Forgotten Waters

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Over 43 million Americans, approximately 15% of the population, rely on private wells for drinking water. These Americans do not have access to public water systems and are not protected by the Safe Drinking Water Act. These individuals are instead left with a set of widely differing state laws regulating their drinking water wells. Most of these states do not have any standards related to drinking water quality. Well owners are instead responsible for monitoring and maintaining the safety of their water.

This problem is often characterized as a rural issue: hard to solve because of the large distance to treated water infrastructure. This assumption is wrong. Many homes are located in peri-urban communities, close to public water systems. These systems often have been excluded from public water systems due to racial and ethnic discrimination and poverty. Using the example of communities surrounding Mebane, North Carolina, this Article argues that approaches to addressing access to safe drinking water must account for this legacy of discrimination and discusses why the Rural Electrification Act provides a promising model to provide safe drinking water to well dependent populations.

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INTRODUCTION

Outside the city limits of Mebane, North Carolina, lies the community of White Level. Predominantly Black, Indigenous, and Latinx,[1] this community was founded by freed slaves and has a long, rich history.[2] Across the street from White Level sits the Mill Creek community, which is predominantly white and wealthier.[3] The street marks a stark dividing line. Most of the White Level

1. *See Our History*, W. END REVITALIZATION ASS'N, https://weranc.org/our-history/ [https://perma.cc/E6SX-4BZJ] (last visited Feb. 5, 2023).

2. *See* W. END REVITALIZATION ASS'N, https://weranc.org [https://perma.cc/YQM7-V9XZ] (last visited Feb. 5, 2023); *see also Our History*, *supra* note 1 (elaborating on this rich history).

3. *See Our History*, *supra* note 1.

residents have no access to municipal water and sewer services. Conversely, many residents of neighboring Mill Creek enjoy access to public water and sewer services.[4]

White Level is not the only unincorporated Mebane community without access to public water. It is one of five predominantly Black, Indigenous, People of Color (BIPOC) communities that the West End Revitalization Association helps to gain access to basic public health amenities.[5] Many of these residents are left without basic amenities, such as paved roads and safe drinking water.[6] This would not be the case if they were annexed by the City of Mebane. Given their proximity to Mebane, annexation would be easy to achieve.[7] But Mebane has not annexed these communities.[8]

Such "peri-urban" communities, unincorporated communities adjacent to municipalities, without access to public water systems, exist throughout the country.[9] They may be found along the U.S.–Mexico border in communities known as "colonias."[10] Similar unincorporated BIPOC communities are located in Texas and as far west as California, where migrant communities in the Central Valley face the same access issues.[11] These communities must rely on private drinking water wells, which they themselves must maintain.[12] With every glass they drink, they risk exposing themselves to contaminated water.

Indeed, over 43 million Americans, or approximately 15% of the population, do not have access to public water systems.[13] Many must rely on private drinking water wells that are unregulated by the Safe Drinking Water Act (SDWA).[14] These individuals are instead subject to widely differing state laws regulating their drinking water wells. Most of these states do not have *any* standards

4. *Id.*

5. W. END REVITALIZATION ASS'N, *supra* note 2.

6. *See* Danielle Purifoy, *A Place Called Mebane*, SCALAWAG MAG. (Aug. 8, 2016), https://scalawagmagazine.org/2016/08/a-place-called-mebane/ [https://perma.cc/W4K9-73YC].

7. *See* David M. Lawrence, *Incorporation, Abolition, and Annexation*, *in* COUNTY AND MUNICIPAL GOVERNMENT IN NORTH CAROLINA 3 (2d ed. 2014).

8. *See* Jonathan Weiler, *Subtle Yet Potent Racism Exists in Deciding Who Lives Within the City Limits*, INDY WK. (May 25, 2011, 4:00 AM), https://indyweek.com/news/subtle-yet-potent-racism-exists-deciding-lives-within-city-limits/ [https://perma.cc/Z5RU-Q3PC].

9. *See* Hannah Gordon Leker & Jacqueline MacDonald Gibson, *Relationship Between Race and Community Water and Sewer Service in North Carolina, USA*, PLOS ONE, Mar. 21, 2018, at 1, 2. The term "municipality" refers to any incorporated city, town, or other unit of local government with elected officials. *Id.* at 5.

10. *Id.* at 3.

11. *Id.*

12. *Water Contamination and Diseases*, CTRS. FOR DISEASE CONTROL & PREVENTION (May 26, 2022), https://www.cdc.gov/healthywater/drinking/private/wells/diseases.html [https://perma.cc/9KUH-T5EW].

13. Water Resources Mission Area, *Domestic (Private) Supply Wells*, U.S. GEOLOGICAL SURV., https://www.usgs.gov/mission-areas/water-resources/science/domestic-private-supply-wells [https://perma.cc/B5BN-SVYX] (last visited Feb. 5, 2023).

14. *Id.*

related to drinking water quality.[15] The owners are individually responsible for monitoring and maintaining the safety of their well water.[16]

The United States enjoys an international reputation for providing safe drinking water to its population.[17] Whether drinking from a water fountain in Portland, Oregon or Portland, Maine, those drinking can be generally confident the water is safe.[18] This is not the case for well water and, consequently, for well dependent communities. Sampling wells from 1991 to 2004 in forty-eight states, the United States Geological Survey (USGS) found that over one-fifth of the wells had contaminants exceeding SDWA standards.[19] Remarkably, the U.S. Department of Health and Human Services has excluded existing well dependent communities from its national drinking water goals. Protection of well water users has been, and remains, predominately ignored in law and policy.[20]

Although much of the population reliant on well water is rural, many are also peri-urban, and within commuting distance of a public water system. Peri-urban communities are unincorporated communities that are adjacent to municipalities.[21] Their proximity means that it is more financially feasible to connect these communities to existing public water systems than sparsely populated and more distant rural areas.[22] Yet that has not happened in a surprising number of cases.

Part of the reason is financial—cities and their water utilities may fear that these communities do not have the capacity to pay water bills.[23] But part of the reason likely lies in discrimination. Many peri-urban communities are primarily BIPOC communities.[24] These BIPOC communities have long been excluded from basic amenities such as water, sewage, and roads through a practice known as "municipal underbounding," the systematic exclusion of unincorporated BIPOC communities from incorporation.[25] Research shows that the decision to exclude these communities through underbounding has historically been rooted

15. Kristina Bowen, Tara Krishna, Lorraine Backer, Kate Hodgins, Lance A. Waller & Matthew O. Gribble, *State-Level Policies Concerning Private Wells in the United States*, 21 WATER POL'Y 428, 428–29, 431 (2019).

16. *Water Contamination and Diseases*, *supra* note 12.

17. *Basic Information About Your Drinking Water*, EPA (Jan. 10, 2022), https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-your-drinking-water [https://perma.cc/MJ93-PDSA].

18. *See id.*

19. LESLIE A. DESIMONE, PIXIE A. HAMILTON & ROBERT J. GILLIOM, U.S. GEOLOGICAL SURV., U.S. DEP'T OF THE INTERIOR, THE QUALITY OF OUR NATION'S WATERS: QUALITY OF WATER FROM DOMESTIC WELLS IN PRINCIPAL AQUIFERS OF THE UNITED STATES, 1991–2004: OVERVIEW OF MAJOR FINDINGS 17 (2009), https://pubs.usgs.gov/sir/2008/5227/ [https://perma.cc/7W2M-26DM].

20. *See id.* at 7.

21. Cristina Gomez-Vidal & Anu Manchikanti Gomez, *Invisible and Unequal: Unincorporated Community Status as a Structural Determinant of Health*, SOC. SCI. & MED., Aug. 4, 2021, at 1, 2.

22. *See* Leker & Gibson, *supra* note 9, at 3.

23. *See* Vinit Mukhija & David R. Mason, *Reluctant Cities, Colonias and Municipal Underbounding in the US: Can Cities Be Convinced to Annex Poor Enclaves?*, 50 URB. STUDS. 2959, 2960 (2013).

24. *See* Leker & Gibson, *supra* note 9, at 3.

25. *See* Michelle Wilde Anderson, *Mapped Out of Local Democracy*, 62 STAN. L. REV. 931, 937–38 (2010); Daniel T. Lichter, Domenico Parisi, Steven Michael Grice & Michael Taquino, *Municipal Underbounding: Annexation and Racial Exclusion in Small Southern Towns*, 72 RURAL SOCIO. 47, 51,

in racism.[26] These underbound communities are still left without access to safe drinking water,[27] and their lack of financial resources leaves them especially vulnerable.

Essentially, the decision of whether to give these communities access to safe drinking water is left up to local officials. Because many municipalities have not annexed these communities into water services, public officials have no duty toward maintaining safe drinking water for these underbound communities.

This Article proposes that the answer to this issue may lie in placing the power of connection within the communities' hands. The Rural Electrification Act (REA) provides a model for connecting communities to basic services when public utilities are resistant to do so. By achieving its goals through a cooperative model, the REA was able to electrify the United States. Its model can be used as a basis for communities to organize around gaining access to public water systems. The decision to connect would lie with communities, not municipalities.

Part I of this Article considers the health disparities in well dependent communities and their environmental justice and public health implications. This Part also assesses the exclusion of well dependent communities from the SDWA and public health priorities and explores municipal underbounding practices and their impacts on well dependent communities. Part II critiques current federal and state approaches to the issue. Part III recommends prioritizing municipally underbound, well dependent communities and proposes the REA as a regulatory model, which could be applied to this problem, to ensure access to public water infrastructure to all communities in the United States.[28]

I. CHOOSING TO FORGET[29]

According to the Environmental Protection Agency (EPA), "[t]he United States enjoys one of the world's most reliable and safest supplies of drinking

60 (2007); Charles S. Aiken, *Race as a Factor in Municipal Underbounding*, 77 ANNALS ASS'N AM. GEOGRAPHERS 564, 565 (1987).

26. *See generally* UNIV. N.C. CTR. FOR C.R., THE STATE OF EXCLUSION: AN EMPIRICAL ANALYSIS OF THE LEGACY OF SEGREGATED COMMUNITIES IN NORTH CAROLINA (2013), http://www.uncinclusion project.org/documents/stateofexclusion.pdf [https://perma.cc/ZN9K-YYG8] (explaining how exclusionary housing and zoning policies in North Carolina led to underbounded communities).

27. *See id*. at 9–10.

28. Recognition of a human right to water would also address the problem of water access in the United States. However, the United States does not recognize the right to safe drinking water and sanitation as a human right. It has repeatedly expressed this position to the United Nations. *See* Brian Kelley, Adviser, U.S. Mission to the United Nations, Statement on Agenda Item 70 "The Human Rights to Safe Drinking Water and Sanitation" (Nov. 18, 2019), https://usun.usmission.gov/united-states-statement-on-agenda-item-70-the-human-rights-to-safe-drinking-water-and-sanitation/ [https://perma.cc/GJ5S-AQLD] (saying that the United States "disagree[s] with any assertion that the right to safe drinking water and sanitation is inextricably related to or otherwise essential to enjoyment of other human rights, such as the right to life").

29. This Article will utilize themes of social forgetting in discussing the problem of exclusion. "Social forgetting" is when a group of people "try, or profess to try, to forget discomfiting historical episodes, but actually retain muted recollections." GUY BEINER, FORGETFUL REMEMBRANCE: SOCIAL FORGETTING AND VERNACULAR HISTORIOGRAPHY OF A REBELLION IN ULSTER 27 (2018). "Enduring traditions of social forgetting are more likely to be found in frontier zones, located on the margins of

water."[30] The United States is often incorrectly viewed as providing its citizens with near-universal access to safe drinking water and sanitation.[31] However, a significant portion of the United States lives under conditions that are similar to developing countries in relation to safe drinking water and sanitation.[32] Approximately 15% of—or 43 million—Americans do not have access to water infrastructure.[33] This population includes neither the approximately 7% of Americans relying on failing water systems for their drinking water[34] nor the approximately 500,000 households lacking complete plumbing.[35] The burden of this lack of access to safe drinking water is not equitably distributed but is intertwined with issues of environmental injustice and health inequity.[36]

A. HEALTH IN WELL DEPENDENT COMMUNITIES

The 43 million Americans who are excluded from the SDWA do not have access to public water systems and treated drinking water. This has profound consequences for their health, since well dependent communities are at increased risk of exposure to waterborne pathogens.[37] A study by the USGS found that over one-fifth of wells exceeded SDWA standards for contaminants.[38] One-quarter of

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powerful states and empires, which have a history of local ethnic, religious, and political conflicts that has left troublesome memories." *Id.* at 627.

30. *Basic Information about Your Drinking Water, supra* note 17.

31. *See* J. Tom Mueller & Stephen Gasteyer, *The Widespread and Unjust Drinking Water and Clean Water Crisis in the United States*, NATURE COMMC'NS, June 2021, at 1, 2.

32.

> Furthermore, residents in these communities grapple with living conditions common in developing countries due to inadequate services. Providing municipal services such as water and wastewater to unincorporated communities can be costly for the county, city, and residents, forcing these communities to rely on unsafe water systems, local water wells, and household septic tanks. The inadequate water systems can create severe water shortages and quality concerns for unincorporated communities. Furthermore, in some U.S. unincorporated communities, old septic tank systems are failing, and sanitation is inadequate. Residents are forced to buy bottled water or risk contamination, showers and sinks spew sewage, and children play in yards with leaking sewage.

Gomez-Vidal & Gomez, *supra* note 21, at 6 (citations omitted).

33. Water Resources Mission Area, *supra* note 13.

34. *See Increase the Proportion of People Whose Water Supply Meets Safe Drinking Water Act Regulations – EH-03*, U.S. DEP'T HEALTH & HUM. SERVS., https://health.gov/healthypeople/objectives-and-data/browse-objectives/environmental-health/increase-proportion-people-whose-water-supply-meets-safe-drinking-water-act-regulations-eh-03 [https://perma.cc/BB5Z-SL4P] (last visited Feb. 5, 2023).

35. Mueller & Gasteyer, *supra* note 31, at 1.

36. *Id.*

37. This Article will apply legal epidemiology to assess the public health impacts of well water contamination. Sacoby M. Wilson, Christopher D. Heaney, John Cooper, and Omega Wilson coined the term "legal epidemiology" in circumstances where "[i]t is sufficient to merely document the existence of infrastructure disparities by showing non-compliance with existing environmental and public health statutes, civil rights legislation, and building codes." Sacoby M. Wilson, Christopher D. Heaney, John Cooper & Omega Wilson, *Built Environment Issues in Unserved and Underserved African-American Neighborhoods in North Carolina*, 1 ENV'T JUST. 63, 64 (2008). This approach focuses on noncompliance with existing legal standards as the driver of infrastructure and exposure disparities in environmental justice communities. *Id.*

38. DESIMONE ET AL., *supra* note 19.

the wells in primarily agricultural areas were in exceedance of standards for nitrate, and 34% tested positive for E. coli.[39] Additionally, children who depend on private drinking water wells have a 25% increased likelihood of having elevated blood lead levels as compared to children with access to water regulated by the SDWA.[40] In a study involving kitchen tap water from Wake County, North Carolina homes, lead levels similar to those present in Flint, Michigan, were found.[41] Research over the past thirty years has shown that 23–58% of private wells exceed at least one health-based standard.[42] The contaminants differ by region. Groundwater pollution from agricultural, industrial, and residential sources all contaminate private drinking water wells.[43] Waste disposal, run-off,[44] and septic systems can all serve as sources of anthropogenic groundwater contamination.[45] However, groundwater contamination is not limited to human activity. Groundwater contamination can also occur naturally. The Earth itself can be a source of contamination, leaching heavy metals and radioactive materials into groundwater.[46] Furthermore, the exclusion of private drinking water wells from the SDWA means that well owners must institute their own corrosion control measures to reduce lead contamination from the components of their water system, which the Lead Free Rule did not restrict prior to 1996.[47] Consequently,

39. *Id*. at 2, 31.

40. Jacqueline MacDonald Gibson, Michael Fisher, Allison Clonch, John M. MacDonald & Philip J. Cook, *Children Drinking Private Well Water Have Higher Blood Lead than Those with City Water*, 117 PNAS 16898, 16898 (2020).

41. Frank Stillo & Jacqueline MacDonald Gibson, *Racial Disparities in Access to Municipal Water Supplies in the American South: Impacts on Children's Health*, 10 INT'L PUB. HEALTH J. 309, 309 (2018).

42. *See* DESIMONE ET AL., *supra* note 19 (reporting that in a 1991–2004 nationwide survey of 1,389 domestic wells, 23% of these wells had at least one contaminant present at concentrations greater than safe drinking water standards); Lynda Knobeloch, Patrick Gorski, Megan Christenson & Henry Anderson, *Private Drinking Water Quality in Rural Wisconsin*, J. ENV'T HEALTH, Mar. 2013, at 16, 17 (reporting that in a 2007–2010 survey of 3,868 Wisconsin private wells, 47% of wells exceeded at least one health-based water quality standard); Bryan R. Swistock, Stephanie Clemens, William E. Sharpe & Shawn Rummel, *Water Quality and Management of Private Drinking Water Wells in Pennsylvania*, J. ENV'T HEALTH, Oct. 2012, at 60, 60, 62 (reporting that in a survey of 701 Pennsylvania water wells, 41% failed to meet at least one health-based drinking water standard); Kelsey J. Pieper, Leigh-Anne H. Krometis, Daniel L. Gallagher, Brian L. Benham & Marc Edwards, *Incidence of Waterborne Lead in Private Drinking Water Systems in Virginia*, 13 J. WATER & HEALTH 897, 901 (2015) (reporting that in a survey of 2,146 Virginia private wells from 2012 to 2013, 58% of wells exceeded safe drinking water standards).

43. *See* SUFFOLK CNTY., N.Y., 1 SUFFOLK COUNTY MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN: 2020 UPDATE at 5.4.9-1 (2020), https://www.southamptontownny.gov/DocumentCenter/View/24198/Section-549—Groundwater-Contamination [https://perma.cc/65F7-HAU3].

44. *Potential Well Water Contaminants and Their Impacts*, EPA (Feb. 17, 2022), https://www.epa.gov/privatewells/potential-well-water-contaminants-and-their-impacts [https://perma.cc/9A4D-YWXY].

45. *See* SUFFOLK CNTY., N.Y., *supra* note 43, at 5.4.9-1 to -2.

46. *See id*. at 5.4.9-2.

47. *See* 40 C.F.R. §§ 143.10–143.20; Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, sec. 118, § 1417, 110 Stat. 1613, 1645–47 (1996); *Use of Lead Free Pipes, Fittings, Fixtures, Solder, and Flux for Drinking Water*, EPA (Apr. 27, 2022), https://www.epa.gov/sdwa/use-lead-free-pipes-fittings-fixtures-solder-and-flux-drinking-water [https://perma.cc/ZUG7-5VQZ] ("In 1996 Congress further amended the Safe Drinking Water Act, requiring plumbing fittings and fixtures (endpoint devices)

those who consume water from private drinking water wells are at greater risk of lead exposure than those who have access to public water systems.

The exclusion of private drinking wells from the SDWA means that well dependent communities are responsible for maintaining their own water quality. Despite the risk of contamination, well owners are unlikely to test and maintain their wells as recommended.[48] Many well owners believe (incorrectly) that they can detect whether their well water is safe by taste, sight, or smell.[49] Most contaminants are not detectable through the senses. However, instead of proactively monitoring and treating their wells, well owners have a tendency to maintain their wells until they perceive something may be wrong with their water.[50]

Homes dependent on private drinking water wells face disparate exposures to drinking water contamination. Black peri-urban communities relying on private drinking water wells are exposed to more microbial contamination than communities receiving water from public water systems in neighboring areas.[51] In some cases, the greater exposure to microbial contaminants may be attributable to the greater likelihood of concentrated animal feeding operations (CAFOs) being located near BIPOC and impoverished communities.[52] Most emergency department visits for acute gastrointestinal illness are associated with private well contamination.[53]

Such exposures only increase the health burdens faced by these communities, as they are less likely to have access to health resources and more likely to be burdened with higher rates of chronic disease.[54] Health disparities are inherently inequitable.[55] Even when the causes of underlying disparities are not well

to be in compliance with voluntary lead leaching standards. The amendments also prohibited the introduction into commerce of any pipe, pipe or plumbing fitting or fixture that is not lead free.").

48. *See* Kristen M.C. Malecki, Amy A. Schultz, Dolores J. Severtson, Henry A. Anderson & James A. VanDerslice, *Private-Well Stewardship Among a General Population Based Sample of Private Well-Owners*, 601–602 SCI. TOTAL ENV'T 1533, 1533 (2017); Chelsea Fizer, Wändi Bruine de Bruin, Frank Stillo & Jacqueline MacDonald Gibson, *Barriers to Managing Private Wells and Septic Systems in Underserved Communities: Mental Models of Homeowner Decision Making*, J. ENV'T HEALTH, Dec. 2018, at 8, 8, 12.

49. Fizer et al., *supra* note 48, at 12.

50. *See id.*

51. Frank Stillo & Jacqueline MacDonald Gibson, *Exposure to Contaminated Drinking Water and Health Disparities in North Carolina*, 107 AM. J. PUB. HEALTH 180, 180 (2017) (finding that in majority Black peri-urban neighborhoods in Wake County in 2014, approximately 29% of private well samples tested positive for total coliform bacteria while 6% tested positive for *Escherichia coli* bacteria; meanwhile, fewer than 1% of municipal system samples tested positive for these same organisms).

52. *See* Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*, 121 ENV'T HEALTH PERSPS. A182, A184–A185 (2013).

53. Nicholas B. DeFelice, Jill E. Johnston & Jacqueline MacDonald Gibson, *Reducing Emergency Department Visits for Acute Gastrointestinal Illnesses in North Carolina (USA) by Extending Community Water Service*, 124 ENV'T HEALTH PERSPS. 1583, 1587 (2016) (finding that, of the 2007–2013 North Carolina emergency department visits for acute gastrointestinal illness attributable to microbial drinking water contamination, 99% were associated with private well contamination).

54. *See* Ji-Young Son, Rebecca L. Muenich, Danica Schaffer-Smith, Marie Lynn Miranda & Michelle L. Bell, *Distribution of Environmental Justice Metrics for Exposure to CAFOs in North Carolina, USA*, ENV'T RSCH., Apr. 2021, at 1, 6–7.

55. Paula Braveman, *What Are Health Disparities and Health Equity? We Need to Be Clear*, 129 PUB. HEALTH REPS. 5, 7 (2014).

understood, health disparities lead to greater inequity because they place additional burdens on an already economically or socially disadvantaged group.[56] Additionally, since health disparities undermine health, they deprive these disadvantaged populations of health, which is necessary to address any preexisting economic and social disadvantages.[57] The effects of these exposures are further compounded by this population being likely to face multiple exposures. This can result in synergistic effects, which increases the health harms beyond what would be expected from each individual contaminant.[58] Health inequities "are avoidable, unnecessary, and unjust."[59]

There is a simple way to address these threats: regulate wells under the SDWA. As Section I.B explains, though, this regulatory option has explicitly been prohibited by the law.

1. Structural Determinants of Health

The structural determinants of health are the underlying causes of these disparities. They include the policies, institutions, and cultural norms that create the conditions for the social determinants of health. The structural determinants of health are rooted in how power and resources are distributed across society.[60] These structures stem from the racial, gender, and class systems originating with the creation of the United States and its economy.[61] Due to structural determinants, people of color live in vastly different social and physical environments than their white counterparts.[62] Addressing structural determinants of health requires governmental action that promotes community power.[63]

The same structures that bore social inequity also lead to disparities in environmental health. Environmental health cannot be understood as being devoid of its social and institutional context. The environments people live in are inextricably

56. *Id.*

57. *Id.*

58. *See* Rachel M. Coyte & Avner Vengosh, *Factors Controlling the Risks of Co-occurrence of the Redox-Sensitive Elements of Arsenic, Chromium, Vanadium, and Uranium in Groundwater from the Eastern United States*, 54 ENV'T SCI. & TECH. 4367, 4367 (2020).

59. Braveman, *supra* note 55.

60. According to the Commission on Social Determinants of Health (CSDH) of the World Health Organization (WHO), "[h]ealth inequities flow from patterns of social stratification—that is, from the systematically unequal distribution of power, prestige and resources among groups in society." ORIELLE SOLAR & ALEC IRWIN, WHO, A CONCEPTUAL FRAMEWORK FOR ACTION ON THE SOCIAL DETERMINANTS OF HEALTH: SOCIAL DETERMINANTS OF HEALTH DISCUSSION PAPER 2, at 20, 36–43 (2010).

61. Joia Crear-Perry, Rosaly Correa-de-Araujo, Tamara Lewis Johnson, Monica R. McLemore, Elizabeth Neilson & Maeve Wallace, *Social and Structural Determinants of Health Inequities in Maternal Health*, 30 J. WOMEN'S HEALTH 230, 231 (2021).

62. Abee L. Boyles, Brandiese E. Beverly, Suzanne E. Fenton, Chandra L. Jackson, Anne Marie Z. Jukic, Vicki L. Sutherland, Donna D. Baird, Gwen W. Collman, Darlene Dixon, Kelly K. Ferguson, Janet E. Hall, Elizabeth M. Martin, Thaddeus T. Schug, Alexandra J. White & Kelly J. Chandler, *Environmental Factors Involved in Maternal Morbidity and Mortality*, 30 J. WOMEN'S HEALTH 245, 246 (2021).

63. *See* SOLAR & IRWIN, *supra* note 60, at 22 ("By definition, then, action on the social determinants of health inequities is a political process that engages both the agency of disadvantaged communities and the responsibility of the state.").

linked to this context, and there is an interplay between environmental risk factors and the social determinants of health. The two dominant approaches, physiological and socioeconomic, to the understanding of health morbidity, mortality, and disparities, ignore the underlying cause. Attempts to understand this inequity by focusing on individual behaviors and socioeconomics lead to a narrative of blaming the individual while a focus on biological susceptibility leads to the misconception that race itself is a risk factor.[64] Physiological, socioeconomic, and environmental factors interact with each other to produce synergistic effects that impact overall health. Unincorporated communities are often doubly vulnerable to health risks and environmental exposures because they often house locally undesirable land uses—such as landfills and water and sewer treatment plants—but do not benefit from the services these facilities provide. With that relationship comes an environment fraught with inequity. Safe drinking water and sanitation are critical material conditions for community health.[65] Overall, research indicates that material conditions are neglected in unincorporated communities, leading to greater health inequities in these communities.[66]

Local government and unincorporated communities' status are determinants of health.[67] "[T]he unique status of being without municipal status . . . codifies, facilitates, and exacerbates inequality, including residential segregation."[68] Unincorporated communities are generally subject to policies that determine their incorporation, jurisdiction, and planning, and are most closely represented by county governments.[69] In the case of unincorporated communities, counties must provide services typically provided by municipal governments, such as water, sewer, law enforcement, and fire prevention.[70] Unfortunately, counties are unable to provide these services to the same extent as municipalities.[71]

Cristina Gomez-Vidal and Anu Manchikanti Gomez have argued for the importance of recognizing how unincorporated status influences health:

> When knit together, the fragmented scholarship on socially vulnerable unincorporated communities suggests that residents are at risk for adverse health outcomes as evidenced by community conditions that are toxic, hazardous, or inadequate to sustain healthy living. Unincorporated communities are not just physically on the fringe of cities but also spatially on the fringe of modern progress. Years behind their municipal counterparts, unincorporated communities struggle to secure adequate water, sewer, and garbage systems that will not pose health risks for their communities. Conceptually, these social conditions make unincorporated communities vulnerable to health risks, including

64. Crear-Perry et al., *supra* note 61.
65. Gomez-Vidal & Gomez, *supra* note 21, at 5.
66. *Id.*
67. *Id.* at 4.
68. *Id.*
69. *See id.*
70. *See id.*
71. Michelle Wilde Anderson, *Cities Inside Out: Race, Poverty, and Exclusion at the Urban Fringe*, 55 UCLA L. REV. 1095, 1128 n.131, 1149 n.185, 1156 (2008).

> infectious diseases, diabetes, asthma, heart disease, infant mortality, and shortened life expectancy. Moreover, lack of municipal status limits unincorporated community residents' ability to effect change, as they must operate without the benefit of a local governmental structure that represents them. The presence of inhospitable living conditions and structural vulnerability identified within the limited research on unincorporated communities suggests a critical need for further scholarly investigation, with particularly [sic] attention to racialized health inequities.[72]

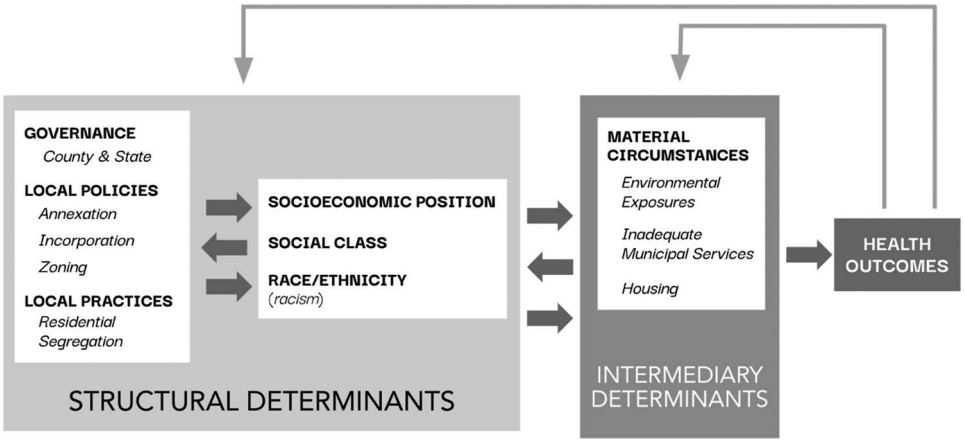

Figure 1. Structural Determinants of Health in Unincorporated Communities, as adapted by Gomez-Vidal and Gomez from the World Health Organization Commission on Social Determinants of Health Framework.[73]

Furthermore, without municipal governments, unincorporated communities are missing an entire unit of government.[74] Municipal governments provide "a form of exclusive citizenship, entitling [municipal residents] to exercise political power to shape the future of their town or city in a way that is suitable to them."[75] This translates into another deficit in the power available to unincorporated communities. Unincorporated communities are dependent on their counties for local policies, but all residents of counties, including incorporated communities, can vote in county elections. Essentially, they are underrepresented in the decisions that will have a greater impact on them. Specifically, "[t]he political power of residents to create healthy futures and mitigate harm is eroded when avenues for government accountability are missing."[76]

72. Gomez-Vidal & Gomez, *supra* note 21, at 6 (citations omitted).

73. *Id.*; *see also* SOLAR & IRWIN, *supra* note 60, at 6 (presenting similar conceptual framework to WHO).

74. Gomez-Vidal & Gomez, *supra* note 21, at 5.

75. Danielle M. Purifoy, *North Carolina [Un]incorporated: Place, Race, and Local Environmental Inequity*, 65 AM. BEHAV. SCIENTIST 1072, 1075 (2019).

76. Gomez-Vidal & Gomez, *supra* note 21, at 5.

2. Forgotten by Public Health

Despite the health risks and disparities associated with private drinking water wells and their lack of access to public water systems, well dependent communities have mainly been excluded from public health metrics. Public health attention to private drinking water wells has been limited. In 2009, in recognition of the risks associated with private wells, the American Academy of Pediatrics issued a policy statement recommending regular testing, inspection, and remediation of private drinking water wells in households with children.[77] Additionally, the American Public Health Association has produced a policy statement calling for greater attention and resources to be dedicated to addressing the health risks faced by well dependent communities.[78] As evidenced by the exclusion of well water dependent populations from Healthy People 2030, federal responses to this recommendation have been inadequate.

The federal government's attention to drinking water has centered on populations serviced by public water systems.[79] Well water users are literally uncounted.[80] Consider that the U.S. Census stopped asking about people's household source of drinking water in 1990.[81] This lack of federal attention is also evident in the U.S. Department of Health and Human Services' Healthy People 2030.

Healthy People 2030 is a project that establishes national objectives for public health.[82] This initiative has guided public health priorities for the nation since 1980.[83] Healthy People seeks to establish "data-driven national objectives to improve health and well-being over the next decade."[84] According to Healthy People, "[c]ommunities, states, and organizations across the country use Healthy

77. Comm. on Env't Health & Comm. on Infectious Diseases, *Drinking Water from Private Wells and Risks to Children*, 123 PEDIATRICS 1599, 1599 (2009).

78. *Drinking Water and Public Health in the United States*, AM. PUB. HEALTH ASS'N (Nov. 5, 2019), https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2020/01/13/drinking-water-and-public-health-in-the-united-states [https://perma.cc/J7YC-XAMM].

79. *Increase the Proportion of People Whose Water Supply Meets Safe Drinking Water Act Regulations – EH-03*, *supra* note 34.

80. The EPA estimates over twenty-three million households rely on private wells for drinking water. *See Private Drinking Water Wells*, EPA (May 26, 2022), https://www.epa.gov/privatewells [https://perma.cc/VC7Z-LHEQ]. The EPA's estimation is based on an article from the Journal of the American Water Resources Association. *Id.* (citing Andrew Murray, Alexander Hall, James Weaver, & Fran Kremer, *Methods for Estimating Locations of Housing Units Served by Private Domestic Drinking Wells in the United States Applied to 2010*, 57 J. AM. WATER RES. ASS'N 828 (2021)).

81. Mary A. Fox, Keeve E. Nachman, Breanna Anderson, Juleen Lam & Beth Resnick, *Meeting the Public Health Challenge of Protecting Private Wells: Proceedings and Recommendations from an Expert Panel Workshop*, 554–555 SCI. TOTAL ENV'T 113, 116 (2016).

82. *Healthy People 2030*, U.S. DEP'T HEALTH & HUM. SERVS., https://health.gov/healthypeople [https://perma.cc/6TEJ-E7ZG] (last visited Feb. 6, 2023).

83. *Healthy People*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 30, 2022, 12:00 PM), https://www.cdc.gov/nchs/healthy_people/index.htm [https://perma.cc/M7G6-H6DX].

84. *Healthy People 2030*, *supra* note 82.

People objectives to set their own priorities[.]"[85] However, the 43 million Americans who do not have access to public water systems are not a priority for Healthy People 2030. In fact, Healthy People 2030 *excludes* those not served by community water systems from its priorities for drinking water. Healthy People 2030 has instead set an objective to "[i]ncrease the proportion of persons served by community water systems who receive a supply of drinking water that meets the regulations of the Safe Drinking Water Act."[86]

Geography is an important factor in health.[87] However, many studies focus on geographical units, such as census tracts and zip codes, that do not reflect incorporation status. This lack of focus leads to these communities being overlooked by public health researchers.[88] Additionally, when the media brings public attention to public health and environmental justice issues facing specific communities, such as those of "Cancer Alley," their political status is often ignored.[89]

B. POWER OVER COMMUNITIES

Municipalities have the power to choose which communities to annex and which to exclude from annexation. As of 2010, those living in unincorporated areas accounted for approximately 37% of the United States population.[90] Unincorporated communities are "settled, populated areas whose community identities are commonly known but do not exist as an incorporated entity like a city or town."[91] Lacking a municipal government, these communities must rely on county governments to meet their local needs.[92]

1. Mischaracterizing the Problem

The well water population is widely seen as a mostly rural population.[93] However, as discussed above, assuming this population is merely rural does not capture the complexity and intersectionality present.[94] Well dependent communities located in rural areas experience challenges connecting to public water

85. *Use Healthy People 2030 in Your Work*, U.S. DEP'T HEALTH & HUM. SERVS., https://health.gov/healthypeople/tools-action/use-healthy-people-2030-your-work [https://perma.cc/ZZF6-9RFD] (last visited Feb. 6, 2023).

86. U.S. DEP'T HEALTH & HUM. SERVS., *supra* note 34.

87. *See* Gomez-Vidal & Gomez, *supra* note 21, at 1.

88. *See id.*

89. *See id.* at 2.

90. DARRYL T. COHEN WITH GEOFFREY W. HATCHARD & STEVEN G. WILSON, U.S. CENSUS BUREAU, U.S. DEP'T COM., POPULATION TRENDS IN INCORPORATED PLACES: 2000 TO 2013: POPULATION ESTIMATES AND PROJECTIONS: CURRENT POPULATION REPORTS 1 (2015).

91. Gomez-Vidal & Gomez, *supra* note 21.

92. *Id.*

93. *See* Jenn Lukens, *Running Clear: Preventing Private Water Sources from Becoming a Health Hazard in Rural America*, RURAL HEALTH INFO. HUB (June 26, 2019), https://www.ruralhealthinfo.org/rural-monitor/private-water-sources/ [https://perma.cc/JL6Z-5VEG]; ROGER M. WALLER, U.S. GEOLOGICAL SURV., U.S. DEP'T OF THE INTERIOR, GROUND WATER AND THE RURAL HOMEOWNER 4 (1994), https://pubs.usgs.gov/gip/gw_ruralhomeowner/ [https://perma.cc/ZCX6-9DPC]; Water Resources, *supra* note 13.

94. *See supra* notes 9–11 and accompanying text.

systems due to distance.[95] For these communities, the high cost of extending existing water lines poses a significant barrier to the provision of services.[96] The cost of extending a service line increases with distance, because longer distances require more construction and excavation costs. To offset the cost of extending lines, more fee-paying users would be needed to offset the costs. This cost burden is significant in rural communities with lower population densities.

State and federal grants are available, but the complexity of the application process often poses a challenge to communities applying for funding.[97] Some municipalities are willing to extend public water services, creating public health and economic development benefits.[98] However, these benefits are difficult to quantify and often seem speculative considering the high cost of connecting rural communities.[99]

The previous Section assessed the vast difference in protection of drinking water, depending on whether it is provided by a water system covered by the SDWA or a private well. Many peri-urban communities could be connected to water systems quite easily, granting them the assurance of safe drinking water. Yet, that occurs infrequently. If a solution to the problem of well drinking water quality is so obvious, why is it not happening? A large part of the answer lies in the practice of municipal underbounding.

2. Legacy of Municipal Underbounding

Municipal underbounding occurs when a municipality excludes an area from annexation and limits the services available to that community. Whereas in metropolitan areas there are high concentrations of BIPOC communities and low-income residents located in the center of the city with the white and wealthier population in the suburbs on the periphery of the city, this pattern is often reversed in small, Southern peri-urban communities.[100] In this population, typically the BIPOC and low-income residents are in the surrounding areas instead of the city center.[101] This racial segregation is the result of the legacy of slavery and racial discrimination.[102] For communities of color, obtaining incorporated status can be disempowering and a process imbued with discrimination.[103]

95. Julia Marie Naman & Jacqueline MacDonald Gibson, *Disparities in Water and Sewer Services in North Carolina: An Analysis of the Decision-Making Process*, 105 AM. J. PUB. HEALTH e20, e20 (2015).

96. *See id.* at e21–22.

97. *Id.* at e22 ("[T]here were barriers to this type of funding that included lack of availability, lengthy applications requiring extensive data, and the cooperation of city or county governments as the grant applicant . . . .").

98. *Id.* at e21–22.

99. *Id.* at e21.

100. Wilson et al., *supra* note 37, at 63.

101. *Id.*

102. *See* Purifoy, *supra* note 75, at 1077 ("Municipal citizenship is thus a fragile endeavor for people of color, and particularly for black people, as it is contingent not so much on their own agency as on the allowances of local white institutions.").

103. *See id.* at 1099.

Omega Wilson,[104] one of the founders of the West End Revitalization Authority (WERA), described how many of these unincorporated communities were established near the city so that workers could travel to work, but, ultimately, these communities were never annexed.[105] The federal government was also involved with discrimination in the South through the funding of low-quality affordable housing outside of cities.[106] When a community is annexed by a municipality, it is added to municipal boundaries.[107] As Wilson bluntly described, with the process of municipal underbounding, "[t]he city grew, but, for the most part, the city didn't annex these communities in the city, and they annexed around them, went through them, by them, beside them, but they [] never became incorporated."[108] As described by Danielle Purifoy and Louise Seamster, these "shadow towns" generally did not have access to adequate water and wastewater sanitation infrastructure.[109]

These areas fall into a municipality's extraterritorial jurisdictions. Although these communities are outside municipal limits, they are still subject to regulation and the provision of certain services granted by the municipality.[110] To receive water services, these communities often must persuade the municipality to annex their community.[111] However, low-income communities of color are likely to remain unincorporated.[112] The municipalities are often majority white and can oppose annexation.[113] This majority-white population can wield significant influence over whether the municipality annexes an area. As the percentage of a white population in the neighboring municipality increases, the odds of the extraterritorial jurisdiction gaining access to basic services decreases.[114]

Peri-urban communities often border municipalities where public water systems are available.[115] For example, approximately 28% of private drinking water

104. For an example of Omega Wilson's contributions to writings on environmental justice and science, see generally Caren B. Cooper, Chris L. Hawn, Lincoln R. Larson, Julia K. Parrish, Gillian Bowser, Darlene Cavalier, Robert R. Dunn, Mordechai (Muki) Haklay, Kaberi Kar Gupta, Na'Taki Osborne Jelks, Valerie A. Johnson, Madhusudan Katti, Zakiya Leggett, Omega R. Wilson & Sacoby Wilson, *Inclusion in Citizen Science: The Conundrum of Rebranding*, 372 SCIENCE 1386 (2021).

105. *See* Danielle M. Purifoy, *Omega Wilson: Satellites*, DANIELLE PURIFOY: IN CONDITIONS OF FRESH WATER: AN ARTISTIC EXPLORATION OF ENVIRONMENTAL RACISM, at 00:19 (2017), https://www.daniellepurifoy.com/media [https://perma.cc/7G4K-G664].

106. *See* Aiken, *supra* note 25, at 564, 571–74.

107. *See, e.g.*, *City of Charlotte – Annexation – Frequently Asked Questions:*, CITY OF CHARLOTTE, https://perma.cc/3CA6-EQKT (last visited Feb. 6, 2023) (defining annexation as "the methodical extension of a city's boundaries into adjacent unincorporated areas, and the corresponding extension of that city's services to the areas encompassed by the new boundaries").

108. Purifoy, *supra* note 105, at 01:15.

109. Danielle M. Purifoy & Louise Seamster, *Creative Extraction: Black Towns in White Space*, 39 ENV'T. & PLAN. D: SOC'Y & SPACE 47, 50 (2020).

110. *See* Holt Civic Club v. City of Tuscaloosa, 439 U.S. 60, 61–62 (1978).

111. *See* Leker & Gibson, *supra* note 9, at 3, 14.

112. *See* Gomez-Vidal & Gomez, *supra* note 21, at 3–4, 7.

113. *Id.* at 5.

114. *See id.* at 3.

115. *See id.* at 2–3.

well users in North Carolina are located in counties designated as urban due to their population density.[116] These residents may be located within blocks of a public water system but may still not be connected to water services.[117] These communities are left without water and sewer services.[118] These same unincorporated communities also may lack access to other basic amenities, such as emergency services, sidewalks, paved roads, and trash collection, though such basic amenities are foundational services or "the building blocks of neighborhoods."[119] These neighborhoods are typically less resilient and have a lower quality of life.[120]

Sacoby M. Wilson, Christopher D. Heaney, John Cooper, and Omega Wilson have described the power to annex as "the ability to 'legally discriminate.'"[121] These excluded communities are more likely to be BIPOC communities.[122] This exclusion is similar to the legacy of redlining, where racially discriminatory zoning and development was common practice prior to the protections under Titles VIII through IX of the Civil Rights Act of 1968, also known as the Fair Housing Act.[123] Black residents were left to live in areas with limited-to-no municipal services.[124] The effects of this legacy continue today.

Similarly, the unincorporated communities of the Southwest, known as colonias, formed along the U.S.–Mexico border.[125] According to the Cranston-Gonzalez National Affordable Housing Act, colonias are unincorporated communities characterized by a "lack of potable water supply, lack of adequate sewage systems, and lack of decent, safe, and sanitary housing" that are located in Arizona, California, New Mexico, or Texas and are within 150 miles of the U.S.–

116. Jacqueline MacDonald Gibson & Kelsey J. Pieper, *Strategies to Improve Private-Well Water Quality: A North Carolina Perspective*, ENV'T HEALTH PERSPS., July 2017, at 1, 1.

117. *See* Leker & Gibson, *supra* note 9, at 1, 3.

118. *See id.* at 1.

119. Wilson et al., *supra* note 37.

120. *See* Cynthia A. Grace-McCaskey, Susan C. Pearce, Lynn Harris, Mamadi Corra & Kayla J. Evans, *Finding Voices in the Floods of Freedom Hill: Innovating Solutions in Princeville, North Carolina*, 11 J. ENV'T STUD. & SCIS. 341, 347, 349 (2021); Gomez-Vidal & Gomez, *supra* note 21, at 5–6.

121. Wilson et al., *supra* note 37, at 65.

122. *See, e.g.*, Leker & Gibson, *supra* note 9, at 1 (finding that lower-income Black populations were "potentially excluded from municipal services during the era of legal racial segregation"); Jacqueline MacDonald Gibson, Nicholas DeFelice, Daniel Sebastian & Hannah Leker, *Racial Disparities in Access to Community Water Supply Service in Wake County, North Carolina*, FRONTIERS PUB. HEALTH SERVS. & SYS. RSCH. Aug. 2014, at 3, 3 ("We find that access to water service is significantly lower in African American neighborhoods than in other ETJ ['extra-territorial jurisdiction'] neighborhoods.").

123. *See* Gomez-Vidal & Gomez, *supra* note 21, at 3 ("Until the mid-20th century, racialized municipal processes (racially restrictive covenants, red-lining, black codes, block busting, and racial steering) segregated people of color, many into unincorporated communities."). For the protections passed under Titles VIII through IX of the Civil Rights Act of 1968, see An Act to Prescribe Penalties for Certain Acts of Violences or Intimidation, and for Other Purposes, Pub. L. No. 90-284, 82 Stat. 73, 81–90 (1968).

124. *See generally* UNIV. N.C. CTR. FOR C.R., *supra* note 26 (examining the patterns of exclusionary housing and zoning policies in North Carolina and how these policies resulted in underbounded communities).

125. Gomez-Vidal & Gomez, *supra* note 21, at 3.

Mexico border.[126] The vast majority, approximately 73%, of these residents are U.S. citizens.[127] However, because of the legacy of discrimination, they are left without access to basic amenities.

The likelihood of a community having access to a public water system decreases the higher the percentage the Black population is. One study found that an area with a low percentage of Black residents has 85% higher odds of having access to a public water system than a community that is 100% Black.[128] A study involving Wake County, North Carolina, found that every 10% increase in the proportion of the Black population in the census block led to a 3.8% increase in the odds that the population would be excluded from public water services.[129]

Despite this legacy of discrimination, the narrative of unincorporated communities has been co-opted by that of "white flight," where white populations fled to the suburbs, instead of that of unincorporated communities of color.[130] Municipalities are more likely to annex these newer, majority-white, wealthier communities.[131] Their justification for avoiding annexing lower income communities of color: money. Municipalities argue that these communities do not provide a large enough source of revenue to justify annexation.[132]

Not all unincorporated communities want to be annexed. Seemingly the obvious answer would be incorporation. This avoidance may be due to concerns regarding cost, increased regulation, and loss of identity.[133] Additionally, incorporation does not benefit all groups equally. Specifically, white residents are more likely to benefit from incorporation than those from communities of color.[134] Unfortunately, incorporation alone generally does not lead to a sustainable system of water and sanitation infrastructure.[135]

II. ATTEMPTING TO INCREASE ACCESS TO SAFE DRINKING WATER

Without regulation under the SDWA, well dependent communities are responsible for ensuring their own drinking water quality. The federal government has attempted to increase access to safe drinking water through various funding programs. Meanwhile, states have imposed minimal standards on private drinking

126. 42 U.S.C. § 1479(f)(8)(A)–(C); *see also* Cranston-Gonzalez National Affordable Housing Act, Pub. L. No. 101-625, 104 Stat. 4079, 4079 (1990) ("An Act to authorize a new HOME Investment Partnerships program, a National Homeownership Trust program, and HOPE programs, to amend and extend certain laws relating to housing, community and neighborhood preservation, and related programs, and for other purposes.").

127. Karina Rios, *What's in a Name?: The Changing Definition of Colonias in Texas*, 6 TEX. A&M J. PROP. L. 583, 586 (2020).

128. Leker & Gibson, *supra* note 9, at 11.

129. Gibson et al., *supra* note 122, at 3–4.

130. Gomez-Vidal & Gomez, *supra* note 21, at 3.

131. *See id.* at 5.

132. *See id.*

133. *See id.*; Louise Seamster & Danielle Purifoy, *What is Environmental Racism For? Place-Based Harm and Relational Development*, 7 ENV'T SOCIO. 110, 111–12 (2021).

134. *See* Purifoy, *supra* note 75, at 1074–96.

135. Purifoy & Seamster, *supra* note 109, at 51.

water wells.[136] Unfortunately, municipally underbound communities fall through the cracks left by a shortfall of federal, state, and local regulation and support for well dependent communities.

A. POWER TO EXCLUDE COMMUNITIES

Power is an important aspect of health and well-being. The perceived lack of control over one's environment itself has negative health consequences.[137] The concept of power is important at the individual, social, and community level.[138] Power can be understood as "power-over," "power-to," and "power-with." Power-over is about domination and coercion. Power-to refers to the ability to achieve one's goals. Power-with is related to the ability to use collective action to achieve a goal.[139] Scholars have mainly conceived of power as competitive: the increase in one party's power leads to a decrease in another party's power.[140] However, feminist theory has added another dimension to power that recognizes the significance of collective action and where power can be achieved though power-sharing, as opposed to domination.[141] Under this framework, power signifies the "push towards a transformation of existing structures and the creation of alternative modes of power-sharing: not a bigger piece of the cake, but a different cake."[142] Unincorporated communities of color are left with few options to exercise their agency to address the lack of basic amenities.[143] Empowering communities[144] means

136. *See* Doug Farquhar, *Regulating Private Water Wells*, NAT'L CONF. STATE LEGISLATURES, Mar. 2020, at 1, 1–2.

137. "There is strong evidence from a small number of high-quality longitudinal studies that low perceived control over destiny in the living environment may play an important role in the micro-level pathways leading from low social position to poorer health and well-being." Lois Catherine Orton, Andy Pennington, Shilpa Nayak, Amanda Sowden, Mark Petticrew, Martin White & Margaret Whitehead, *What is the Evidence that Differences in 'Control Over Destiny' Lead to Socioeconomic Inequalities in Health? A Theory-Led Systematic Review of High-Quality Longitudinal Studies on Pathways in the Living Environment*, 73 J. EPIDEMIOLOGY & CMTY. HEALTH 929, 934 (2019).

138. Jo Rowlands, *Empowerment Examined*, 5 DEV. PRAC. 101, 103 (1995).

139. *See* Pamela Pansardi & Marianna Bindi, *The New Concepts of Power? Power-over, Power-to and Power-with*, 14 J. POL. POWER 51, 54–66 (2021).

140. ANGUS STEWART, THEORIES OF POWER AND DOMINATION: THE POLITICS OF EMPOWERMENT IN LATE MODERNITY 12 (2001).

141. *See* SOLAR & IRWIN, *supra* note 60, at 21–22.

142. *Id.* at 22 (internal quotation marks omitted).

143.

> In sum residents in unincorporated communities experience institutionalized political exclusion through reliance on distal and constrained county government, diluted voting power, and reduced legal control over their home territory. Political exclusion reduces one's influence over resources, power, and government investment to decrease health risks and increase health benefits in one's community. This has salience for low-income communities of color, systematically targeted for disenfranchisement through evolving policies and practices at the state and local levels associated with lack of incorporation.

Gomez-Vidal & Gomez, *supra* note 21, at 5 (citation omitted).

144. In this Article, "community empowerment" is synonymous with "collective empowerment," which is "where individuals work together to achieve a more extensive impact than each could have had alone." Rowlands, *supra* note 138 (defining "collective empowerment").

also remedying the political and societal structures that disempower them.[145]

1. History of Drinking Water Regulation in the United States

The Centers for Disease Control and Prevention (CDC) has heralded public water disinfection and treatment as "one of the greatest public health achievements of the 20th century."[146] Before the twentieth century, cities were mainly seen as places of disease and death.[147] However, during the twentieth century, a greater understanding developed regarding disease transmission and the importance of proper hygiene and sanitation.[148] The combination of disinfection by water treatment plants and improved hygiene resulted in a dramatic reduction in mortality from waterborne disease in urban areas of the United States.[149]

In 1914, the U.S. Public Health Service developed the first federal regulations for drinking water.[150] These standards applied only to contagious disease-causing contaminants and only to drinking water systems providing drinking water to interstate carriers, such as ships and trains.[151] Nevertheless, all fifty states adopted these standards for the regulation of their public water supplies, even though there was no federal mandate requiring them to do so.[152] The Public Health Service's standards continued to expand; the last iteration of standards was in 1962.[153] The changes led to improved water quality for those in urban areas and a reduction in disease-related mortality.[154]

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145. *See* Jennie Popay, Margaret Whitehead, Ruth Ponsford, Matt Egan & Rebecca Mead, *Power, Control, Communities and Health Inequities I: Theories, Concepts and Analytical Frameworks*, 36 HEALTH PROMOTION INT'L 1253, 1254 (2021) ("[C]ontemporary 'empowerment' initiatives in disadvantaged communities of interest/place are increasingly restricted to an '*inward gaze*' onto communities psycho-social capacities, lifestyle changes and proximal neighbourhood conditions, neglecting the *outward gaze* onto political and social transformation for greater equity, embedded in foundational statements on health promotion."); *see also* Rowlands, *supra* note 138, at 102–03 ("Empowerment must involve undoing negative social constructions, so that the people affected come to see themselves as having the capacity and the right to act and have influence.").

146. *A Century of U.S. Water Chlorination and Treatment: One of the Ten Greatest Public Health Achievements of the 20th Century*, CTRS. FOR DISEASE CONTROL & PREVENTION (Nov. 26, 2012), https://www.cdc.gov/healthywater/drinking/history.html [https://perma.cc/QVU2-8MN7].

147. Angeli Gabriel, *When Cities Were Cesspools of Disease*, NAT'L GEOGRAPHIC (May 21, 2020), https://www.nationalgeographic.com/science/article/when-cities-were-cesspools-of-disease [https://perma.cc/64SB-XCDN].

148. *Achievements in Public Health, 1990-1999: Control of Infectious Diseases*, 48 MORBIDITY & MORTALITY WKLY. REP. 621, 621 (1999).

149. *See* David Cutler & Grant Miller, *The Role of Public Health Improvements in Health Advances: The Twentieth-Century United States*, 42 DEMOGRAPHY 1, 13–14 (2005) (finding that clean water technologies reduced mortality by 13% from 1900 to 1936 and that clean water was responsible for about 75% of this decline in infant mortality).

150. EPA, EPA 816-R-99-007, 25 YEARS OF THE SAFE DRINKING WATER ACT: HISTORY AND TRENDS 2 (1999), https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=200027R1.PDF [https://perma.cc/8DWE-NTC7].

151. *Id.*

152. *Id.*

153. *Id.*

154. *See* Cutler & Miller, *supra* note 149, at 1, 13–14 (noting that clean water technologies in municipal water systems reduced mortality by 13% from 1900 to 1936, reduction in mortality from

During the 1960s, concerns regarding water quality increased to include areas not covered by the Public Health Service's standard, which at this point included standards related to aesthetics of water, pathogens, and a limited number of chemical contaminants.[155] The public was growing more concerned about industrial and agricultural chemicals that were migrating into water supplies. These concerns included the increasing development of previously unknown man-made chemicals.[156] There was also apprehension related to the prospect of the federal government regulating an area that had been the province of local government.[157] These concerns ultimately led the federal government to perform several studies to assess the national drinking water supply. The studies found widespread contamination within the nation's water supply.[158] To address these concerns, Congress passed the Safe Drinking Water Act (SDWA) of 1974,[159] which was then amended in 1986 and 1996.[160]

2. Safe Drinking Water Act Overview

Thanks to the SDWA, more than 92% of the American population who receive their water from community water systems consume drinking water that consistently meets all health-based standards.[161] Congress delegated authority to the EPA to develop national drinking water regulations for public water systems.[162] The SDWA is an example of cooperative federalism where the states have primary enforcement responsibilities and may develop their own standards if they are no less stringent than those promulgated by the EPA.[163] Under this design, states, territories, and tribal nations have primary enforcement responsibility (primacy) for ensuring compliance with the SDWA and receive funding for fulfilling this responsibility.[164]

infectious disease accounted for about 75% percent of this decline, and these benefits from improved water quality coincided with the disappearance of high mortality rates in urban areas).

155. EPA, *supra* note 150.

156. *Id.*

157. *See* Memorandum from Roy L. Ash, Dir., Off. Mgmt. & Budget, to Gerald R. Ford, President 1 (Dec. 12, 1974) (available at https://www.fordlibrarymuseum.gov/library/document/0055/12004528.pdf [https://perma.cc/7ZYC-NW9T]) (regarding "Enrolled Bill S. 433 – Safe Drinking Water Act"); James Salzman, *The Past, Present and Future of the Safe Drinking Water Act* 2–3 (UCLA Sch. of L. Pub. L. & Legal Theory Rsch. Paper, Paper No. 22-21, 2022).

158. EPA, *supra* note 150.

159. Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974).

160. EPA, *supra* note 150. For the 1996 version, see Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613 (1996).

161. *Safe Drinking Water Act (SDWA)*, EPA (July 14, 2022), https://www.epa.gov/sdwa [https://perma.cc/5Q4J-MRE8].

162. *See* ELENA H. HUMPHREYS & MARY TIEMANN, CONG. RSCH. SERV., RL31243, SAFE DRINKING WATER ACT (SDWA): A SUMMARY OF THE ACT AND ITS MAJOR REQUIREMENTS 1, 2 n.5 (2021).

163. *See* 42 U.S.C. § 300g-2(a)(1) (outlining this balance).

164. *See* 42 U.S. Code §§ 300g-2, 300j-12.

The EPA has created enforceable drinking water standards for over ninety contaminants.[165] States must monitor water for compliance with the SDWA.[166] The SDWA authorizes the EPA to protect public health through the regulation of public water systems.[167] If a water system is not in compliance with standards under the SDWA, it must notify customers.[168]

Additionally, the EPA has promulgated the Lead Free Rule,[169] which restricts lead in "pipes, pipe or plumbing fittings, or fixtures, solder and flux" that are exposed to drinking water.[170] The 1996 SDWA Amendments extended this restriction to newly constructed and replacement parts for private drinking water wells.[171] Private drinking wells older than twenty years old may contain lead components, which can result in lead exposure from drinking water wells.[172]

3. SDWA Exclusion of Private Drinking Water Wells

Despite these strong health protections for Americans who drink water from regulated sources, with the exception of the 1996 SDWA Amendments,[173] the SDWA does not apply to private drinking water wells.[174] The SDWA only applies to public water systems.[175] These are defined in the statute to exclude private drinking water wells.[176] A lack of infrastructure translates to a lack of standards. To fall under the jurisdiction of the SDWA, a public water system must either service at least twenty-five people or have at least fifteen service connections.[177] Communities that do not have access to public water systems must rely on their own private drinking water wells.

Despite the omission of private drinking water wells from the SDWA, their inclusion was contemplated during the development of the SDWA. In a memorandum to President Gerald Ford, the Office of Management and Budget noted that "virtually all of the health problems identified originated in small rural areas from the infiltration of septic tank discharge into wells" in the Department of

165. EPA, REGULATION TIMELINE: CONTAMINANTS REGULATED UNDER THE SAFE DRINKING WATER ACT (2015), https://www.epa.gov/sites/production/files/2015-10/documents/dw_regulation_timeline.pdf [https://perma.cc/K6RD-SL9H].

166. 42 U.S.C. § 300g-2(a)(2).

167. *See id.* § 300g-1(b)(1)(A).

168. *Id.* § 300g-3(c)(1).

169. The EPA defines "lead free" as "(1) Not containing more than 0.2 percent lead when used with respect to solder and flux; and (2) Not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures." 40 C.F.R. § 143.12(a)(1)–(2) (2021).

170. *Id.* §§ 143.10(a), 143.13(a) (2021).

171. Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104–182, sec. 118, § 1417, 110 Stat. 1613, 1645–47 (1996).

172. *Chemicals That Can Contaminate Tap Water*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 23, 2022), https://www.cdc.gov/healthywater/drinking/private/wells/disease/lead.html [https://perma.cc/2K5K-SU6Z].

173. *See infra* notes 169–72 and accompanying text.

174. *See* 42 U.S.C. § 300g.

175. *See id.*

176. *See id.* § 300f(4).

177. *Id.*

Health, Education, and Welfare (HEW) Survey.[178] At the time of its passage, there was an expectation that the SDWA could potentially apply to private drinking water wells. The Senate Committee on Commerce stated in its analysis of the SDWA definitions, "While some studies have indicated problems with certain types of individual water wells, it is felt that Federal regulation should concentrate, at least initially, on the larger water supply systems."[179] A previous version of the SDWA included language allowing potential EPA regulation of private drinking water wells. The report went on to say, "However, if future studies clearly define the problems with the small systems, such systems could be included within the regulatory framework under the fourth element of the definition described below."[180] In this version of the bill, the definition of a "public water system" included "any other system or class of systems which provides drinking water if the Administrator determines by regulation that such system or class of systems may pose an unreasonable threat to public health."[181] According to the report,

> This portion of the definition would allow EPA to include within the umbrella of Federal-State regulatory responsibility those small systems not included within the other elements of the definition if studies by the Environmental Protection Agency or other competent sources indicate that unreasonable threats to health may exist with respect to such small systems.[182]

Ultimately, the SDWA passed with a much more restrictive definition of public water systems.[183] The SDWA defines a "public water system" as "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals."[184] Under this version of the SDWA, there is no room for the EPA to expand regulation to private drinking water wells even if the Agency were to find that an unreasonable threat to public health exists.

B. FEDERAL FUNDING

The federal government has attempted to address the lack of access to public water systems through grant programs. The SDWA provides funding of public water systems through state revolving-loan funds.[185] This money is distributed to

178. Memorandum from Roy L. Ash, *supra* note 157, at 2 (regarding "Enrolled Bill S. 433 – Safe Drinking Water Act: Sponsor – Sen. Byrd (D) West Virginia and 3 Others").
179. S. REP. NO. 93-231, at 5 (1973).
180. *Id.*
181. *Id.* at 6, 22.
182. *Id.* at 6.
183. *See* 42 U.S.C. § 300f(4)(A).
184. *Id.*
185. *Id.* §§ 300j-12(a)(1)(A)-(B), (2)(A).

states for water infrastructure improvements.[186] Although other funding programs do exist, the primary mechanism for funding remains state revolving-loan funds.[187] Recent legislation has provided funding changes to several areas of infrastructure, including for drinking water and wastewater.[188]

The EPA, Department of Agriculture (USDA), Department of Housing and Urban Development (HUD), the Department of Commerce's Economic Development Administration (EDA), the Department of the Interior (DOI) Bureau of Reclamation (Reclamation), and the U.S. Army Corps of Engineers (USACE) each administer their own programs.[189] Congressional funding for these programs competes with other areas of discretionary funding and varies significantly.[190] Funding requirements and administration of these programs also differ greatly.[191] Reclamation and USACE differ from the other agencies in that they do not have standing authorization and, therefore, must seek congressional authorization for individual projects.[192]

Few of these federal programs provide funding for direct services to private drinking water well owners.[193] Instead, federal funding goes toward state programs or eligible nonprofits. Eligible nonprofits receive funding to provide technical assistance to communities and administer subgrants or loans.[194] For example, the USDA Rural Utilities Service (RUS) Rural Decentralized Water Systems Program provides grants to nonprofits "for the purpose of providing loans and subgrants to eligible individuals."[195] The EPA Small and Disadvantaged Communities Drinking Water Grant Program provides funding for drinking water projects that help underserved communities meet federal drinking water standards and monitor their water quality on a per-household basis.[196] However, it currently only provides support to those utilizing small public water systems.[197] These programs are unable to meet the demand of communities lacking access to public systems. For example, the USDA RUS Water and Waste Disposal Program, which provides funding to state and local governments, nonprofits, and federally recognized tribes, had a backlog equivalent to $2.5 billion in requests for water and wastewater projects at the end of 2018.[198]

186. *Id*. §§ 300j-12(a)(2)(A)-(B).

187. *See Learn About the Clean Water State Revolving Fund (CWSRF)*, EPA (Feb. 10, 2023), https://www.epa.gov/cwsrf/learn-about-clean-water-state-revolving-fund-cwsrf [https://perma.cc/CW8C-P9Z8].

188. *See* Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, sec. 50102, § 1452, 135 Stat. 429, 1136–37 (2021).

189. JONATHAN L. RAMSEUR, CONG. RSCH. SERV., R46471, FEDERALLY SUPPORTED PROJECTS AND PROGRAMS FOR WASTEWATER, DRINKING WATER, AND WATER SUPPLY INFRASTRUCTURE 1 (2021).

190. *Id*. at 2.

191. *Id*. at 1.

192. *Id*.

193. *See id*. at 3–8.

194. *See id*.

195. *Id*. at 4, 24.

196. *Id*. at 7, 37–38; *see* 42 U.S.C. § 300j-1(e).

197. 42 U.S.C. § 300j-1(e)(1).

198. RAMSEUR, *supra* note 189, at 20–21.

The primary mechanisms for funding drinking water and wastewater projects are "state revolving funds" (SRFs).[199] These SRFs provide federal funding to states to improve their water infrastructure.[200] Because the SDWA regulates drinking water systems while the Clean Water Act (CWA) regulates wastewater systems, each act has its own respective SRF.[201] The Clean Water State Revolving Fund (CWSRF) provides funding for wastewater projects under the CWA, and the Drinking Water State Revolving Fund (DWSRF) provides funding to drinking water infrastructure projects under the SDWA.[202] The DWSRF developed to provide funding for drinking water improvements necessary to meet increased regulation under the 1996 Amendments to the SDWA.[203] Both SRFs operate similarly.[204] While this money has traditionally been distributed as subsidized loans for water system projects, the Infrastructure Investment and Jobs Act (IIJA), enacted in November 2021, has provided supplemental funding for grants and principal forgiveness funding.[205]

Despite changes under the IIJA, the DWSRF is still a SDWA program, and the SDWA applies to *public* water systems, not private drinking water wells.[206] This restriction means that underbound communities may be unable to directly benefit from these provisions. Incorporated communities will benefit from infrastructure improvements through both the DWSRF and the CWSRF, but communities relying on private systems, such as private drinking water wells and septic systems, may not fully reap the benefits of these infrastructure improvements.[207]

The IIJA addresses drinking water improvements in Section 50104[208] and wastewater improvements in Sections 50208 and 50209 of the legislation.[209] The IIJA's emphasis on addressing infrastructure needs of distressed communities

199. ELENA H. HUMPHREYS & JONATHAN L. RAMSEUR, CONG. RSCH. SERV., R46892, INFRASTRUCTURE INVESTMENT AND JOBS ACT (IIJA): DRINKING WATER AND WASTEWATER INFRASTRUCTURE 3–4 (2022).

200. *Id.* at 5.

201. *Id.* at 1; *see also id.* at 4 (discussing purview of the CWA).

202. *Id.* at 1. For a greater discussion of these programs and their functions, see *id.* at 4–24.

203. *See id.* at 4.

204. *Id.* at 4–5.

205. Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, sec. 40502, 135 Stat. 429, 1051–52 (2021); *id.* sec. 601, 135 Stat. at 1399–1401; HUMPHREYS & RAMSEUR, *supra* note 199, at 2.

206. RAMSEUR, *supra* note 189, at 35.

207. *See, e.g.*, Infrastructure Investment and Jobs Act, sec. 50204, § 221 (extending grant programming under the CWSRF to projects informing communities regarding wastewater overflows released into waters, with federal cost sharing in rural or financially distressed communities); *id.* sec. 50205, 135 Stat. at 1162 (amending the CWA to establish a grant program for projects in less populated or lower income communities); *id.* sec. 50206, 135 Stat. at 1164 (amending the CWA to establish a grant program for nonprofit entities to assist with CWA compliance); *id.* sec. 50207, 135 Stat. at 1165 (amending the Federal Water Pollution Control Act to provide grants to improve publicly-owned treatment plants in low population areas or disadvantaged communities); *id.* § 50217, 135 Stat. at 1175–79 (prioritizing grants for applications related to stormwater control technologies in small, rural, or disadvantaged communities or communities with "municipal combined storm and sanitary sewers in the collection system of the community").

208. Infrastructure Investment and Jobs Act, sec. 50104.

209. *Id.* §§ 50208–09.

and households better position SRFs to address environmental justice issues facing EPA-identified communities of concern.[210]

Title I of Division E of the IIJA addresses safe drinking water. Many of these provisions support environmental and health issues in public water systems under the SDWA.[211] However, there are a few provisions that may benefit underbound communities.[212] The Source Water Petition Program allows counties to act *on behalf* of unincorporated communities to create voluntary partnerships to protect source water from degradation.[213] The IIJA gives the EPA the authority to create the Assistance for Small and Disadvantaged Communities Program for the provision of grants, similar to USDA grant programs,[214] to connect individual households to public water systems.[215] Unlike other provisions of the grant—which focus on "underserved communities" that do not have "household drinking water or wastewater services" and those that are served by public water systems that are in violation of the SDWA—this provision focuses on "disadvantaged communities."[216] Unfortunately, by definition, municipally underbound communities are excluded from accessing funds dedicated to "underserved communities" because "underserved communities" are restricted to "a political subdivision of a State."[217] However, the same restriction does not apply to disadvantaged

210. For greater elaboration of this emphasis, see NAT'L ENV'T JUST. ADVISORY COUNCIL, EPA'S ROLE IN ADDRESSING THE URGENT WATER INFRASTRUCTURE NEEDS OF ENVIRONMENTAL JUSTICE COMMUNITIES 10–11 (2018), https://www.epa.gov/sites/default/files/2019-05/documents/nejac_white_paper_water-final-3-1-19.pdf [https://perma.cc/A94H-EVRR].

211. *See, e.g.*, 42 U.S.C. § 300j-19f (establishing grant program for disadvantaged public water systems); Infrastructure Investment and Jobs Act, § 50108 (discussing "Needs Assessment for Nationwide Rural and Urban Low-Income Community Water Assistance"); *id.* § 50109 (discussing the "Rural and Low-Income Water Assistance Pilot Program); 42 U.S.C. § 300j-24 (expressing concern about "[l]ead contamination in school drinking water"); *id.* § 300j-19a(j) (discussing the "[s]tate response to contaminants"); *see also Fact Sheet: The Bipartisan Infrastructure Deal*, WHITE HOUSE (Nov. 6, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/06/fact-sheet-the-bipartisan-infrastructure-deal/ [https://perma.cc/77R4-VBSM] ("The Bipartisan Infrastructure Deal will invest $55 billion to expand access to clean drinking water for households, businesses, schools, and child care centers all across the country. From rural towns to struggling cities, the legislation will invest in water infrastructure and eliminate lead service pipes, including in Tribal Nations and disadvantaged communities that need it most.").

212. Some states utilized federal funding to extend access to public water systems to well dependent communities prior to the IIJA. For example, Illinois employed a system of prioritization where projects providing access to well dependent communities would receive fifteen points while those addressing public health violations in public water systems would receive twenty points. EPA, EPA 816-S-17-002, WATER SYSTEM PARTNERSHIPS: STATE PROGRAMS AND POLICIES SUPPORTING COOPERATIVE APPROACHES FOR DRINKING WATER SYSTEMS 18 (2017), https://www.epa.gov/sites/default/files/2017-08/documents/water_system_partnerships_guide_0.pdf [https://perma.cc/7CSE-BDZ4].

213. *See* 42 U.S.C. § 300j-14(a)(1)(A).

214. *See* 7 U.S.C. § 1962a.

215. The Water Infrastructure Improvements for the Nation Act (WIIN Act) originally authorized the creation of this grant program in 2016. Pub. L. No. 114-322, § 2104, 130 Stat. 1628, 1718 (2016). The IIJA added subsection (m) to SDWA § 1459A, which addresses connecting disadvantaged communities to public water systems. Infrastructure Investment and Jobs Act, sec. 50104, § 1459A; *see also* HUMPHREYS & RAMSEUR, *supra* note 199, at 2–3 (discussing the passage of IIJA and its potential).

216. 42 U.S.C. § 300j-19a(a)–(c).

217. For this restriction in SDWA, see *id.* § 300j-19a(a)(1).

communities.[218] To receive assistance to connect to a public water system, an individual must be "a member of a household, the members of which have a combined income (for the most recent 12-month period for which information is available) equal to not more than 50 percent of the median nonmetropolitan household income for the State in which the household is located."[219] This requirement is the same as the standard for someone to receive assistance to improve their septic system or connect to a centralized wastewater treatment system.[220] However, this grant does not provide direct assistance. This money would go through a public water system or a nonprofit assisting an individual needing assistance.[221] Furthermore, the program has a "voluntary connection" requirement.[222] The individual must not only be voluntarily seeking to connect to the public water system, but the public water system must also agree to the connection.[223] Under this program, the power still ultimately lies with the public water system—not the individual who needs assistance.

Similar to Title I of Division E of the IIJA, Title II of Division E provides infrastructure funding to support wastewater treatment improvements. Like other wastewater treatment programs, Title II programs are under the CWA and funded by the CWSRF.[224] The IIJA prioritizes underserved communities and projects initiated under nonprofit organizations.[225] These provisions include funding of programs to connect communities to public wastewater systems. For example, the Grants for Construction and Refurbishing of Individual Household Decentralized Wastewater Systems for Individuals with Low or Moderate Income Program provides funding to nonprofits to improve and construct individual wastewater treatment systems and connect communities to larger but decentralized wastewater treatment systems.[226] These funds may be used in conjunction with the USDA's RUS loans program to defray the cost of extending and improving access to wastewater systems in rural and sparsely populated areas.[227] This program prioritizes those without access to a sewage disposal system.[228] The IIJA's Connection

218. *See id.* § 300j-19a(c)(2)(A) (allowing states to determine what constitutes a "disadvantaged community").

219. 33 U.S.C. § 1383(j).

220. *Id.*

221. Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, sec. 50104, § 1459A, 135 Stat. 429, 1138–39 (2021).

222. *Id.*

223. *Id.*

224. *See id.* § 50210, 135 Stat. at 1169.

225. For examples of this prioritization, see *id.* sec. 50204, § 221, 135 Stat. at 1160; *id.* sec. 50205, 135 Stat. at 1162; *id.* sec. 50206, 135 Stat. at 1164.

226. *Id.* sec. 50208, 135 Stat. at 1165.

227. *See* 7 U.S.C. § 1926 (authorizing USDA RUS loan and grant assistance programs); *see also Water & Waste Disposal Loan & Grant Program*, U.S. DEP'T AGRIC., https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-grant-program [https://perma.cc/67LW-T6L4] (last visited Feb. 20, 2023).

228. Infrastructure Investment and Jobs Act, sec. 50208.

to Publicly Owned Treatment Works program specifically aims to provide funding to connect low-income households to public water treatment systems.[229]

Additionally, the IIJA includes information-gathering requirements that will support the EPA's goal of addressing environmental justice in both water and wastewater systems.[230] These provisions require the EPA to collect historical data and develop outreach plans for disadvantaged communities.[231] The EPA must also assess and report on drinking water and wastewater systems under the IIJA.[232] While the IIJA is progress toward achieving environmental justice for municipally underbound communities, the funding mechanisms for safe drinking water still favor municipal power.

C. STATE REGULATION

Instead of a uniform system under the SDWA, private drinking water wells are instead regulated by a patchwork of state regulations. While the SDWA is concerned with protecting public health through the establishment of minimum standards for drinking water quality, state regulations tend to be more concerned with technical and procedural requirements. Only 46% of states have water quality standards for private drinking water wells, while all fifty states have requirements for the drilling and construction of private drinking water wells.[233] Additionally, states can task different agencies with regulating private wells and may task multiple agencies with this responsibility.[234]

The lack of regulation regarding the testing, mitigation, and remediation of private drinking water wells means that data are absent on the quality of the drinking water from these wells.[235] A 2019 study found that 94% of states had policies addressing abandonment, 88% had policies addressing design, and 70% had policies addressing the permitting of wells.[236] However, these numbers begin to decrease the more policies focus on aspects beyond the initial well installation.[237] The study found that 58% of states had policies concerning inspection, 48% had policies concerning maintenance, 22% had policies regarding the procedures for private drinking water wells related to the selling of home and property, and only 6% had policies concerning rental property.[238]

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229. *Id.*

230. *See* Jeffrey Karp & Edward Mahaffey, *Congress Provides Substantial Funding for Variety of Water Projects in Infrastructure Law with Emphasis on Low Income Communities*, JD SUPRA (Dec. 27, 2021), https://www.jdsupra.com/legalnews/congress-provides-substantial-funding-6794946/ [https://perma.cc/DP8G-R2JC].

231. *See* Infrastructure Investment and Jobs Act sec. 50215, § 5033 (discussing "water infrastructure financing reauthorization"); *id.* § 50216 (discussing "small and disadvantaged community analysis").

232. *See id.* sec. 50101 *et seq.* (discussing compliance and reporting requirements for the EPA under the IIJA, as well as mechanisms for carrying out these proposals).

233. Bowen et. al, *supra* note 15, at 430.

234. *Id.* at 431.

235. *See id.* at 428–30, 433–34.

236. *Id.* at 430.

237. *Id.*

238. *Id.*

Overall, private drinking water well owners are predominately responsible for managing the safety of their own drinking water. Although not covered by the SDWA, the EPA and state agencies recommend that well owners test their wells and compare their results with federal and state drinking water standards, including Maximum Contaminant Levels (MCLs).[239] However, recommendations can differ. For example, the EPA recommends that well owners test their wells annually for nitrates, coliform bacteria, dissolved solids, pH levels, and other suspected contaminants.[240] In contrast, North Carolina recommends annual testing for coliform bacteria but biennial testing for heavy metals, nitrates, lead, and copper.[241] The state also recommends testing for pesticides and volatile organic compounds every five years.[242] Because specific contaminants can differ locally, North Carolina also recommends that well owners contact their local health departments to receive additional recommendations and learn about specific local testing procedures.[243] The lack of consistency can lead to confusion regarding the proper procedure for maintaining the safety of one's well.

Additionally, the complexity and cost of properly maintaining a private drinking water well can serve as barriers to safe drinking water. There are ninety-four contaminants with standards under the SDWA.[244] As noted by EPA recommendations, a private well owner is supposed to test based on suspected contaminants but will likely have difficulty determining which of the ninety-four contaminants to test for.[245] Testing itself may also be cost-prohibitive. Some, but not all, local health departments provide free testing.[246] Even if a well owner completes testing, the well owner will be left to interpret the results. Test results may not state whether the values listed exceed water quality standards. In such cases, the well owner will have to compare the results for each contaminant to existing standards.[247]

It is easy to see why the complexity and costs associated with owning private drinking water wells lead to well owners failing to maintain safe drinking

239. *See Protect Your Home's Water*, EPA (Mar. 16, 2022), https://www.epa.gov/privatewells/protect-your-homes-water [https://perma.cc/T378-B834] (sharing guidance from the EPA); *Private Wells: Frequently Asked Questions About Testing*, N.C. DEP'T HEALTH & HUM. SERVS. (Nov. 18, 2021), https://epi.dph.ncdhhs.gov/oee/wellwater/howtotest.html [https://perma.cc/8FH2-ZG77] (offering guidance from the North Carolina Department of Health and Human Services); *Test Your Private Well Water Annually*, WIS. DEP'T NAT. RES., https://dnr.wisconsin.gov/topic/Wells/privateWellTest.html [https://perma.cc/ABC9-QMQ4] (last visited Feb. 20, 2023) (showing guidance from the Wisconsin Department of Natural Resources); *GAMA – Domestic Well Testing*, CAL. WATER BDS. (Sept. 9, 2020), https://www.waterboards.ca.gov/gama/domestic_wells_testing.html [https://perma.cc/N7V4-PXRF] (offering guidance from the California Water Boards).

240. *Protect Your Home's Water*, *supra* note 239.

241. *Private Wells: Frequently Asked Questions About Testing*, *supra* note 239.

242. *Id.*

243. *Id.*

244. EPA, *supra* note 165.

245. *See Protect Your Home's Water*, *supra* note 239.

246. *See id.*

247. *Id.*

water.[248] Nor do the challenges and required expertise to maintain a well end with testing. Changes in water quality standards do not always translate into changes for private well owners. When the EPA revised the MCL for arsenic in 2006, a study found that there was no change in arsenic concentrations in private drinking water wells but observed a significant reduction in arsenic concentrations during the same period for public water systems.[249]

If a well owner discovers their well water is contaminated, they will then need to take steps to mitigate or remediate the problem. They need to purchase a filtration system that removes the particular contaminants found in their well.[250] This filtration system may cost under $20 or hundreds of dollars, and it may require professional installation.[251] The well owner will then often have to replace filters regularly to maintain the system.[252] The cost and complexity associated with well ownership make maintaining one's well difficult.

1. The North Carolina Example

With 3.3 million people using private well water, over one-third of its state population, North Carolina has the second highest number of people and the third largest proportion of its population in the nation dependent on private drinking water wells.[253] Because of its geological characteristics, North Carolina is also prone to naturally occurring groundwater contamination.[254] This includes

248. *See* Sara V. Flanagan, Jessie A. Gleason, Steven E. Spayd, Nicholas A. Procopio, Megan Rockafellow-Baldoni, Stuart Braman, Steven N. Chillrud & Yan Zheng, *Health Protective Behavior Following Required Arsenic Testing Under the New Jersey Private Well Testing Act*, 221 INT'L J. HYGIENE & ENV'T HEALTH 929, 930, 934–35 (2018) (discussing these obstacles and reporting behaviors).

249. Anne E. Nigra, Tiffany R. Sanchez, Keeve E. Nachman, David E. Harvey, Steven N. Chillrud, Joseph H. Graziano & Ana Navas-Acien, *The Effect of the Environmental Protection Agency Maximum Contaminant Level on Arsenic Exposure in the USA from 2003 to 2014: An Analysis of the National Health and Nutrition Examination Survey (NHANES)*, 2 LANCET PUB. HEALTH e513, e520 (2017).

250. *See Choosing Home Water Filters & Other Water Treatment Systems*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 4, 2020), https://www.cdc.gov/healthywater/drinking/home-water-treatment/water-filters.html [https://perma.cc/87VS-VUCB] (discussing water filters).

251. *Choosing Home Water Filters & Other Water Treatment Systems Step 3: Consider How the Filter Fits Your Home, Lifestyle, and Budget*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 4, 2020), https://www.cdc.gov/healthywater/drinking/home-water-treatment/water-filters/step3.html [https://perma.cc/R37H-HVMJ].

252. *Id.*

253. *See* Crystal Lee Pow Jackson & Max Zarate-Bermudez, *Exposure to Contaminants Among Private Well Users in North Carolina: Enhancing the Role of Public Health*, 81 J. ENV'T HEALTH 36, 36 (2019) (citing MOLLY A. MAUPIN, JOAN F. KENNY, SUSAN S. HUTSON, JOHN K. LOVELACE, NANCY L. BARBER & KRISTIN S. LINSEY, U.S. GEOLOGICAL SURV., U.S. DEP'T OF THE INTERIOR, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2010, at 22 (2014), https://pubs.usgs.gov/circ/1405/pdf/circ1405.pdf [https://perma.cc/N624-THVK]); *see also* MAUPIN ET AL., *supra*.

254. *See generally* MELINDA J. CHAPMAN, CHARLES A. CRAVOTTA III, ZOLTAN SZABO & BRUCE D. LINDSEY, U.S. GEOLOGICAL SURV., U.S. DEP'T OF THE INTERIOR, NATURALLY OCCURRING CONTAMINANTS IN THE PIEDMONT AND BLUE RIDGE CRYSTALLINE-ROCK AQUIFERS AND PIEDMONT EARLY MESOZOIC BASIN SILICICLASTIC-ROCK AQUIFERS, EASTERN UNITED STATES, 1994–2008 (2013), https://pubs.usgs.gov/sir/2013/5072/pdf/sir2013-5072.pdf [https://perma.cc/A54C-52BH] (discussing impact of geography on groundwater quality in eastern United States); Claire Mullaney & Michele

contamination from such heavy metals and radionuclides as arsenic and uranium.[255]

Additionally, bacterial contamination is also a concern in North Carolina. A study of majority-Black communities in Wake County found that 29.2% of private drinking water wells were contaminated with coliform bacteria and 6.43% were contaminated with *Escherichia coli* as compared with the less than 1% found in the public water systems sampled.[256] The difference has real-world implications. In North Carolina, 7.3% of emergency department visits for acute gastrointestinal illnesses stem from exposure to contaminated well water—99% of which come from contamination of private wells.[257]

Lead contamination is also a concern for well water dependent populations. A study of children in Wake County, North Carolina, found that children consuming well water have 25% increased odds of having elevated blood lead levels as compared with children receiving their water from public water systems.[258] Another study found lead levels similar to those during the Flint, Michigan water crisis in kitchen tap water sourced from private drinking water wells in Wake County, North Carolina.[259]

2. The Fight for Access by Unincorporated Communities in Mebane, North Carolina[260]

In 1994, Omega and Brenda Wilson co-founded the West End Revitalization Association (WERA).[261] It is the only grassroots "Right to Basic Amenities" organization in Alamance County, North Carolina.[262] WERA serves residents from five predominantly Black unincorporated communities in and around Mebane, North Carolina.[263] These communities, settled by former slaves, are 85% to 95% Black and are located just outside of Mebane's city limits.[264] The communities are located in Mebane's extraterritorial jurisdiction, where the city extends its jurisdiction for some purposes—such as land use and zoning—but the provision of

Okoh, *A Drop in the Bucket: North Carolina's Neglected Problem of Private Well Water Contamination*, 3 N.C. C.R. L. REV. 1 (2023).

255. *See* CHAPMAN ET AL., *supra* note 254, at 1–2; Mullaney & Okoh, *supra* note 254.

256. Stillo & Gibson, *supra* note 51.

257. DeFelice et al., *supra* note 53, at 1583.

258. Gibson et al., *supra* note 40.

259. Stillo & Gibson, *supra* note 41.

260. For audio recordings concerning the struggle for water access, see generally Purifoy, *supra* note 105.

261. *Our History*, *supra* note 1.

262. W. END REVITALIZATION ASS'N, *supra* note 2.

263. *See id.* (noting that "WERA provides service to residents, homeowners, and landowners of five predominantly Black communities in, and around, Mebane"); Danielle Purifoy, *Community Organizing Mattered Around Mebane—but the Struggle Isn't Over*, SCALAWAG MAG. (Aug. 27, 2016), https://scalawagmagazine.org/2016/08/community-organizing-mattered-around-mebane-n-c-but-the-struggle-isnt-over/ [https://perma.cc/ND97-H6CP] (noting that WERA serves residents of unincorporated communities).

264. W. END REVITALIZATION ASS'N, *supra* note 2.

municipals services are limited.[265] As such, WERA advocates for "these historic communities [that] have been denied the right to basic amenities like clean water and safe sewage."[266] However, Mebane has annexed newer, primarily white communities, thus granting them basic amenities and the right to vote in local elections.[267]

In addition to the social and racial barriers dividing the communities of WERA, physical barriers also exist. For example, every road in the West End community except for one is a dead-end road.[268] Mebane also constructed a fence blocking off one of the roads, which prevented residents from accessing local events and recreational activities. According to Omega Wilson, "[t]hey always had a fence there, that was chain link, that people couldn't get through while the white residents could just walk over or drive over and sit on the athletic field and watch[.]"[269] While residents were not able to go through the fence, trucks from the local wastewater treatment facility were able to travel through the fence's gates.[270] These trucks would then drive through West End while bypassing other communities. Trucks spilling sewage plagued these communities because, although they did not have access to water and sewer services, they lived near the water treatment facility.[271]

Ultimately, it was Mebane's proposal to build a state highway bypass, NC-119 (119 Bypass), through these communities that catalyzed them into filing an administrative complaint with the U.S. Department of Justice (DOJ) and the EPA.[272] The 119 Bypass originally was planned to bifurcate these communities.[273]

This administrative complaint was filed under Section 602 of Title VI of the Civil Rights Act, which empowers federal agencies to make a finding of noncompliance with Title VI based on disparate impacts based on race, color, or national origin.[274] For such a finding, proof of an intent to discriminate is

265. *See* Purifoy, *supra* note 263; David W. Owens, *Extraterritorial Jurisdiction for Planning and Development Regulation*, UNIV. N.C. SCH. GOV'T (Apr. 2020), https://www.sog.unc.edu/resources/legal-summaries/extraterritorial-jurisdiction-planning-and-development-regulation [https://perma.cc/V3YV-GHAV].

266. W. END REVITALIZATION ASS'N, *supra* note 2.

267. Wilson et al., *supra* note 37, at 65–66.

268. Dylan Phillips, *Tate Avenue-Corregidor Street Connector Nears Completion*, MEBANE ENTER. (Sept. 30, 2021), https://www.mebaneenterprise.com/news/article_131e0c9a-21f0-11ec-90a5-d3da202afdcc.html [https://perma.cc/7ZWD-LFCB].

269. *Id.*

270. *Id.*

271. *Id.*

272. Purifoy, *supra* note 263.

273. Phillips, *supra* note 268.

274. 42 U.S.C. § 2000d-1; Civil Rights Act of 1964, Pub. L. No. 88-352, § 601, 78 Stat. 252, 252–53 (1964); Guardians Ass'n v. Civ. Serv. Comm'n of N.Y., 463 U.S. 582, 593 (1983). For an interpretation of this conclusion from *Guardians*, see Alexander v. Choate, 469 U.S. 287, 293–94 (1985) ("[A] two-pronged holding on the nature of the discrimination proscribed by Title VI emerged in [*Guardians*]. First, the Court held that Title VI itself directly reached only instances of intentional discrimination. Second, the Court held that actions having an unjustifiable disparate impact on minorities could be redressed through agency regulations designed to implement the purposes of Title VI. In essence, then,

not required.[275]

Additionally, WERA was able to collaborate with citizen scientists and researchers from the University of North Carolina at Chapel Hill to complete a study entitled *Failing Septic Systems and Contaminated Well Waters: African-American Communities in Mebane, North Carolina*.[276] This study was funded by an Environmental Justice Small Grant from EPA.[277] According to the study, "[o]ver 500 homes, churches, and a Masonic Temple are threatened by failing septic systems and contaminated well water and surface water outside the city, along with water and sewer lines that do not meet minimum code standards in the City of Mebane."[278] The study indicated that despite the residents' desire to receive public water services, Mebane repeatedly refused to annex these communities to provide water and sewer services.[279] The city did indicate that residents could apply for voluntary annexations but emphasized that the city was under no obligation to provide water and sewer services.[280]

Due to the administrative complaint, $22 million in federal funds were withheld, and a moratorium was issued on the bypass until the route was modified and basic amenities, such as water and sewer service, were provided to these communities.[281] However, progress has been slow. The bypass remains unbuilt,[282] and WERA still works to gain access to water services for its communities.[283] The North Carolina Department of Transportation currently plans for the 119 Bypass to run west of West End and has incorporated a connector into its plan.[284] The connector would be another step to removing the physical barriers that exist between Mebane's Black and white communities.[285] Due to efforts by WERA, 104 homes have gained access to water and sewer services.[286] Since then, Mebane has rejected a $5 million grant from the state of North Carolina to improve infrastructure in the surrounding area.[287]

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we held that Title VI had delegated to the agencies in the first instance the complex determination of what sorts of disparate impacts upon minorities constituted sufficiently significant social problems, and were readily enough remediable, to warrant altering the practices of the federal grantees that had produced those impacts. *Guardians*, therefore, does not support petitioners' blanket proposition that federal law proscribes only intentional discrimination against the handicapped." (footnotes omitted)).

275. *See Guardians Ass'n*, 463 U.S. at 607.

276. W. END REVITALIZATION ASS'N, FAILING SEPTIC SYSTEMS AND CONTAMINATED WELL WATERS: AFRICAN-AMERICAN COMMUNITIES IN MEBANE, NORTH CAROLINA 3 (2002), https://www.wera-nc.org/News/epa/epaej_1202.htm [https://perma.cc/F5LU-23R8].

277. *Id.* at 1.

278. *Id.* at 3.

279. *Id.* at 5–6.

280. *Id.* at 6.

281. Purifoy, *supra* note 263.

282. *See* Phillips, *supra* note 268.

283. *Our History*, *supra* note 1; W. END REVITALIZATION ASS'N, *supra* note 2.

284. Phillips, *supra* note 268.

285. *Id.*

286. Purifoy, *supra* note 263.

287. *Id.*

Currently, WERA is working to improve relations with Mebane, and, in 2019, WERA created the WERA/Mebane Taskforce Model.[288] The task force is designed to address environmental injustices in BIPOC communities in Mebane. The task force facilitates communication between WERA and Mebane on how to address environmental justice issues in these communities. Since its creation, many government officials have joined the task force, including local and state officials. One of the innovations of the WERA/Mebane Task force Model is its use of the federal EJSCREEN tool, which helps locate residents without access to safe drinking water.[289]

The activism by WERA demonstrates that underbound communities can be innovative in banding together to address a lack of amenities. However, it also reflects the frustration these communities may face in their attempt to gain access to public water services and other amenities. It illustrates that the appropriate unit of support for achieving access to public water systems may not be the public water utilities, but, instead, the well dependent communities themselves.

III. MOVING TOWARD INCLUSION

A power deficit lies at the heart of the lack of access to public water systems. The SDWA does not protect well dependent communities, and there is little impetus among public water systems to extend connections to peri-urban communities, despite their proximity. Like WERA, many of these communities may be willing to cooperate to gain access to public water systems protected by the SDWA. Currently, the focus remains on localities and public water systems to extend this access. However, when localities are unwilling to provide public access, the cooperative nature of communities should be the catalyst for increasing access to safe drinking water.

The Rural Electrification Act (REA) provides a model of infrastructure development that empowers communities to be the vehicles for increasing their own access to basic amenities. The United States has a history of connecting large segments of its populations in dire need of access to basic services.[290] The nation has invested in connecting rural populations to electricity and the Internet through the REA.[291] Within a few decades, the REA provided near-universal electrification to rural communities.[292] A central feature of the REA is its focus on developing

288. Dylan Phillips, *West End Revitalization Association and City of Mebane Working Together*, MEBANE ENTER. (July 7, 2021), https://www.mebaneenterprise.com/news/article_080952f8-df4f-11eb-a191-2f13b0b55512.html [https://perma.cc/NBR8-XEE2].

289. *Id.*

290. *See* Tim Sablik, *Electrifying Rural America: During the Great Depression, Communities Banded Together to Bring Electricity to America's Farmland*, 25 ECON FOCUS 24, 24–26 (2020); Joshua Lewis & Edson Severnini, *Short- and Long-Run Impacts of Rural Electrification: Evidence from the Historical Rollout of the U.S. Power Grid*, 143 J. DEV. ECON. 1, 2–4 (2020).

291. *See* Sablik, *supra* note 290.

292. *Id.* at 26.

infrastructure through electric cooperatives (co-ops),[293] which are nonprofit, consumer-owned entities.[294]

A. BRIEF HISTORY OF THE RURAL ELECTRIFICATION ACT

Congress enacted the Rural Electrification Act in 1936 as part of the New Deal.[295] Although the Industrial Revolution had brought electricity to urban centers, many rural communities were not connected to electrical systems.[296] In 1936, due to the cost of electrifying rural areas, approximately 90% of farms did not have access to electricity.[297] To address this issue, the REA created what was then known as the Rural Electrification Administration, but is now known as the Rural Utilities Service (RUS).[298] The program was mostly successful. By 1950, 80% of farms had electricity.[299]

The REA provided a cooperative model where co-ops, made up of collaborating farmers, worked with utility providers to expand access to services and establish reasonable costs.[300] The Rural Electrification Administration implemented this structure by drafting a model law called the Electric Cooperative Corporation Act for states to create co-ops for the purpose of electrifying areas.[301] The REA also empowered the Secretary of Agriculture to provide low-cost loans for rural electrification and coordinate with the RUS on providing loans for electrification.[302] These loans were dedicated to the construction and operation of rural electric systems.[303] They covered a variety of projects for electrification. REA loans included projects for large-scale power infrastructure and small projects for individual homes, such as installing electrical wiring in a home.[304] The loans

293. *See id.* at 24–26; *History: The Story Behind America's Electric Cooperatives and NRECA*, NAT'L RURAL ELEC. COOP. ASS'N, https://www.electric.coop/our-organization/history [https://perma.cc/5NAD-QTSR] (last visited Feb. 22, 2023).

294. NAT'L RURAL ELEC. COOP. ASS'N, *supra* note 293 (noting that "the REA drafted the Electric Cooperative Corporation Act, a model law that states could adopt to enable the formation and operation of not-for-profit, consumer-owned electric cooperatives").

295. *Id.*; Sablik, *supra* note 290, at 24.

296. *See* Sablik, *supra* note 290, at 24.

297. Brandon McBride, *Celebrating the 80th Anniversary of the Rural Electrification Administration*, U.S. DEP'T OF AGRIC. (Feb. 21, 2017), https://www.usda.gov/media/blog/2016/05/20/celebrating-80th-anniversary-rural-electrification-administration [https://perma.cc/J5N6-4TB4].

298. *See id.* ("The REA was created to bring electricity to farms."); JONATHAN P. CLAFFEY, U.S. DEP'T OF AGRIC. RURAL DEVELOPMENT, RURAL DEVELOPMENT'S RURAL UTILITIES SERVICE (RUS) ELECTRIC PROGRAMS 7 https://www.energy.gov/sites/prod/files/2016/06/f33/rural-dev-electric-program.pdf [https://perma.cc/Y4EW-WGQD] (last visited Feb. 22, 2023) ("The USDA Rural Utilities Service evolved from the Rural Electrification Administration (REA) formed as part of the Federal Government's "New Deal" programs during the Great Depression, designed to help the neediest in America.").

299. McBride, *supra* note 297.

300. Sablik, *supra* note 290, at 24–25.

301. NAT'L RURAL ELEC. COOP. ASS'N, *supra* note 293.

302. 7 U.S.C. §§ 902(a), (c).

303. *See id.* §§ 904(a), 908.

304. Lisa Thompson, *Rural Electrification Administration (REA) (1935)*, LIVING NEW DEAL (Nov. 18, 2016), https://livingnewdeal.org/glossary/rural-electrification-administration-rea-1935/ [https://perma.cc/6JKX-684C].

were designed to be low-risk to consumers. The interest rates for these loans were low, and there was no liability to individual borrowers for defaulting on these loans.[305]

The RUS has grown in scope since its creation. In addition to rural electrification, the program now includes increasing rural access to broadband telecommunication and Internet services.[306] The RUS now also administers the USDA's Rural Development Water and Environmental Programs (WEP).[307] To be eligible for direct loans and grants under this program, the community must have a population of 10,000 or fewer.[308] Guaranteed loans are available to communities with a population of 50,000 or fewer.[309] WEP is the only program funding rural communities of 10,000 people or fewer.[310] WEP also funds nonprofits to provide water and waste technical assistance to rural communities.[311] However, the program had a backlog of $2.5 billion at the end of 2018.[312]

Although an increase in funding is a necessary part of addressing the lack of access to public water systems, it would not be sufficient to address the legacy of municipal underbounding that continues to threaten the health of peri-urban communities. The cooperative structure utilized for electrification can recognize and harness the agency within these communities—and provide them with the tools required to gain access to safe drinking water.

B. THE COOPERATIVE MODEL

The electric industry in the United States does not have a single structure. The structure varies based on the entity selling the electricity and how that entity conveys electricity.[313] The U.S. Energy Information Administration (EIA) identifies three types of utility ownership: investor-owned utilities (IOUs), publicly run or

305. *Id.*

306. Food, Conservation, and Energy Act of 2008, Pub. L. No. 110-246, sec. 6110, § 601, 122 Stat. 1651, 1960–61.

307. *See* RAMSEUR, *supra* note 189, at 24–25 & 25 n.61; *Water & Environmental Programs*, U.S. DEP'T OF AGRIC., https://www.rd.usda.gov/programs-services/water-environmental-programs [https://perma.cc/U4H4-QS4F] (last visited Feb. 22, 2023) (labeling WEP as "Rural Utilities Service Water and Environmental Programs (WEP)").

308. RAMSEUR, *supra* note 189, at 24.

309. *Id.*

310. *Water & Environmental Programs*, *supra* note 307.

311. RAMSEUR, *supra* note 189, at 25.

312. *See supra* note 198 and surrounding text.

313. For descriptions of various structures of the electricity retail industry, see *Electricity Explained: How Electricity is Delivered to Consumers*, U.S. ENERGY INFO. ADMIN. (Aug. 11, 2022), https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php [https://perma.cc/NA9U-5YBG] ("The company selling you power may be a not-for-profit municipal electric utility; an electric cooperative owned by its members; a private, for-profit electric utility owned by stockholders (often called an investor-owned utility); or in some states, you may purchase electricity through a power marketer. A few federally owned power authorities—including the Bonneville Power Administration and the Tennessee Valley Authority, among others—also generate, buy, sell, and distribute power. Local electric utilities operate the distribution system that connects consumers with the grid regardless of the source of the electricity." (references omitted)).

managed utilities (POUs), and cooperatives (co-ops).[314] By 1923, municipalities operated most utilities.[315] However, as technology progressed and it became less economical to operate small plants, municipalities increasingly sold their equipment and transferred their customers to IOUs. Now nearly 75% of customers receive their electricity from an IOU.[316] After the passage of the REA, co-ops of farmers formed to address electricity needs of communities not served by IOUs and municipal utilities.[317]

Co-ops are nonprofit, member-owned entities. Co-ops are still most common in rural areas.[318] A community-run electric co-op has two options for connecting its community to electricity—the co-op can connect to an existing power, functioning as a distributor, or it can create its own power plant.[319] The primary mechanism co-ops chose to connect their communities to electricity was to purchase electricity from an electric generator source, such as an IOU or POU, and then to resell it to individual customers.[320] However, the REA also provides for the construction of electrical generating facilities.[321]

C. REMEMBERING UNDERBOUND COMMUNITIES

To address communities lacking access to public water systems, the federal government would need to make significant investments in these communities. The REA provides an example of the feasibility and potential success of such an endeavor. However, it would not be enough for the federal government to simply make a massive financial investment. Policymakers must also be aware that well dependent populations cannot be viewed as merely a rural population. The

314. Anodyne Lindstrom & Sara Hoff, *Investor-Owned Utilities Served 72% of U.S. Electricity Customers in 2017*, U.S. ENERGY INFO. ADMIN. (Aug. 15, 2019), https://www.eia.gov/todayinenergy/detail.php?id=40913 [https://perma.cc/AK7A-LEQ9].

315. *Id.*

316. *Id.*

317. *Id.*

318. *Id.*

319. *See id.*

320. *See* U.S. DEP'T OF AGRIC., RURAL LINES, USA: THE STORY OF THE RURAL ELECTRIFICATION ADMINISTRATION'S FIRST TWENTY-FIVE YEARS: 1935-1960, at 37 (1960); 7 U.S.C. § 918a(a) ("The Secretary, acting through the Rural Utilities Service, may—(1) in coordination with State rural development initiatives, make grants and loans to persons, States, political subdivisions of States, and other entities organized under the laws of States to acquire, construct, extend, upgrade, and otherwise improve energy generation, transmission, or distribution facilities serving communities in which the average residential expenditure for home energy is at least 275 percent of the national average residential expenditure for home energy (as determined by the Energy Information Agency using the most recent data available); (2) make grants and loans to the Denali Commission established by the Denali Commission Act of 1998 to acquire, construct, extend, upgrade, and otherwise improve energy generation, transmission, or distribution facilities serving communities described in paragraph (1) . . . ." (citation omitted)); 7 U.S.C. § 918b ("On and after November 28, 2001, notwithstanding any other provision of law, the Secretary of Agriculture, acting through the Administrator of the Rural Utilities Service shall use the authorities provided in the Rural Electrification Act of 1936 to finance the acquisition of existing generation, transmission and distribution systems and facilities serving high cost, predominantly rural areas by entities capable of and dedicated to providing or improving service in such areas in an efficient and cost effective manner." (footnote and citation omitted)).

321. *See* 7 U.S.C. §918a(a)(2).

investment and approach will have to take into account peri-urban communities—as well as the legacy of racism, which underpins the practice of municipal underbounding. This means dedicating funds to underserved communities that are not protected by the SDWA.

However, unserved communities (those without access to public water systems) should not compete with underserved communities (those that are served by failing public water systems).[322] If these communities compete for the same funding programs, then well dependent communities run the risk of not being prioritized. Underserved communities that receive their water from public water systems have water quality standards. The incentive exists for officials to prioritize these communities over well dependent communities without SDWA water quality standards. The Flint, Michigan water crisis demonstrates that violations of the SDWA can lead to civil and criminal liability for government officials.[323] If these communities compete for the same funding programs, then well dependent communities may be forgotten.

Additionally, the legacy of municipal underbounding should not be ignored. The REA's cooperative model should be emulated in addressing the needs of well dependent communities. Current grant programs predominately focus on public water systems, and—even when funding is provided to benefit well dependent communities—this often goes through local entities. The cooperative model under the REA allows the power to rest with impacted communities, instead of the local governments that have excluded them from municipal services.

As demonstrated by WERA, peri-urban communities can organize to address their lack of access to basic amenities. A funding structure that acknowledges co-ops would allow such communities to be more effective in achieving safe drinking water for their populations. Under the REA, co-ops were provided with technical assistance and low-cost loans. Because many of these peri-urban communities are also low-income communities, the absence of individual liability for defaulting should also be emulated.

Of course, another consideration in relation to cost would be fees. Water system users fund public water services. Subsidization may need to be considered to help individuals afford water service fees. Such subsidization will likely be its own cost burden. However, just as the cost was justified during the New Deal, protecting the health of these communities can also be justified through improved public health. The key to this approach is focusing on the power that lies within underserved communities and prioritizing the needs of these communities.

322. *See* Wilson et al., *supra* note 37, at 63–64, 69.

323. *See* Boler v. Earley, 865 F.3d 391, 416 (6th Cir. 2017) (holding that Michigan Department of Environmental Quality (MDEQ) officials were not entitled to absolute immunity).

CONCLUSION

Millions of Americans continue to lack access to safe drinking water. Many of these individuals are near public water systems but have been denied access due to a legacy of municipal underbounding, enshrined in a system of discrimination. Because of their proximity, the resolution is simpler closer to municipalities than in rural areas. This affected population does not face the additional challenges of distance and low population density. The REA's approach to electrification provides a model of infrastructure access that moves away from relying on the localities that have historically excluded these populations and denied them from annexation. It instead presents a cooperative example where these communities can gain direct access to funding for increasing their access to public water systems. In addition to the REA's model, it is important that well dependent municipally underbound communities are prioritized and that they are not placed in a position where they must compete against underserved communities that are serviced by public water systems. These communities require their own water infrastructure initiative—one that gives them the power to decide whether they have access to safe drinking water, instead of having to rely on the same localities that exclude them.