actions of implementing actors; and four additional consequence mechanisms, which have the authority to impose some forms of penalties for non-compliance. Thus, actors have additional opportunities to hold one another accountable, as well as additional sanctioning opportunities.

Incorporating additional compliance and consequence mechanisms in current land acquisition programs likely reflects the ongoing tensions between the watershed jurisdictions and New York City. According to the Coalition of Watershed Towns, the land acquisition program has swept up more developable land than intended, or desired (see Coalition <https://coalitionofwatershedtowns.org/>). The MOA established criteria meant to restrict land acquisitions to parcels that could not be built on, but in practice land owners having willingly sold larger tracts of property (personal communication, May 29, 2019).

Water Quality Programs

Water quality programs also play a key role in the FAD, the MOA, and to a lesser extent the CWC programs. The FAD organizes the water quality programs into three broad categories – environmental infrastructure, which includes septic systems and waste water treatment plants; protection and remediation, which in addition to the land acquisition programs, includes a variety of land management programs, such as the agricultural program in which farmers are encouraged to adopt best management practices; and regulatory programs. The categories remain consistent across the FADS as do the program areas within each broad category. That is, there are no program areas that are removed. However, program areas have been added.

Across the five FADS, one, the 2007 FAD, expanded the number of programs in the category of protection and remediation by three.

For the purposes of this paper (read the author ran out of time), only a single category – environmental infrastructure – will be examined. Like the land acquisition programs, the FADS suggest both deepening of existing programs and the addition of new programs primarily developed by the CWC. Examples of deepening include the Waste Water Treatment Plant Upgrades Program (WWTP) created by the MOA. In each FAD, until 2007, the progress on the program is noted and additional plants scheduled for upgrading are identified. Beginning with the 2007 FAD, it is noted that all identified plants have been upgraded and the program is transitioning into one of maintenance.

The broadening of programs occurs through the CWC adopting new programs, in addition to the programs initially created through the MOA. For instance, in 1999, one of the first programs the CWC adopts and implements is the Septic System Rehab and Replace program, and in 2004 it adopts the Community Waster Water Management program. Once adopted, both programs follow the same deepening process as did the WWTP upgrade program, with each FAD noting progress made and scheduling additional septic and waste water management projects in specific communities or basins.

Economic Development Programs

One of the major concerns of watershed jurisdictions was the effect of land acquisition programs on their economies. The MOA provided that the City would pay just over \$59 million to capitalize the Catskills Fund for the Future to be used for loans, grants, and other projects that support environmentally sound economic development (MOA, Section 5). The CWC developed a series of programs adopted in 2000, ranging from “Main Street Grants”, devoted to streetscapes, facades, and other types of improvements, to a “Catskills Hospital/Healthcare Loan Program” providing loans for nonprofit healthcare facilities for construction and rehabilitation of facilities.

The economic development programs have remained in place over the last twenty years, with several new programs added more recently. The new programs focused on flood recovery following the two tropical storms in 2011. The 2011 Flood Recovery grant program was to be used for private businesses that suffered flood damage to return buildings to pre-flood conditions. The Greene County Flood Recovery grant program served similar purposes, assisting private businesses to recover from flood damage.

The CWC economic development programs provide evidence of deepening and limited broadening. For deepening, the programs were put in place in 2000, and have remained stable since that time, with New York City providing funding, and grants and loans being issued each year. New, time limited programs were created

in response to the impact of severe storms to aid private businesses in recovering from flood damage.

The watershed jurisdictions were also protected from the loss of revenues due to the purchase and protection of lands within their jurisdictions. The MOA created a tax program in which New York City would pay taxes on the lands and easements it owns. The tax program was incorporated within the WSP. Furthermore, the MOA recognized that watershed villages and towns lacked the capacity to properly assess lands, especially lands containing reservoirs and distribution systems, for tax purposes. The MOA created a tax consulting fund to be used to pay for the services of tax consultants hired by watershed jurisdictions.

Tax assessments, however, have been a source of conflict between the City and watershed jurisdictions. Each year, for ten years, the City sued a different village or town over its tax assessments (Hanlon 2015). While the City did not prevail in any single lawsuit, the lawsuits signaled problems in the tax program and the CWC developed a new tax consulting program – the Tax Litigation Avoidance Program (TLAP) adopted in 2012. The TLAP provided an agreed upon set of procedures for developing assessments of City property as well as funding for consulting and legal fees of watershed jurisdictions. The program appears to have realized its goals as City instigated lawsuits have largely ceased (Hanlon 2015).

The institutional designs of the tax programs have changed since the inception of the MOA. Two distinct comparisons can be made. The MOA (1997) and WSP (2010) tax programs differ in notable ways. While the condition scores of each program are virtually identical (1.63 compared to 1.61), the WSP program contains no aggregation rules, whereas the MOA program had a single consulting type of aggregation rule. However, the WSP contains an additional compliance mechanism. Neither program contains consequence or monitoring mechanisms.

In addition, the design of the tax consulting programs also changed. TLAP, the later program, consists of rules that contain fewer conditions. The MOA tax consulting program exhibited a mean of 1.60, whereas TLAP 1.28. In addition, TLAP's aggregation rules are more numerous. The MOA tax consulting program contained a single rule and it required consultation. The TLAP contains five aggregation rules, one is a veto rule and four require consultation among actors. The mechanisms are also different. The MOA program contained a single mechanism, a consequence mechanism. The TLAP program does not contain a consequence mechanism, but it does include a monitoring and a compliance mechanism.

The design differences between the two sets of programs suggests that the more recent programs are somewhat less prescriptive, are drawing on more “soft” aggregation rules, and are stepping away from providing for consequences or penalties, and instead are providing means for allowing actors to hold one another accountable.

Federal Culture

To paraphrase Bednar (2009:185), how do we know that adaptations, the deepening and broadening of the New York City Watersheds Governing arrangements are in the common interest? Instead of taking a conventional policy analysis approach to this question, the paper follows scholars of federalism and takes more of a covenantal approach focusing on actors, perceptions of the governing arrangements and of one another and their actions. That is, covenants focus on relationships that are buttressed by norms of reciprocity and values of respect. As Elazar (1987:78) notes, covenants support “interactions that emphasize coordinative rather than superior-subordinate relationships, negotiated cooperation, and sharing among parties.”

A survey of the members to the MOA, conducted in 2014, asked a series of questions centering on perceptions of the fairness of and the benefits to watershed residents of the FAD, the WSP, and the CWC program rules. In addition, a series of questions focused on perceptions of the primary actors implementing the land acquisition, water quality, and economic development programs, specifically New York State, New York City, and the CWC, and how attentive they are to the needs and demands of watershed jurisdictions (see the Appendix for wording of questions).

Table 1a . Actors Perceived Distribution of Benefits of FAD (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Some benefit at expense of others	2 (20%)	8 (57%)	10 (42%)
All benefit but some more	1 (10%)	4 (28%)	5 (21%)
All benefit	7 (70%)	2 (14%)	9 (37%)
Total	10	14	24

Fisher’s Exact Test; p:0.022

Table 1b . Actors Perceived Distribution of Benefits of Water Supply Permit (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Some benefit at expense of others	3 (30%)	2 (15%)	5 (22%)
All benefit but some more	1 (10%)	9 (69%)	10 (43%)
All benefit	6 (60%)	2 (16%)	8 (35%)
Total	10	13	23

Fisher’s Exact Test; p:0.018

Table 1c. Actors Perceived Distribution of Benefits of CWC Program Rules (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Some benefit at expense of others	1 (11%)	0 (0%)	1 (4%)
All benefit but some more	4 (44%)	10 (71%)	14 (61%)
All benefit	4 (44%)	4 (29%)	8 (35%)
Total	9	14	23

Fisher's Exact Test; p:0.333

Tables 1a, 1b, and 1c report the perceptions of rule fairness and benefits. Respondents were divided into two groups, those representing the EPA, New York State and New York City on the one hand and those representing the watershed counties, towns, and villages on the other. Given the small cell sizes, the Fisher's exact test was used to measure difference in responses. Perceptions of representatives of watershed jurisdictions are significantly different from representatives of the EPA, State, and City regarding the FADs and the WSP. Regarding the FADS, eight of the fourteen watershed representatives responded that some benefit at the expense of others. In contrast, seven of the ten federal/state/city representatives responded that all benefit from the FADs. The WSP is not evaluated as negatively by the representatives of the watershed jurisdictions. Nine of thirteen respondents agreed that all benefit, but not equally, whereas six of the ten federal/state/city representatives responded that all benefit. Differences among the respondents regarding the CWC program rules, which in general are perceived as benefiting all, but not equally, are not significant.

Table 2a. Attentiveness of NYS to Needs of Watershed Jurisdictions (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Disagree	1 (11%)	6 (50%)	7 (33%)
Neither	3 (33%)	4 (33%)	7 (33%)
Agree	5 (56%)	2 (17%)	7 (33%)
Total	9	12	21

Fisher's Exact Test; p:0.147

Table 2b. Attentiveness of NYC to Needs of Watershed Jurisdictions (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Disagree	2 (22%)	4 (33%)	6 (29%)
Neither	2 (22%)	6 (50%)	8 (38%)
Agree	5 (56%)	2 (17%)	7 (33%)
Total	9	12	21

Fisher's Exact Test; p:0.215

Table 2c. Attentiveness of CWC to Needs of Watershed Jurisdictions (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Disagree	0 (0%)	2 (18%)	2 (11%)
Neither	2 (25%)	3 (27%)	5 (26%)
Agree	6 (75%)	6 (55%)	12 (63%)
Total	8	11	19

Fisher's Exact Test; p:0.659

Table 2d. Actors Make Decisions without considering needs of watershed as whole (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Disagree	8 (89%)	7 (58%)	15 (71%)
Neither	1 (11%)	3 (25%)	4 (19%)
Agree	0 (0%)	2 (17%)	2 (10%)
Total	9	12	21

Fisher's Exact Test; p:0.489

Tables 2a, 2b, and 2c report the actors' perceptions of New York State, New York City, and the CWC and their attentiveness to the needs and demands of watershed jurisdictions. Differences in perceptions of the two groups of actors are not significantly different, however, there are notable patterns. Representatives of watershed jurisdictions tend to disagree with the statements that New York State and New York City are attentive to the needs of watershed jurisdictions, and

conversely federal/state/city representatives tend to agree with the statements, but both groups include respondents who selected the neutral response. When it comes to the CWC, however, majorities of both respondent groups agreed that the CWC is attentive to the needs of watershed jurisdictions. A final general question was asked about whether actors make decisions without considering the needs and problems of the watershed as a whole (Table 2d). Here too, the differences between the two groups of respondents are not significantly different with clear majorities of respondents disagreeing with the statement.

Table 3a. Environmental Change Over Time (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Worse	1 (12%)	5 (42%)	6 (30%)
Neither	5 (63%)	6 (50%)	11 (55%)
Better	2 (25%)	1 (8%)	3 (15%)
Total	8	12	20

Fisher's Exact Test; p:0.408

Table 3b. Current Quality of Environment (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Poor	2 (20%)	2 (14%)	4 (17%)
Neither	4 (40%)	7 (50%)	11 (46%)
Excellent	4 (40%)	5 (36%)	9 (38%)
Total	10	14	24

Fisher's Exact Test; p: 1.00

Table 3c. Economic Development Over Time (number of responses)

Response	EPA/State/City	Watershed Jurisdictions	Total
Worse	2 (22%)	8 (57%)	10 (43%)
Neither	1 (11%)	1 (7%)	2 (9%)
Better	6 (67%)	5 (36%)	11 (48%)
Total	9	14	23

Fisher's Exact Test; p:0.305

Tables 3a, 3b, and 3c report the perceptions of respondents to environmental conditions and economic development in the watersheds. The median response to the question on whether environmental conditions had changed over time was neither better nor worse, but with a notable number of watershed jurisdiction representatives responding worse. Perceptions of the current state of environmental conditions is not that different between the two groups of respondents, with majorities responding that environmental conditions are neither excellent nor poor.

The perceptions of how MOA programs have affected economic development over time exhibit interesting patterns. The federal/state/city representatives view the effects of the economic development programs positively, whereas the watershed jurisdictions representatives are split. A majority perceive the economic development programs negatively, but a sizeable minority view economic development as improving over time.

In general, the EPA, New York State, and the City of New York respondents view the governing arrangements more positively than do the representatives of the watershed jurisdictions. Watershed jurisdiction representatives evaluate more positively the programs that they are more directly tied to and have some control over. For instance, they were more negative regarding the FADs. They were less negative regarding the WSP, which they participate in revising and which is the mechanism by which they may convince the State to impose severe sanctions on the City if it fails to comply with the MOA. They are positively inclined towards the CWC programs, which are mostly economic development programs, and which they have a direct say in developing and implementing.

There are no significant differences between the two groups in how they evaluate the behavior of the actors engaged in implementing the governing arrangements and associated programs. Representatives of the watershed jurisdictions do not consistently evaluate the actors in a negative fashion, and in fact, both groups of representatives give mixed evaluations of the actors, although the evaluations lean towards being positive.

Conclusion

Prior to the adoption of the MOA, New York City was the dominant water and land decision maker and regulator in the watersheds. Why would the City step away from this approach and bind itself to the watershed jurisdictions through the MOA? The MOA offered the City the means of demonstrating to the EPA and New York State that it exercised long term control over its watersheds, and in so doing avoid the extremely costly alternative, building and operating a multi-billion dollar filtration plant for the Delaware/Catskills watersheds. It meant the loss of singular authority, and the payment of millions of dollars a year, rather than billions of dollars. The City faced strong external rewards and material incentives.

The watershed jurisdictions, in contrast, were offered combinations of material incentives, external rewards, and authority or some form of control over key decisions that affected their social and economic well being. They were not just paid to provide ecosystem services, as some have characterized the arrangement, they were invited to participate in key governing decisions, whereas before, they were excluded. And, they were given more fine tuned accountability mechanisms in exchange for abandoning their primary mechanism, courts. Thus, the design of the governing arrangement and anticipated programs included external rewards, but also included the promise of a more “federal culture”, in which their interests and values would be recognized.

The evidence suggests that cooperative behavior has been crowded in, rather than crowded out. The MOA created shared decision making opportunities and venues. Watershed jurisdictions participate in devising CWC programs and they are partners with the City in identifying lands and easements for acquisition. Actors’ time horizons shift, from reviewing their activities every five years, as the initial FADs specified, to every ten years, and currently the land acquisition programs are projected to extend out another fifteen years. Along with extended time horizons are more opportunities for participation. Most notably in the FAD process. Initially, FADs involved bargaining among the EPA, the State, and the City. However, beginning with the development of the 2002 FAD, watershed jurisdictions are consulted and are allowed to suggest revisions prior to the adoption of the final FAD and those (EPA 2002).

But, has a federal culture developed? The single survey cannot answer that question because it only provides one snapshot, however, it is suggestive on a couple of aspects of the governing arrangement. The watershed jurisdictions representatives tend to favor the programs that they participate in developing. Also, no deep seated distrust appears among the actors.

It is tempting to view the New York City Watersheds governing system as inevitable, determined by an enabling environment and the significant net benefits provided to all of the participants. But such a view is wrong. First, New York State’s laws, which support inter-local cooperation, provide multiple institutional pathways for jurisdictions to follow to create intergovernmental agreements. The participants brought together one combination of tools provided them to realize the present arrangement. There were other pathways that could have been taken, and that remain available. For instance, the City has the authority and capacity to build a water filtration system. Certainly it is much more costly than the existing governing arrangement, but it remains a viable option. Or, New York City retains its powers of eminent domain and its regulatory authority. In the future, when the City has largely completed its land acquisition program, there may be no reason for it to continue to support dozens of economic development programs. It could maintain its landholdings, and occasionally add a remaining land parcel, its regulatory authority and eminent domain.

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Appendix A

FADs. EPA Filtration Avoidance Determinations (FADs) allow New York City to deliver unfiltered water to its retail customers. The primary content of a FAD is the programs and projects that New York City and watershed cities and towns agree to engage in over the course of the FAD in order to maintain water quality. Since the creation of the 1997 MOA, New York City has been issued five FADs, 1997, 2002, 2007, (2014), and 2017. A count of the numbers of programs listed in each FAD along with the time periods each FAD covers is used as evidence of crowding in/out. In addition, two critical programs, the New York City land acquisition program and water infrastructure programs are examined in depth for evidence if existing programs are deepened, that is, remain in place and are further extended.

Water Quality and Economic Development Public Goods. The public goods and programs adopted and implemented through the MOA, WSP, and CWC were coded using the institutional grammar tool (IGT) (Basurto, et al 2010). The IGT is an operationalization of the grammar of institutions devised by Crawford and Ostrom (1995). For each MOA, WSP, and CWC program several institutional design features were identified and coded (see Schlager et al 2019 for a detailed explanation).

Three measurements of institutional design features were developed directly from the Institutional Grammar Tool. First, a measure of rule constraint based on the “conditions” component of the Grammar Tool was created. Conditions identify what, when, where, and how an action may or must be taken by an actor. Statements are scored from 0 to 4 such that those containing all four conditions are assigned a score of 4, statements that contain three conditions are assigned a condition score of 3, and so on. A lower score means that an actor is granted greater discretion in carrying out the action, that is, a rule assigns fewer conditions to the specified action. A higher score means the action specified in a rule is more constrained. The actor who is to carry out the rule must do so subject to a series of constraints.

For instance, the following are two consecutive rules in Article 2 of the Memorandum of Agreement that have the conditions coded using the grammar (with conditions in italics and type of condition in bold):

(1) *With the consent of the involved Towns or Villages* (**when**), the City may also make a *joint presentation* (**what**) to groups of more than three Towns and/or Villages *West of Hudson* (**where**)

(2) Such presentation shall also include *an indication of what land is eligible for acquisition in such Town or Village (including a map of the Town or Village reflecting the priority areas and applicable Natural Features Criteria) and the estimated acreage that the City expects to acquire* (**what**)

The first statement includes three conditions, when, what and where, that constrain or limit the action of the City to when, where, and what it may do. The second statement includes one condition, what information the City must include in its presentation. The variable “Constraint Score” was thus calculated by taking the

mean of the rule constraint score of all institutional statements composing each public goods arrangement.

Two additional measures developed from the Grammar Tool focus on aggregation rules in each public good arrangement. Aggregation rules specify whether two or more actors must consent before an action or outcomes occurs.¹⁵ We created two measures based on aggregation rules: the number of aggregation rules that appear in an arrangement, and level of agreement required for making a decision. Unanimity, veto, and super majority rules are considered more constraining or strict. More specifically, aggregation statements that included the words “jointly with”, “concurrence”, “consent to”, “approve”, “determine together”, or represents a decision rule (e.g., majority vote) was coded as strict. These statements require actors to jointly take an action or decision.

Aggregation rules requiring consultation are considered less constraining of action. Aggregation statements that included the words “consultation”, “coordinate”, “work with”, “consider”, “cooperation with” were coded as consultative or less strict. These statements require actors to take other actors into account, but unlike the strict aggregation statements, they do not require joint actions or decisions. All aggregation statements were classified according to the levels of agreement they require.

Separate from the institutional grammar, we construct three additional variables based on institutional design mechanisms that may appear in public goods arrangements: monitoring, compliance, and consequence. These mechanisms consist of 1 to N consecutive institutional statements, and allow actors to monitor one another’s actions as well as the outputs and outcomes of public goods. They also allow actors to hold one another accountable by providing processes for questioning possible compliance issues and they provide for sanctions for rule violating behavior. Counts of each monitoring, compliance, and consequence mechanism are used as a measure of institutional design in the variables “Number of Monitoring Mechanisms”, “Number of Compliance Mechanisms”, and “Number of Consequence Mechanisms”, respectively.¹⁶

Survey. Finally, in 2014, a survey of the participants in the MOA was conducted. Tables 1a, b, and c are based on the following question:

¹⁵ The first example statement in the constraint score subsection is a form of an aggregation rule, as it requires more than three Towns or Villages and the City to consent before a presentation is permitted.

¹⁶ To assess inter-coder reliability, 1392 institutional statements were coded by two secondary coders. Coefficients were calculated as the percentage of times the coders agreed on labeling a statement a monitoring, compliance, or consequence, or rule change mechanism. The average percentage agreement across documents was 89%.

Rate the following sets of rules in terms of your sense of fairness and benefits to watershed organizations and landowners.

	A select few benefit	Many or most benefit	All benefit
Catskill Watershed Corporation Program Rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Filtration Avoidance Determination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water Supply Permit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New York City Watershed Rules and Regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watershed Agricultural Council Program Rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tables 2a, b, c, and d are based on the following questions:
 Indicate your agreement with the following statements.

	Strongly Disagree	Mostly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Mostly agree	Strongly agree
In the watershed, actors tend to make decisions without considering the needs and problems of the watershed as a whole.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New York City does everything it can to protect the water quality of the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New York City is attentive to the needs and demands of the Counties, Towns, Municipalities, and Landowners in the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The State of New York does everything it can to protect the water quality of the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The State of New York is attentive to the needs and demands of the Counties, Towns, Municipalities and Landowners in the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Watershed Agricultural Council is attentive to the needs and demands of the Counties, Towns, Municipalities and Landowners in the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Mostly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Mostly agree	Strongly agree
The Catskill Watershed Corporation is attentive to the needs and demands of the Counties, Towns, Municipalities and Landowners in the watershed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the watershed, we all share, more or less, the same goals, but we cannot agree on the ways we want to achieve them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tables 3a, b, and c are based on the following questions:

In general, how would you define the environmental state of the watersheds TODAY? Would you describe them as being in a bad environmental state, or in a good environmental state?

- An extremely bad environmental state
- A mostly bad environmental state
- A slightly bad environmental state
- Neither a bad nor a good environmental state
- A slightly good environmental state
- A mostly good environmental state
- An extremely good environmental state

How has the environmental situation in the watersheds changed since the establishment of the 1997 Memorandum of Agreement? Has the environmental situation worsened or has it improved?

- Dramatically worsened
- Mostly worsened
- Stayed about the same
- Slightly improved
- Mostly improved
- Dramatically improved

Since the establishment of the 1997 Memorandum of Agreement, how have watershed programs affected the economic prosperity of the communities in the watershed? Have they had negative effects or positive effects?

- Completely negative effects
- Mostly negative effects
- A few negative effects
- Neither negative nor positive effects
- A few positive effects
- Mostly positive effects
- Completely positive effects