



# Iowa's Grants to Counties Program: A Valuable but Underutilized Program for Protecting the Public Health of Private Well Users

*Silvia Secchi, Department of Geographical and Sustainability Sciences and Public Policy Center, University of Iowa*

*David Cwiertny, Center for Health Effects of Environmental Contamination, Public Policy Center and Department of Civil and Environmental Engineering, University of Iowa.*

## OVERVIEW OF THE GRANTS TO COUNTIES PROGRAM:

Nearly 300,000 Iowans rely on private wells for their primary drinking water supply. Because private water wells fall outside the jurisdiction of the Safe Drinking Water Act, there are no federal regulations for the quality and routine testing of private well water. Instead, [the EPA states](#) that it is the homeowner's responsibility to ensure the safety of their water.

The Grants to Counties program ([641 IAC – Chapter 24](#)) was created in 1987 as part of the Groundwater Protection Act to assist private water well owners in Iowa. Funded through the Agricultural Management Account within the State's Groundwater Protection Fund ([Iowa Code 455E.11](#)), the Grants to Counties program provides money each year for (i) testing private water wells for total nitrate (including nitrite) and total coliform bacteria, at a minimum, with the option to test also for arsenic; (ii) reconstructing private water wells; and (iii) plugging of abandoned private water wells (including cisterns that present a contamination risk to groundwater). The Iowa Department of Public Health (IDPH) administers the Grants to Counties program with funding and technical assistance from the Iowa Department of Natural Resources (IDNR). The [State Hygienic Laboratory](#) (SHL) provides additional support. Local Boards of Health implement the program in Iowa counties.

Participating counties receive an equal allocation annually from Iowa's Groundwater Protection Fund to administer the grant activities. In 2016, program rules ([641 IAC – Chapter 24](#)) changed to allow IDPH to reallocate Grants to Counties funds between counties, with those demonstrating an under-utilization of funds receiving a mid-contract funding reduction to redistribute dollars to counties that demonstrate a higher funding need. The intent of mid-year reallocations is to allow for more effective and complete use of available funds.

## ANALYSIS OF GRANTS TO COUNTIES EXPENDITURES:

**Available Data and Analysis Methodology:** Award and expenditure data for fiscal years 2013 through 2018 were obtained through the IDPH. Data included the total amount of funding awarded to each participating county during each fiscal year. Also provided was a breakdown of how each county used their funding for activities authorized under the Grants to Counties program. Some counties jointly operate their activities or contract them out to another county. Details on these are provided at the end of this brief in a methodological note.

### Overview of County Level Funding and Expenditures:

From FY13–FY18, participating counties received between \$23,469 (average low in 2013) and \$36,082 (average high in 2015) in available funds. This equates to an average of \$2.8 million annually (low of \$2.18 million in 2013, high

of \$3.50 million in 2015) appropriated to the Grants to Counties program and subsequently allocated evenly across participating counties at the start of each grant year (July 1–June 30).

Generally, the program has seen some severe underutilization over the past five years (**Table 1**), with anywhere between 29–55% of the awarded funds remaining unspent by the participating counties. Two noteworthy changes to the program over this period include revisions of 641 IAC – Chapter 24 in 2014 to expand eligible testing to cover arsenic and other tests approved by IDPH and in 2016 to allow IDPH to reallocate funds between counties. Indeed, total expenditures have improved, somewhat, since the start of mid-year reallocations in 2016. Overall, there are seven categories of spending in the program (**Table 2**). By far the two largest uses of funds are for water quality testing and plugging of abandoned wells.

**TABLE 1. COUNTY LEVEL AVERAGES FOR ANNUAL AWARDS AND EXPENDITURES MADE THROUGH THE GRANTS TO COUNTIES PROGRAM FOR FY13–FY18.**

YEAR	NUMBER OF PARTICIPATING COUNTIES	AWARDED FUNDS	SPENT FUNDS	UNSPENT FUNDS	SPENT FUNDS (%)
2013	93	\$23,469	\$15,383	\$8,086	66%
2014	96	\$30,612	\$14,891	\$15,751	49%
2015	97	\$36,082	\$16,247	\$19,835	45%
2016	98	\$26,530	\$17,984	\$8,546	68%
2017	98	\$26,530	\$18,950	\$7,580	71%
2018	98	\$30,512	\$19,644	\$10,868	64%

**TABLE 2. AVERAGE ANNUAL SPENDING BY ALLOWABLE EXPENDITURE CATEGORY IN THE GRANTS TO COUNTIES PROGRAM. DATA SHOWN ARE COUNTY LEVEL AVERAGES ACROSS FY13–FY18.**

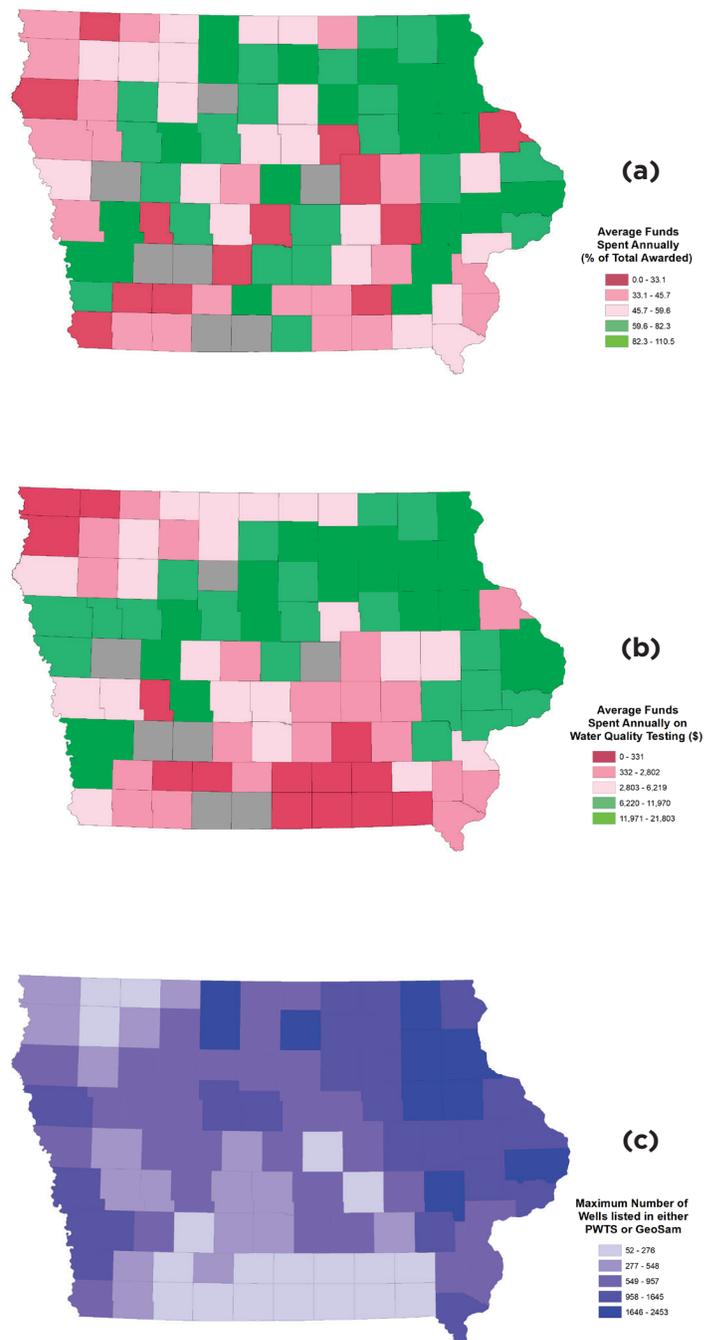
WATER TESTS	WELL PLUGGING	CISTERN PLUGGING	WELL RECONSTRUCTION	TRAINING	SUPPLIES	PROMOTION
\$6,367	\$9,936	\$1,014	\$1,215	\$372	\$151	\$226



**Figure 1** looks at expenditures across Iowa counties based on percentage of awarded funds spent annually by each county (**Figure 1a**) and the total amount of funding per county spent each year on water quality testing (**Figure 1b**). Regarding water quality testing, some counties may conduct independent analysis of their private well water quality without using Grants to Counties funds. Thus, a low level of expenditures on water quality testing does not necessarily imply a lack of water quality testing by a particular county.

Also provided for comparison (**Figure 1c**) is an estimate of the distribution of active private wells in each county. To date, there is no comprehensive database that completely inventories all private wells used for drinking water in Iowa. Some information is available through the [Private Well Tracking System Database](#) (PWTS) database managed by Iowa Department of Natural Resources (DNR). However, the number of wells entered in the PWTS database is influenced by whether a county uses Grants to Counties funds; use of Grants to Counties funds for water quality testing, for example, would result in data entry of those water tests into the PWTS system. The PWTS database also does not necessarily include all the wells in each county, particularly those already in use at the creation of the database. Another resource is [GeoSam](#), a database maintained by the Iowa Geological Survey that contains location information, among other details, for wells across Iowa. However, only those wells with well characterized geology are included in the database. So as not to underestimate the number of wells in each county, **Figure 1c** presents the maximum number of private wells used for drinking water in each county between PWTS and GeoSam.

From this analysis, a few general trends are observed regarding Grants to Counties spending. First, the counties spending more of their total allocated funding each year tend to coincide with those counties that have a larger number of active wells in the PWTS or GeoSam database. Thus, where there appears to be the greatest need for supporting private wells, funding from the Grants to Counties program is spent more proactively. Second, counties using a greater percentage of their Grants to Counties funding tend to be those counties spending the most money on water quality testing.



**FIGURE 1.** Average percentage of allocated Grants to Counties funds spent annually between FY13-FY18 and (b) average of Grants to Counties dollars spent on water testing annually between FY13-FY18. Provided for comparison in (c) are the county level distribution of active private (or subdivision) wells based on information available in the Private Well Tracking System and GeoSam as of March 2019. In (a) and (b), counties in grey are those that contract with neighboring counties for management of the Grants to Counties Program, and for which allocation and expenditure data are not available (see Methodological Note at the end of the brief).

Accordingly, when many consumers rely on private wells, a priority for use of funds appears to be measuring the quality and safety of the available drinking water supply. In contrast, use of funds for well plugging tends to occur more often in the southern and northwestern part of the State, where the abundance of active wells is more limited and there is access to alternative water supplies (for example Rural Water).

Overall, these trends are encouraging, as it appears that the funds are being spent in the areas that need them the most and for the most socially valuable activities.

**Table 3** lists those counties that expend the highest and lowest percentage of their awarded Grants to Counties funds. These counties are ranked based upon the average

**TABLE 3. COUNTY BOARDS OF HEALTH THAT EXPEND THE HIGHEST AND LOWEST PERCENTAGE OF THEIR AWARDED GRANTS TO COUNTIES FUNDS BASED ON AVERAGE EXPENDITURES (AS PERCENT) FROM FY13-FY18. Also provided are estimates of the total number of private wells in each county (as of March 2019) taken from the PWTS database and GeoSam.**

COUNTY BOARD OF HEALTH	EXPENDITURES (BASED ON AVERAGE % OF TOTAL ALLOCATED FUNDS FY13-18)	ACTIVE PRIVATE WELLS IN PWTS	ACTIVE PRIVATE WELLS IN GEOSAM
<b>COUNTIES WITH HIGHEST EXPENDITURES</b>			
Delaware County Board of Health*	108.5%	2453	1579
Jefferson County Board of Health	102.6%	216	191
Clayton County Board of Health*	102.1%	1883	1440
Buchanan County Board of Health	98.4%	2185	1075
Cerro Gordo County Board of Health*	98.1%	1812	818
Chickasaw County Board of Health*	92.3%	1258	1018
Pottawattamie County Board of Health	92.0%	1645	945
Cedar County Board of Health*	91.4%	1262	617
Clinton County Board of Health*	89.4%	2263	1064
Butler County Board of Health	89.2%	1045	1095
<b>COUNTIES WITH LOWEST EXPENDITURES</b>			
Tama County Board of Health	30.5%	552	824
Iowa County Board of Health	30.3%	339	562
Madison County Board of Health	29.9%	176	401
Plymouth County Board of Health	29.5%	957	854
Grundy County Board of Health	25.1%	447	787
Adams County Board of Health	24.3%	20	173
Fremont County Board of Health	23.9%	580	439
Dubuque County Board of Health*	23.0%	412	1509
Wapello County Board of Health	21.4%	36	276
Montgomery County Board of Health	15.6%	290	454

\*indicates no access to Rural Water

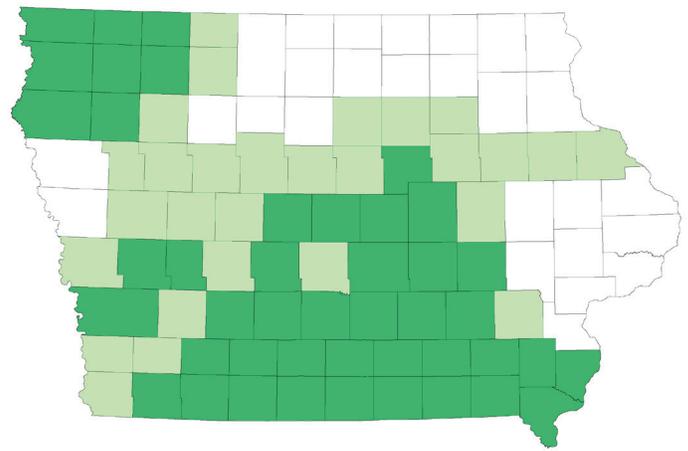


percentage of allocated funds spent over the period from FY13–FY18. Of the top ten counties based on expenditures, three of which spent slightly more than their initial funding allotment, most tend to have a higher concentration of active private wells in the PWTS and GeoSam databases. On average, the top ten counties have approximately 1,600 active wells, compared to just 380 in the ten counties with the lowest average annual expenditures based on available PWTS data. The trend holds based on records from GeoSam although the difference in the average number of wells for top (980) and bottom (630) performing counties is smaller.

Certainly, other factors would also be expected to influence the use of funds. For example, one would anticipate that a high level of commitment from the county for program administration and promotion would increase expenditures. However, without more detailed information about county level staffing and administration of the Grants to Counties program, it is difficult to assess accurately how such factors impact expenditures.

**Influence of Rural Water Access on Expenditures:** From our analysis, another important factor on spending of Grants to Counties funds is whether the participating county has access to Rural Water. Based on the Rural Water System Service Territory Map, **Figure 2** illustrates counties with access to Rural Water across the entire county (dark green), access to Rural Water in only a portion of the county (light green), or without Rural Water access anywhere in the county (white). Currently, there are 44 counties with Rural Water access across the entire county, 28 counties with partial Rural Water access covering only a portion of the county, and 27 counties with no Rural Water access at all. Note that rural water access across the entire county does not necessarily mean that every resident is being served by a Rural Water supplier.

From **Figure 2**, six of the top ten counties in terms of percent of grant funds expended had no Rural Water access (indicated in **Table 1**), while only one of the low utilizers of funds was without access (Dubuque). Two of the other top counties based on expenditures, Buchanan and Butler, only had Rural Water access in about half of their county. This trend of increased use of Grants to Counties funds



**FIGURE 2.** County access to Rural Water. Counties entirely in Rural Water districts are shown in dark green and counties partly in Rural Water districts are shown in light green.

when access to Rural Water is limited is generalizable across Iowa (**Table 4**). When grouped together, counties with full access to Rural Water both received the most funding from the Grants to Counties program (nearly \$7 million between FY13–18) and had the largest percentage of unspent funding (almost 50% from FY13–FY18). In contrast, counties without access to Rural Water have been the most effective in expending a lower amount of total funding (\$4.7 million), with only 30% remaining unspent across FY13–18. As shown in **Table 4**, expenditure of funding improved after FY16 when the mid-year reallocation was initiated, but the counties without Rural Water access remained most effective at using their funding (with only 21% of allocated funds unspent over FY16–FY18).

Not surprisingly, there are also clear differences in how counties with or without access to Rural Water use their funding. On average between FY13–FY18, counties without Rural Water access spent more than five times as much annually as the counties with full access to Rural Water for water quality testing (\$10,430 versus \$2,067; counties with partial access spent \$8,671).

**TABLE 4.** COMPARISON OF GRANTS TO COUNTIES EXPENDITURES IN COUNTIES WITH FULL, PARTIAL OR NO ACCESS TO RURAL WATER.

	TOTAL FUNDS AWARDED FY13-18	TOTAL UNSPENT FUNDS FY13-18	% OF FUNDS UNSPENT FY13-18	TOTAL FUNDS AWARDED FY16-18	TOTAL UNSPENT FUNDS FY16-18	% OF FUNDS UNSPENT FY16-18
Counties with full access to Rural Water	\$6,890,404	\$3,338,256	48%	\$3,356,048	\$1,373,570	41%
Counties with partial access to Rural Water	\$5,132,852	\$2,036,292	40%	\$2,498,369	\$776,436	31%
Counties without Rural Water access	\$4,797,923	\$1,459,597	30%	\$2,345,439	\$498,939	21%

## CONCLUSIONS AND RECOMMENDATIONS:

The Grants to Counties program is a valuable and necessary program for protecting the public health of Iowans reliant on drinking water from private wells. As a policy, the Grants to Counties program has helped to distinguish Iowa from other Midwestern states through its commitment of funding for protecting private well owners for over 30 years; indeed, relatively few states have dedicated funding streams each year for assisting users of private wells.

Despite its value, the Grants to Counties program is underutilized and yet to achieve the lofty expectations codified upon passage of the Groundwater Protection Act of 1987 *“to protect groundwater quality by providing assistance in testing all private water supply wells and to use the test information to improve the quality of water in these supplies”*. Rather, analysis of available data suggests that on average less than ten percent of private water supply wells are tested each year, with most wells only tested once or twice, if at all, since program creation.

Improving the performance, reach and impact of the Grants to Counties program should be a priority for the State of Iowa. However, it is currently difficult to justify a greater allocation of funding to the program given the extent to which current levels remain unspent annually at the county level.

Some opportunities for improving the Grants to Counties include:

- Expanded testing.** Through the [Iowa Well Survey](#), the SHL has expanded analysis for contaminants present in private water wells. In voluntary partnership with participating county public health agencies, samples collected by sanitarians are tested for chemical contaminants beyond those typically allowed under the Grants to Counties program (*E. coli*, nitrate/nitrite and arsenic), including pesticides, manganese, and lead and copper. Efforts have identified several instances where these other contaminants are present in private well water samples at levels that would be deemed unsafe in public water systems regulated under SDWA. The need for additional testing is well recognized, and changes made to the Grants to Counties Program in FY20 will allow counties, with IDPH approval, to include additional contaminants in water quality testing supported by the program. This is an important first step toward increasing the value of water quality testing under the Grants to Counties program, and there are opportunities for agencies in the State (e.g., IDPH, DNR, and SHL) to assist counties in using available evidence to identify potential threats to private wells suitable for expanded testing. Another promising option for expanded testing would be to institute mandatory follow-up testing for an expanded suite of possible contaminants if unsafe levels are found



for one of the standard monitoring targets (for example *E. coli* or nitrate/nitrite). This is analogous to [Minnesota's](#) well testing program, which calls for additional testing of pesticides in instances where high nitrate levels are found.

- **Prioritization of spending on vulnerable wells.** Older and shallower wells are more vulnerable to contamination, especially when sited in close proximity to sources of pollution. Funding could be prioritized to assist users of these wells while also allowing greater choice in testing based upon most probable risk of contamination, including naturally occurring contaminants (e.g., arsenic, manganese or radium) and those derived from land management practices (e.g., pesticides). There are also opportunities for prioritizing funding to those counties with greatest need. Based on our analysis, counties with a larger number of active private wells (see [Table 3](#)) and those without access to Rural Water (see [Figure 2](#)) seem to most often better utilize Grants to Counties funding. These county level criteria would be a logical starting point for prioritization of additional or re-allocated funds. Through use of publicly available data, including PWTS, GeoSam, and the [Iowa Well Forecasting System](#) (which leverages both databases), more detailed analyses should be conducted to identify how factors including well age, depth, location and seasonality correlate to specific vulnerabilities, providing evidence in support of which well and environmental variables are best used as priorities for funding.
- **Allow use of funding to assist with remedial actions.** Through the Grants to Counties program, currently available options to assist well users with unsafe drinking water are limited to activities such as well repair and reconstruction. Providing more assistance to well users with contaminated drinking water would be a worthwhile use of otherwise unspent Grants to Counties funding. This could include technical assistance to conduct a full assessment of well deficiencies to identify the cause of contamination and identify options for restoring drinking water quality. Such analysis could in turn help promote the use of reconstruction funds through the Grants to Counties program to make

improvements to existing wells, whenever possible. Expanding the allowable use of Grants to Counties funds to include whole home or point of use water treatment options is another possibility that would help users whose well is functioning properly but are reliant on a compromised water supply.

- **Improved marketing to increase participation.** To date, there is little to no centralized marketing strategy to increase awareness and participation in the Grants to Counties program. Improved awareness through increased marketing may help drive well user participation and more complete utilization of available funds. Counties are able to use a set amount of their funding allocation for advertising of the program. To help counties use these promotional funds most effectively, it would be beneficial to survey key stakeholders to identify potential barriers to well owner participation and utilization of funds at the county level. Increasing the ease of access to publicly available data on private water well quality, like that in the PWTS database, could also help to raise awareness in groundwater challenges in the State and catalyze interest in Grants to Counties program participation.
- **Close gaps in the inventory of existing private wells and well users.** Both PWTS and GeoSam underestimate the number of private wells used for drinking water in Iowa, and little is known about the quality of water from wells not included in the PWTS database. Efforts to improve marketing of the Grants to Counties program could coincide with activities to inventory private wells in each county, while prioritizing assistance for wells with no prior water quality testing information. Another question relates to the number of Iowans served by private wells, which is often estimated from the difference between the State's population and the number of people served by community water systems. However, because community water systems often cross county boundaries, it is not possible to determine accurately how many people rely on well water in each county, which would be another useful metric in evaluating and prioritizing use of Grants to Counties funds.



## ACKNOWLEDGEMENTS

*The authors thank Mindy Uhle at IDPH for access to Grants to Counties expenditure data, and Rick Langel at IGS for queries about private wells using PWTS and GeoSam. We would also like to acknowledge Russ Tell at Iowa DNR and IDPH staff for their review and comments on draft versions of this report.*

## METHODOLOGICAL NOTE:

Appanoose, Davis, Lucas, and Monroe Counties operate under a single Board of Public Health, and thus A.D.L.M. Counties received funding each year equivalent to four separate participating counties. Six other counties contract with adjacent counties to manage their Environmental Health programs, including the Grants to Counties program. These counties are Adair (contracts with Guthrie), Cass (Guthrie), Crawford (Carroll), Decatur (Clarke), Humboldt (Pocahontas) and Ringgold (Clarke). In all of these cases, the contracting county received funding each year equivalent to the number of individual participating counties. Because we are unable to distinguish expenditures between partnering counties, funding allocation and expenditure information in our analysis are attributed to the county managing Grants to Counties funds. Finally, Marshall County was not listed in any of the funding information provided by IDPH, indicating they did not participate in the Grants to Counties Program between FY13 and FY18. According to the [Private Well Tracking System Database](#) (PWTS), operated by the Iowa Department of Natural Resources (DNR), only one private well is listed as currently active in Marshall County.

