

Appendix 7: Options for the NGWMN Management Structure and Funding Models

The Subcommittee on Ground Water discussed several options for management of the NGWMN. Chapter 7 of the report presents the consensus recommendations on the management structure and funding of the NGWMN. Other management options were considered, and they are included in this appendix. This appendix also includes additional information about the possible funding mechanisms for the NGWMN.

A7.1 Management Options

There will be many stakeholders involved with this program, likely over 100. To provide the stakeholders a voice and at the same time provide efficient program direction will require some compromise on everyone's part. To accomplish this, a three section structure is recommended that consists of 1) an advisory panel at the federal level to provide guidance and be a voice, federally, for the network, 2) a two-tiered group of program boards, made up of stakeholders, and 3) a management and operations group (MO group) to conduct the day to day network operation functions, including the managing of data.

The advisory panel would be best served by ACWI-SOGW and the MO group would be best served by the USGS. The stakeholder boards would include about ten regional program boards and a national program board serving as the regional board's voice with ACWI-SOGW and the USGS MO group. The key issue for success of the NGWMN is developing a structure that is truly cooperative and inclusive between the stakeholders who operate the state and regional well networks and the USGS at the level of data collection, sample analysis, and data dissemination.

Three alternative proposals are described that fit the structure listed above. The main differences are in regard to management and oversight of the program. There are two options for the ACWI-SOGW role, either strictly advisory, as their current role is, or modifying their role to have direct decision making authority as part of this program. There are also two options for the role of the Program boards. The program boards can either be advisory, or they could have direct decision making authority as part of this program. In all three options, the USGS MO Group would have joint decision making authority in regard to the NGWMN. Table 1 provides a summary of the options.

Table A7-1.

Group\Option	A	B	C
ACWI-SOGW	Joint authority	Advisory role	Advisory role
National PB	Advisory role	Joint authority	Advisory role
Regional PB	Advisory role	Advisory role	Advisory role
USGS MO Group	Joint Authority	Joint Authority	Direct Authority

Option A would have National Program Board's role as advisory to the ACWI-SOGW and the USGS MO group. The ACWI-SOGW and the USGS MO Group would have joint authority to make decisions and give direction to the NGWMN program.

Option B would have ACWI-SOGW’s role as advisory to both the USGS MO group and the National Program Board. The National Program board and the USGS MO group would have joint authority to make decisions and give direction to the NGWMN program.

Option C would have ACWI-SOGW and the National Program Board serving the USGS MO group in an advisory capacity. The USGS would take recommendations and advice from the other two groups but would have direct authority over the NGWMN program.

Table 2 provides a summary of key characteristics of the options. Option A and B may require federal legislation. Of the three options, Option B, which have the National Program Board having joint authority to make decisions and help provide direction to the program, is believed to provide the greatest opportunity for state participation and overall program success. State buy-in for this program, which will include many wells already in service for monitoring at the state level, is considered the most critical issue facing the NGWMN.

Table A7-2.

Characteristic\Option	A	B	C
Funding Appropriation Required	√	√	√
No Legislation Required			√
State Participation More Likely		√	

The recommended of the SOGW is option is B, with ACWI-SOGW remaining in an advisory role, and the formation of a new National Program Board and Regional Program Boards through legislation to work with the USGS to implement the NGWMN. This option provides ACWI-SOGW the opportunity to influence the direction of the NGWMN, as they currently do with other federal programs, as well as providing the NGWMN a federal voice. Option B is the most cooperative approach. It allows the USGS and stakeholders in the program to work together, make decisions together, and guide the program together. State participation is the most critical component of the program and the key to its success. The stakeholders will have more incentive to participate, which will lead to a more comprehensive network, and allow the USGS to better meet the needs of the nation.

A7.2 Advisory Panel

The ACWI-SOGW understands the importance of the NGWMN and has members with diverse backgrounds and the experience to provide sound advice on the needs of the nation. ACWI-SOGW members work directly with federal agencies and will be sensitive to individual federal agency priorities and issues when recommending/providing direction to the National Program Board and/or the USGS MO group.

ACWI-SOGW can respond to new, emerging federal issues. When directives related to emerging issues are given to the individual federal agencies, ACWI-SOGW can provide guidance to address those issues with an overarching understanding of how the NGWMN priorities should shift, if necessary.

ACWI-SOGW is an established and proven advisor at the federal level. Their recommendations carry significance nationally and having their guidance will influence how the NGWMN is viewed and, therefore, how resources are allocated in support of the NGWMN.

In Option A, ACWI-SOGW would govern and direct the NGWMN program jointly with the USGS MO Group. They would solicit advice and opinions on the direction of the NGWMN from the National Program Board, but they would make final recommendations and decisions on priorities and distribution of funding for the network. The National Program Board would be advisory, and make recommendations on stakeholder issues to the ACWI-SOGW for their consideration. The ACWI-SOGW would have the following roles (many in conjunction with the USGS MO group*):

- Approve changes in scope and program
- Approve grant solicitations based on agreed priorities
- Evaluate proposals for funding from stakeholders, and/or make final determinations on funding issues
- Determine priorities for the program
- Coordinate, consult, and reach consensus with the USGS MO group
- Evaluate success of the program, making necessary changes
- Ensure that the NGWMN Level I questions (required questions) are appropriately addressed
- Appoint working groups to work on specific issues (proposal evaluation, etc)
- Provide the stakeholders with information and advice related to national issues and funding opportunities.
- Provide feedback to stakeholders on decisions made for the NGWMN (why, what was considered, etc.)
- Assist in startup of the program, soliciting participation, set up of the boards, etc.

* It's likely that some of the roles listed above would be completed by the USGS MO group and then reviewed and approved by ACWI-SOGW.

In Options B & C, ACWI-SOGW would strictly maintain an advisory role. Their specific roles would be:

- provide advice to the USGS MO group and the National program board on federal issues and suggest directions and priorities for the NGWMN based on their national experience and contacts within the federal government.
- Provide the stakeholders with information and advice related to national issues and funding opportunities
- Evaluate the success of the program, provide feedback.

- Assist in startup of the program, soliciting participation, set up of the boards, etc.

A7.3 Program Boards

The program boards would serve as the voice of the stakeholders that make up the networks that are part of the NGWMN. Because of the large number of stakeholders involved nationally, a two-tiered approach is necessary to adequately represent interests at every level. There would be one national program board (National PB) and a series of regional program boards (Regional PB) underneath and reporting to the National PB. The Regional PB's would consist of stakeholders from a specific region of the country, the USEPA regions (10) being recommended here, but some redistribution of the states in the EPA regions to better fit the location of principle aquifers will be necessary where obvious disconnects occur. Having ten Regional PBs strikes a balance between size of the membership of the Regional PBs themselves and the size of the National PB, keeping both manageable.

The makeup of the National PB will be one member from each of the ten Regional PB's and a member each from the USGS and USEPA (plus ACWI-SOGW in Option B). The ten Regional PB members of the National PB would have rotating two year terms, so that each stakeholder with a local, regional, or state monitoring network would have a chance to serve and be the voice for their specific region. The terms would be staggered among regions to maintain consistency in the board to carry over institutional knowledge and promote consistent interaction between the SOGW, the USGS, and the NPB. This approach will create consensus among regional stakeholders and create an environment that promotes national and regional needs first, and individual network needs second.

The Regional PB's will function as advisory groups to the National PB. Their mission is to bring together regional interests to develop consensus on how to best work cooperatively with the USGS MO group, other regions, and other stakeholders for the betterment of both the NGWMN and their individual networks. They will send forward to the National PB, needs, suggestions, recommendations, and reviews that will provide local and regional insight on every aspect of the program, from what is working and not working, to where resources should be focused, to how to improve success of the program.

In Option A & C, the National PB would serve in an advisory role to ACWI-SOGW, providing a voice for the Regional PB's. They would make recommendations to ACWI-SOGW, based on the needs identified by the regions. In Option A, ACWI-SOGW would have the authority to determine how to use/prioritize those recommendations. In Option C, ACWI-SOGW would consider those recommendations when making their recommendations to the USGS MO Group. The PB roles in Option A & C would be:

Regional PB

- Ensure regional success and accomplishment of goals.
- Set priorities to be brought forward to the National PB for their region.

- Identify areas of regional cooperation around aquifers or with shared resources.
- Recommend issues that the NGWMN should answer within their region.

National PB

- Prioritize regional issues to forward to ACWI-SOGW.
- Make recommendations to ACWI-SOGW (priorities, funding, proposal review, etc).
- Cooperate with ACWI-SOGW, participate in ACWI-SOGW calls and meetings.
- Provide feedback to the Regional PB's.

In Option B, the National PB would be an equal partner with the USGS MO group in making decisions regarding the NGWMN. The National PB would be directly involved with the USGS MO group in setting priorities related to funds distribution, program logistics, member cooperation, and determining program direction, based on the advice/direction of ACWI-SOGW. The National PB will work with the USGS MO group to cooperatively develop solutions, keeping in mind the constraints and directives the USGS has to work under. The National PB will review the information coming from the Regional PB's and consider those suggestions and needs when making decisions. They will respond to the Regional PB's as to why specific decisions are being made in relation to their suggestions, to promote feedback and communication.

In addition to serving on the National PB periodically, the Regional PB members could be asked to serve on subcommittees under the National PB that would be charged with specific tasks. These tasks include reviewing proposals seeking additional resources for individual well networks, developing priorities/needs as seen by the stakeholders, performing an evaluation of the program or aspect of the program, and making recommendations for funding or improvements in the network where needed, among others. Each Regional PB would appoint their subcommittee member to ensure that conflicts of interest were eliminated. (e.g. the subcommittee member would need to not have submitted a proposal if the subcommittee were charged with scoring proposals for the National PB). Option B would likely require that the National PB have at least one staff member/secretary to organize meetings and information, mail materials, etc.

The roles associated with the Regional PB's and the National PB in Option B are:

Regional PB

- Ensure regional success and accomplishment of goals.
- Set priorities to be brought forward to the National PB for their region.
- Identify areas of regional cooperation around aquifers or with shared resources.
- Determine issues that the NGWMN should answer within their region.

National PB (jointly with and taking advice from the USGS MO group)

- Approve changes in scope and program
- Approve grant solicitations based on agreed priorities

- Evaluate proposals for funding from stakeholders, and/or make final determinations on funding issues
- Determine priorities for the program
- Coordinate, consult, and reach consensus with the USGS MO group as a team.
- Evaluate success of the program, making necessary changes
- Appoint working groups to work on specific issues (proposal evaluation, etc)
- Provide the stakeholders with information and advice related to national issues and funding opportunities.
- Provide feedback to stakeholders on decisions made for the NGWMN (why, what was considered, etc.)

A7.4 Management and Operations Group

The MO group is envisioned as new unit at the USGS devoted to conducting the day-to-day tasks needed to operate the network at the national level as well as provide guidance to well network operators that are part of the NGWMN. The USGS has the experience and know-how and their mission is directly related to the goals of the network.

Initially, before the Regional and National PB's are set up, the USGS MO group will be charged with making the contacts with the owners of the networks and states to gather details about their programs and information on their wells, methods, data capabilities, and willingness to participate. This will be a very large and difficult undertaking. The USGS MO group will require assistance from ACWI-SOGW members to develop and cultivate this information. Regardless of the final structure, the MO group will have to oversee the gathering of well and well network data, as well as soliciting the members to the regional boards of stakeholders, with assistance from ACWI-SOGW.

Below are the tasks associated with the USGS MO group:

- Implement startup of the program, including developing a solicitation for participation and organizing stakeholders to get involved and forming the Regional PB's (using volunteer orgs (such as NGWA, State geologists) and state/regional SOGW members to help)
- Coordinate, consult, and reach consensus with the National PB (Option B).
- Coordinate, consult, and reach consensus with ACWI-SOGW (Option A)
- Recommend funding priorities
- Create and manage the data portal
- Evaluate and recommend new technologies
- Provide program guidance/technical advice to stakeholders
- Oversee/manage grants program
- Disseminate technical info to stakeholders on methods, national needs, data standards, etc. (things needed to have the day-to-day, two-way flow between the USGS and network managers)
- Assist/advise on committees and subcommittees

- Disseminate data and interpretive reports as needed in an open and flexible system.
- Assist in developing report findings, answering basic questions, promoting the program with relevant and timely technical results.
- Develop interpretative methods
- Conduct training as needed
- Assist stakeholders in obtaining ancillary data as needed

A7.5 Issues Identified with the Options

The options presented identify specific issues that potentially have a bearing on the acceptability and success of the program. These issues are:

1. May require legislative action to create a new body with authority in managing resources or directing the program is more effort, and could be a stumbling block in getting that legislative action done.
2. There is strong opinion that in order to gain many stakeholders/well owners/states cooperation in volunteering to become a part of the NGWMN, the stakeholders will have to be involved in decisions and allocation of resources in order to see the program as a truly cooperative where they are utilizing data from their individual networks for the betterment of the nation.

Issue 1. Legislative Action

Option A, ACWI-SOGW Authority: Based on OMB-92-01 and information on the FACA website, it appears that ACWI is advisory only. Therefore, in order to have ACWI accept the roles outlined in Option A, legislative action will be required to give them that authority.

Option B, National PB Authority: The National PB would be a new organization and, therefore, to have the National PB and Regional PB's accept the roles outlined in Option B, legislative action will be required to give them that authority. (Regional PB's only in the sense that one member from each makes up the National PB. The Regional PB's would have no other direct authority over the program, though individual members may be asked to serve on National PB committees.)

Issue 2. Stakeholder Participation

Options A & C, Stakeholders as Advisors: The stakeholders would have a voice in providing input, recommendations, and feedback to ACWI-SOGW regarding the NGWMN, but would be relying on ACWI-SOGW to decide which actions to take (Option A) or which to pass forward to the USGS MO Group (Option C). The positive is ACWI-SOGW is made up of a diverse group of state, regional, and national members that would act in the best interests of the program. The disadvantage is that some states may feel the program isn't truly cooperative and inclusive if they have no authority over decisions that could affect their networks and the prospect of obtaining additional funding to build and/or better their networks.

Option B, Stakeholders as Decision Makers: The stakeholders would be directly involved in the implementation of resources and priorities related to the network. The advantage is that this will likely create the buy-in necessary to get the network started, maintain stakeholder cooperation, and help in securing the overall success of the network. It will also promote federal-state cooperation and potentially build bridges between those entities where no current joint efforts are occurring. The disadvantage is that there are more decision makers involved and the potential exists for consensus being more difficult to achieve.

A7.6 Funding options for NGWMN – Management and Operations (MO)

Funding/data gathering models

Funding included in the U.S. Geological Survey (USGS) budget would be allocated to support the NWGMN Management and Operations (MO) group, activities of the NGWMN National Board, NGWMN data management, and NWGMN cooperator costs. Because NGWMN is largely cooperator based, the USGS has data-collection agreements with a variety of non-federal entities including:

- Water management districts—that may operate on a relatively local scale,
- Tribal governments—that may operate at multi-county scales,
- State governments—operating on state-wide scales,
- Multistate groups—that may operate on regional scales similar to that of the High Plains aquifer in the western high plains, and
- Federal agencies including the USGS—that have existing long-term ground-water monitoring networks, water-management responsibilities, manage large amounts of federal land, or control military installations.

Because the number of potential cooperators is large, the scales that the cooperators operate at differ, and the cooperators themselves have widely varying capabilities, several funding/data gathering models are necessary. The NGWMN National Board and USGS MO group work together to develop the best data collection agreements between NGWMN and its cooperators.

FUNDING/DATA GATHERING MODELS

All NGWMN funding/data gathering models address the topics listed below:

- Monitored sites and measurement frequencies.
- Standard operating procedures.
- **Data collection, storage, and transfer.**
- Data gaps, replacement monitoring sites, and new data collection needs.
- Infrastructure improvement.
- **Work assignment, funding flow and cooperator support.**
- Failure to perform and/or inability to sustain long-term monitoring.
- Duplication of effort.

Two other elements critical to funding/data gathering agreements but not necessarily directly addresses within agreements are:

- **A focus on long-term, not issue driven monitoring,** and
- **Overall applicability of a model to NGWMN.**

The bolded topics are critical to the success of the NGWMN and determine how well a funding/data gathering model fits the program, and the cooperator's goals. Applicability also depends on the sites being considered, the cooperating agencies, and their capabilities.

NGWMN uses four funding/data gathering models to gather data.

- Federal Programs and Federal-to-Federal collaboration
 - The USGS Cooperative Water Program (CWP) model.
 - A modified STATEMAP/NGWMN model.
 - U.S. Environmental Protection Agency (USEPA) funding.
1. Various **Federal Programs** and **Federal-to-Federal collaboration** can provide for direct Federal monitoring of backbone network sites, such as those in the USGS Climate Response Network or NAWQA water-quality monitoring, or for monitoring sites at locations with restricted access, such as in national parks or military installations.
 2. **USGS Cooperative Water Program** agreements are appropriate for cooperators that have funding for long-term monitoring but lack the technical expertise or personnel to collect the data.
 3. A **modified STATEMAP/NGWMN** funding option is appropriate for cooperators who have an existing long-term ground-water monitoring network; a need to enhance their infrastructure, instrumentation, or frequency of data collection; the technical expertise and personnel to successfully collect the data; long-term ground-water monitoring funding; and a mission closely aligned with that of the NGWMN.
 4. **USEPA funding** for NGWMN has great potential to add data-collection sites, enhance infrastructure, and provide for more frequent measurement and instrumentation. However, USEPA and USGS must coordinate closely at the agency level so that duplication of effort is minimized.

Federal Programs and Federal-to-Federal collaboration

Federal agencies cooperate to generate NGWMN data, particularly where site access by non-federal entities is difficult and/or the non-USGS federal agency has its own capabilities. Federal programs provide funding for USGS 'backbone' networks such as the Climate Response Network (<http://groundwaterwatch.usgs.gov>). Federal-to-federal agreements between the USGS and the U.S. Forest Service, National Park Service,

Department of Defense, Bureau of Land Management, and the Bureau of Reclamation insure that data from areas managed by these agencies are included.

USGS Cooperative Water Program (CWP) model

The USGS enters into agreements with states, tribes, and local agencies through its Cooperative Water Program (CWP) and provides hydrologic data collection and interpretative services for projects meeting local and national goals. About half the program funds are used for interpretive studies, and half are used for data collection activities. The data collection program is active in all 50 states and focuses stream gauging, ground-water levels, and surface and ground-water quality. Cooperators and the USGS plan data collection that meets federal and cooperator objectives, and depending on the agreement, the USGS either does the work, or work is done jointly with the cooperator.

Modified STATEMAP/NGWMN model:

Under the STATEMAP program, state geological surveys write proposals to create geologic maps consistent with national and state geologic mapping goals. The state survey receives benefit of detailed geologic mapping and the National Cooperative Geological Mapping Program receives mapping consistent with its goals. STATEMAP cooperators provide 50 percent of the funding. The STATEMAP program strongly links the USGS National Cooperative Mapping Program's mission and the missions of its cooperators; both are focused on producing geologic maps and developing unified broad-based geologic mapping support during the executive and congressional budget process.

NGWMN's modified STATEMAP structure also links NGWMN's mission with the missions of its cooperators. Because more agencies have expertise to monitor ground water than to create geologic maps, the model can include a broad range of partners. STATEMAP/NGWMN agreements are with local, state, and regional entities that have ground-water monitoring expertise, current management of a long-term ground-water monitoring network, and a non-federally funded long-term ground-water monitoring mission. NGWMN's need to collect data from the same sites year after year requires competitive and non-competitive elements:

- A non-competitive element under which the USGS MO group and the National Board solicit proposals from cooperators to collect data from monitoring sites and either make the data available to NGWMN or store them in databases for access. Contracts to gather data are renewed upon satisfactory cooperator performance and data quality.
- A competitive element where cooperators propose enhancements to NGWMN infrastructure. Examples include installation of new wells to reduce the number of non-dedicated network wells and/or to fill data gaps. The USGS MO group and the National Board annually reviews proposals and based on national-network need, awards grants to accomplish all or part of the proposed work.

Because many cooperators are states that already have long-term monitoring programs, the cooperative agreements not only provide data for NGWMN but also allows cooperators to cover NGWMN imposed costs related to modified field procedures,

internal data management, and other operational factors. Wells within cooperator networks that are included in NGWMN provide data for non-federal as well as NGWMN purposes and because there is state interest in the data, cooperators provide 50 percent of the support, often through in-kind services. Federal funding for long-term ground-water monitoring, similar to the federal funding for state geologic mapping, creates broad, unified, state-level support during executive and congressional review.

Environmental Protection Agency funding:

Historically, the U.S. Environmental Protection Agency (USEPA) has not actively funded long-term aquifer-based ground-water level and quality networks similar to the NGWMN, but has focused on sites where impacts to ground water must be defined, and/or the effectiveness of cleanup evaluated. Potential USEPA involvement in NGWMN-like networks may depend on future need to evaluate the availability of potable ground-water supplies in response to climate variability and/or change.

USEPA has historically funded state or other non-federal agencies either through direct grant programs or through “pass-through” funding. State agencies often use “pass-through” funds to accomplish federally mandated tasks, but may also further distribute the funds through state-level grant programs. An example of “pass-through” funds used to support a state-level grant program is the “319 Non-Point Source” program through which non-point source contamination issues are addressed. Because the groups that ultimately receive the funding have local interest in the work, matching funds are required. For example in Montana, “319 Non-Point Source” cooperators must match 40 percent of each project.

If USEPA determines that it must characterize how water supplies respond to climate variability, it may fund states to provide the data through direct grants or “pass-through” programs. If future USEPA long-term monitoring programs could be linked with NGWMN, the additional funding would be beneficial because additional locations could be monitored, measurement frequencies increased, more instrumentation employed, and network infrastructure enhanced. However, if USEPA does not coordinate with NGWMN, duplication of effort through competition to monitor the most valuable sites would likely result.