

# GUIDELINES

For Preparation and Submittal of Proposals for the  
State Water Resources  
Competitive Grants Program

FY 2010 PROPOSALS DEADLINE: 4:45 p.m., November 20, 2009
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Alabama Water Resources Research Institute  
1090 South Donahue Drive  
Auburn University  
Auburn, AL 36849

TELEPHONE: (334) 844-4132

October  
2009

The Alabama Water Resources Research Institute (AWRRI) was established at Auburn University in 1964 in response to Act No. 149, Second Special Session, 1963 Alabama Legislature, and Resolution No. 4 of Auburn University Board of Trustees meeting, June 3, 1963. The Director of the AWRRI is appointed by the President of Auburn University and operates under the administrative supervision of the Natural Resources Management and Development Institute (NRMDI). The President appoints the members of the Water Resources Council who establishes policy and operating procedures for the AWRRI and reviews research proposals.

The AWRRI is the federally authorized entity that encourages, facilitates, and assists multi-disciplinary water resources research at our universities. The purpose of the Institute program is to respond to identified water resources problems of the state and region and to encourage and broaden faculty participation in research and other scholarly pursuits. The AWRRI has an obligation to fund proposals having the best probability of producing meaningful results, and/or have good promise of follow-on funding. Such projects will directly benefit the researcher and their profession, and indirectly their students and the Institute's overall mission.

The AWRRI receives funding from the Geological Survey (USGS) of the U.S. Department of the Interior under Section 104 of P.L. 106-374, the Water Resources Research Act of 1984. Research proposals selected will be supported as projects in the State Water Resources Competitive Grants Program, subject to the approval of the USGS. Faculty members from any university or college in Alabama, public or private, are eligible to submit a research proposal to this program. You are invited to submit proposals for grants under this Announcement. There are some conditions which must be adhered to that are addressed in the following Guidelines.

***The intent of the State Program is to foster collaboration by two or more researchers at colleges and universities within Alabama. However, proposals submitted by a single researcher will receive the same consideration as one submitted by a team of researchers. Through this program, the Institute hopes to form partnerships between universities to address a broad range of water resources problems affecting the state and region.***

# GENERAL INFORMATION

1. SUBMITTAL DATE: 4:45 p.m., Friday, November 20, 2009. Your proposal must be received in the Water Resources Research Institute office by the above time/date to be available for review. Proposals received after the deadline will not be accepted for the FY-2010 program and will be returned to the researcher submitting the proposal.
2. NOTIFICATION: You will be notified as soon as possible regarding the status of your proposal.
3. EVALUATIONS: Proposals will be evaluated on the basis of:
  - a. **Relevance and Importance (15 points)**. Does the proposal directly address research topics of significance to our state? If so, does it deal with a subject of particularly high importance to present and future water resources management programs? Does the proposal itself do a convincing job of describing the relevance and importance of the proposed research?
  - b. **Scientific/Technical Merit (40 points)**. Does the proposal have potential to expand the fundamental knowledge in its specific area? Is it scientifically and technically sound? Are the Investigators cognizant of past work? Is the proposal well written, organized, and complete?
  - c. **Feasibility (15 points)**. Does the proposal demonstrate substantive and important collaboration among investigators? Are the objectives, methodologies, designs, and techniques adequate and completely described? What is the likelihood of success given the methods and time frame proposed? Is the budget reasonable and adequate for the work proposed? Will the expected results lend themselves to a more comprehensive proposal with additional funding?
  - d. **Professional Competence of the Investigators (10 points)**. Are the qualifications of the investigators commensurate with the proposed research? Are the facilities and equipment adequate? If appropriate, have external cooperators been identified? Has the nature of such cooperation been described? Are the roles and advantages of involving the different investigators clearly described?
  - e. **Student Educational and Training Opportunities (10 points)**. Does the proposal contain the opportunity for student participation (graduate and/or undergraduate)?
  - f. **Technology Transfer (10 points)**. Does the proposal actively address the eventual transfer of results to user groups? Does it actively address the impact the results

could have?

4. **PARTICIPATION RESTRICTIONS:** You may not participate in the program if you have failed to submit a technical completion report for any prior project in the AWRRI program.
5. **PROGRAM FOCUS:** The purpose of the State Water Resources Research program is to address major state water resources problems by motivating and supporting research by qualified scientists from the State's colleges and universities.

The focus of our program is directed by those state priority areas addressed in **Attachment A**, which have been developed by the Institute's Council. Research proposals submitted to our program **MUST** be responsive to at least one of these priority areas. A project should not consist solely of conventional data collection, tabulation, analysis, or equipment development.

If you are in need of assistance in the development and production of your proposal, including text editing, budget preparation, and/or typing, call our office at (334) 844-4132 for an appointment. We may be able to visit with you on your campus if you are unable to come to Auburn.

6. **PERFORMANCE PERIOD:** Research projects supported by FY 2010 funds are anticipated to start March 1, 2010, and should be 12 months in duration. Projects designed to continue beyond that period must be supported by funds from subsequent fiscal year appropriations.
7. **FUNDING:** Grants from FY 2010 funds will be limited to \$25,000 for a 12-month budget period. Projects may be designed to run beyond the 12-month period provided they contain a reportable element to be included in the Institute's annual report to the granting agency. Funding for subsequent years of a multi-year project **is not guaranteed** and continuation proposals for such projects will be evaluated along with all other proposals received in a given year. Evidence of satisfactory performance will be considered in evaluating continuation proposals.
8. **COST SHARING:** The Federal authorizing legislation (P.L. 106-374) requires at least **two** non-Federal dollars for **each** FY 2010 grant dollar to be met on each grant award.
9. **NUMBER OF COPIES:** One electronic via Internet portal, one unbound signed original of your proposal should be submitted to the AWRRI. Please contact our office at 334/844-4132 or [blockdh@auburn.edu](mailto:blockdh@auburn.edu) to obtain instructions for online submission of abstract.

## **CHARGES ALLOWABLE TO FEDERAL FUNDS**

- A. Costs will be allowable in accordance with OMB Circular A-21, revised, "Cost Principles for Educational Institutions".
- B. This program is modestly funded and should not be perceived as a source of funds for acquisition of major equipment items. Non-expendable personal property (e.g., typewriters, office furniture, and computers) **may not** be purchased with grant funds. Special purpose equipment used for research, scientific, or other technical activities may be proposed for purchase if each item is identified and justified and the acquisition cost is stated.
- C. The portion of benefits paid to individuals cannot exceed the proportion of their salaries paid from the grant.
- D. **INDIRECT COSTS MAY NOT BE CHARGED AGAINST THE FEDERAL GRANT FUNDS.** The Indirect Costs normally charged against Federal grant funds should be used to meet your cost sharing requirement. The U.S. Geological Survey will accept indirect cost rates approved by your university's cognizant auditing agency in accordance with OMB Circular A-88. Applicants must provide a copy of the approved Indirect Cost Rate Agreement or other approving documentation.
- E. Travel costs are allowable subject to the conditions established in OMB Circular A-21, Attachment J, No. 43 and the travel regulations of your college or university. Travel outside the United States, its territories and possessions, and Canada is considered as foreign travel and requires advance written approval of our office and the U.S. Geological Survey.
- F. Project expenses may not be charged to the grant accounts prior to the official project start date.
- G. All FY 2010 funds must be spent or obligated within the twelve month period of the project. **NO CARRY-OVER OF FUNDS OR EXTENSIONS WILL BE ALLOWED.**

## **PROPOSAL CONTENT AND FORMAT**

TITLE PAGE. (see sample, Attachment C)

The body of each proposal (no longer than 25 pages) is to consist of 18 elements. The first

11 (A-K) constitute the synopsis (not to exceed two pages). **BEGIN A NEW PAGE WITH ELEMENT L (ELEMENTS L thru O SHALL NOT EXCEED 15 SINGLE SPACED PAGES).**

- A. Project Number. You type the heading; AWRI will add the number.
- B. Title.
- C. Focus Category. Select a maximum of three, with the most preferred category first.
- D. Keywords. Select six to eight keywords in descending order of importance, separated by commas.
- E. Duration. Month/year to month/year. Use the actual beginning and ending dates.
- F. Fiscal Year 2009 Federal Funds.

Total	Direct	Indirect
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- G. Non-Federal Funds Allocated.

Total	Direct	Indirect
-------	--------	----------
- H. Name, University and city of principal investigator(s).
- I. Congressional District of University performing the research.
- J. Identification and Statement of the major regional water problem (2 paragraphs maximum) to be addressed by the project, including explanation of the need for the research. (Who wants it? Why?)
- K. Statement of the results, benefits, and/or information expected to be gained during the initial performance period and by the end of the project, and how they will be used (2 paragraphs maximum).

**START A NEW PAGE HERE**

- L. Nature, Scope, and Objectives of the research.
- M. Methods, Procedures, and Facilities.
- N. Related research. Show by literature review and communication citations the similarities and differences of the proposed project to completed or on-going research on the same topic.
- O. Progress Review. **(Required only if you had a prior year project)**
- P. Investigator's Qualifications. Include resumes of all participating investigators. **No resume shall exceed three pages or list more than 15 pertinent publications.**
- Q. Training Potential. Estimate the number of graduate and/or undergraduate students, fields of study, graduation date, and degrees expected to result from participation in the project.
- R. Budget Form. Budget information should be included by cost categories on the attached budget form (Attachment B). Also provide a budget justification for items 3 through 7 on the budget form.
- (1) AWRRI grants from FY 2010 funds to support research projects will not exceed \$25,000.
  - (2) Cost Sharing. Federal funds provided for the Institute program will be on a cost sharing basis of two non-Federal dollars for each Federal dollar allotted. This cost sharing basis must be reflected in the budget for each proposed project.
  - (3) Indirect Costs. Federal funds made available under this program **MAY NOT** be used for support of indirect costs **but may be used to meet part of your Cost Sharing requirement.**
  - (4) Staff Benefit Costs. Staff benefits include those employer contributions (employee insurance, pension plan, etc.) which are granted in accordance with established institutional employment policies. Federal funds may be used to support benefit costs in proportion to the extent that the salary or wages to which the benefits relate are also paid from Federal funds.
  - (5) Your budget should include funds for preparation and submittal of one copy of a final technical completion report and a three or four page project synopsis for inclusion in the Institutes program report to the U.S. Geological Survey.
- S. Reporting Requirements. It is the intent of this program that the results of research be published so that others can use the information or new technology to assist in the solution of water resources problems. Researchers are encouraged to seek publication of one or more

papers in refereed technical journals, proceedings of professional meetings, and other appropriate media. A copy of those published papers will also be sent to the Alabama Water Resources Research Institute to be kept as a part of the project permanent file. **In addition, we require the submission of a synopsis and a project technical completion report.**

Guidelines for both are as follows:

- (1) Synopsis. You should provide our office with two written copies and one electronic copy of a synopsis of your research results, single-spaced and not to exceed four (4) pages, which incorporates:
  - a. A statement of the problem and research objectives
  - b. A brief explanation of the methodology used
  - c. Principal findings and their significance
  - d. A list of all publications/presentations (journal articles, manuscripts, proceedings, abstracts, theses, and reports).
  - e. A list of all students directly or indirectly supported by the project. The list should include the student name, major, degree, and date of graduation (or expected graduation date).
  
- (2) Project Completion Report. This report should have an informative abstract, a statement of the research problem and project objectives, a discussion of related research or activities, a description of methods and procedures used, the project's principal findings and their significance, conclusions, and literature citations. The report should be concise. We are asking that the report be limited to approximately 25 pages. If a report necessarily has much more than 25 pages, e.g. large data sets, this information should be submitted as an addendum to the report and will be maintained in the AWRI files. Please provide our office with one written and one electronic copy of your full report.

You should submit your synopsis to the AWRI thirty (30) calendar days after the end of the project period. The project's technical completion report is due sixty (60) days after the end of the project period.

**IF YOU HAVE ANY QUESTIONS REGARDING THESE GUIDELINES, PLEASE CALL OUR OFFICE AT (334) 844-4132.**

# MAJOR WATER RESOURCES PROBLEMS IN ALABAMA

Research projects funded in the Alabama Water Resources Research Institute's (AWRRI) program address those areas which constitute major problems not only with respect to Alabama's water resources but also regional and national water resources concerns. Alabama experiences a multitude of water quality, quantity, and management problems which cannot all be addressed at once. Therefore, the AWRRI program focuses its research and information transfer efforts in specific areas. The major water resources problems in the State of Alabama (as adopted by the Water Resources Council) are listed below.

## 1. Environmental In-Stream Flows

- A. Water is a vital feature of Alabama's natural heritage. Fish and wildlife depend on water flowing in rivers and streams to sustain riparian vegetation and wetland areas and supply the bays and estuaries along the Gulf Coast with freshwater inflows. More than any other factor, the availability of water will determine the future of fish and wildlife in our state. Initially, all of the spring flows and stream and river flows in Alabama were available as environmental flows. That has changed dramatically as more and more water has been withdrawn for use by humans or appropriated for other uses (power generation, etc.). Fortunately, nature is adaptable and can tolerate reasonable reductions in flows as a result of human use. The big questions to be answered are how much those flows can be reduced without destroying our natural heritage and how do we make sure adequate flows are maintained.
- B. More research is needed on the role of instream flows in managing Alabama's water resources, determining the level of flows that are needed to maintain habitat and promote diverse and productive aquatic environments, and ways to protect the in-stream flows necessary for environmental integrity.

## 2. Ground Water Resources and Contamination

- A. There is a need to conduct research related to both the quantity and quality of ground water. The effects of land use practices on ground water quality should be investigated, including the effects of agricultural practices; urbanization; timber harvesting; and waste disposal. There is also a need to study the fate and transport of contaminants in the ground water and to develop improved methods for ground water remediation.
- B. Increased demands on ground water supplies from agricultural, industrial and municipal uses underscore a need for improved water management and conservation. This could involve the development of more efficient irrigation techniques, development of drought resistant grasses and plants, and studies to minimize water loss through evapo-transpiration.

### 3. **Surface Water – Quantity and Quality**

- A. Water quality concerns for surface water supplies include both point-source and non-point-source contamination. Studies are needed to develop techniques to correlate land use and pollution loads from agricultural, industrial and urban non-point sources and to determine the effects of BMP's on water quantity and quality. Studies are needed to evaluate the impacts of erosion/sedimentation on surface water quality and to correlate sediment characteristics to geology, slope, and land use. Attention should be given to determining the fate of metals in stream sediment and to the development of models for predicting sediment production and transport.
- B. Studies relating to the storage and conservation of surface water supplies are needed, including studies on the feasibility of off-stream storage of abundant winter/spring flows as opposed to conventional in-stream storage.

### 4. **Management**

- A. There is a critical need to develop a comprehensive water management plan for the State of Alabama that would permit effective use of both ground and surface water resources. Work is needed on the development of improved planning and management techniques and on improved legal and institutional arrangements for management of land and water resources.
- B. Studies are needed to develop and refine water and wastewater treatment techniques, including cost-effective, low-technology water and wastewater treatment systems for individual and small community systems. Investigations into improved financial arrangements and alternatives for funding water and wastewater projects are also needed.

### 5. **Hydrology, Climatology and Hydraulics**

Increasing demands on the State's water resources will place more and more importance on the development of improved weather and hydrologic forecasting techniques. Benefits, including improved management strategies and water conservation, will accrue from more reliable forecasts of precipitation and streamflow over short-term, intermediate and long-term time periods. This category should include studies of precipitation and streamflow relationships; weather forecasting; climate modification; meteorological processes linking atmospheric water, solar energy, water use by plants, and available soil moisture; hydrologic and hydraulic modeling and processes.

**BUDGET  
WATER RESOURCES RESEARCH PROJECT  
FISCAL YEAR**

Proposed Starting Date:

Proposed Completion Date:

Project Title:

Principal Investigator(s):

<u><b>Cost Categories</b></u>		<u><b>Estimated Costs</b></u>		
		<u>Federal</u>	<u>Non-Federal</u>	<u>Total</u>
1.	Salaries & Wages			
	Principal Investigator(s)			
	No.      Man Months			
	Other Professional Staff			
	No.      Man Months			
	Graduate Student(s)			
	No.      Man Months			
	Others			
	No.      Man Months			
<b>TOTAL SALARIES &amp; WAGES</b>				
2.	Fringe Benefits			
3.	Supplies			
4.	Equipment			
5.	Subcontracts/Consultants			
6.	Travel			
7.	Other Direct Costs			
8.	Total Direct Costs			
9.	Indirect Costs			
10.	<b>TOTAL ESTIMATED COST</b>			

Project Proposal  
for  
Water Resources Research Institute Program  
under  
Section 104, Water Resources Research Act of 1984  
to the  
Alabama Water Resources Research Institute

in support of the  
Research Proposal

TITLE IN ALL CAPS

by

John/Mary Doe  
Principal Investigator  
Academic Rank  
Department Name  
School or College Name  
University Name  
Telephone ( )  
date

**ATTACHMENT D**

Sample Format for Synopsis Portion of Research Proposal\*

RESEARCH PROPOSAL

Project Number: (to be inserted by AWRRI)

Title

Focus Category: List a maximum of three categories, with the most preferred category first

Descriptors: List descriptor words, separated by commas.

Duration: From \_\_\_\_\_ To \_\_\_\_\_

Federal Funds:

Total	Direct	Indirect
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Non-Federal Funds:

Total	Direct	Indirect
-------	--------	----------

Principal Investigator(s), University, and City:

Congressional District:

Water Problem and Need for Research:

Expected Results, Benefits, Information, etc.:

\*Note: Synopsis may be single spaced and is limited to two pages. Please use letters and titles as shown on this sample.

ACID DEPOSITION	ACD
AGRICULTURE	AG
CLIMATOLOGICAL PROCESSES	CP
CONSERVATION	COV
DROUGHT	DROU
ECOLOGY	ECL
ECONOMICS	ECON
EDUCATION	EDU
FLOODS	FL
GEOMORPHOLOGICAL PROCESSES	GEOMOR
GEOCHEMICAL PROCESSES	GEOCHE
GROUNDWATER	GW
HYDROGEOCHEMISTRY	HYDGEO
HYDROLOGY	HYDROL
IRRIGATION	IG
LAW, INSTITUTIONS, AND POLICY	LIP
MANAGEMENT AND PLANNING	M&P
METHODS	MET
MODELS	MOD
NITRATE CONTAMINATION	NC
NON POINT POLLUTION	NPP
NUTRIENTS	NU
RADIOACTIVE SUBSTANCES	RAD
RECREATION	REC
SEDIMENTS	SED
SOLUTE TRANSPORT	ST
SURFACE WATER	SW
TOXIC SUBSTANCES	TS
TREATMENT	TRT
WASTEWATER	WW
WATER QUALITY	WQL
WATER QUANTITY	WQN
WATER SUPPLY	WS
WATER USE	WU
WETLANDS	WL

**KEYWORDS/DESCRIPTORS**

**A.**

1. Acid Deposition
2. Acid Rain
3. Activated Carbon
4. Activated Sludge
5. Adsorption and Exchange
6. Aeration
7. Agriculture
8. Algae
9. Alkaline Scale
10. Anaerobic Treatment
11. Animal Waste
12. Aquaculture
13. Arid Climates
14. Aquatic Plants
15. Aquifer Characteristics
16. Aquifer Parameters
17. Atmospheric Models
18. Atmospheric Processes

**B.**

19. Bacteria
20. Basalt Hydrology
21. Base Flow
22. Bays
23. Beaches
24. Benefit-cost Analysis
25. Benthos
26. Biodegradation
27. Bioindicators
28. Biological Control
29. Biological Treatment
30. Biomonitoring
31. Biotechnology
32. Birds
33. Boating
34. Blackish Water
35. Brines

**C.**

36. Cartography
37. Channels
38. Chemigation
39. Chlorination
40. Climate
41. Cloud Seeding
42. Coastal Engineering

43. Coastal Zone
44. Computers
45. Conflict Management
46. Conjunctive Use
47. Conservation
48. Contaminant Transport
49. Conveyance System
50. Cooling
51. Crop Water Use
52. Crustaceans

**D.**

53. Dairy Waste Management
54. Dams
55. Data Analysis
56. Data Storage and Retrieval
57. Decision Models
58. Demand Management
59. Denitrification
60. Desalination
61. Developing Countries
62. Disinfection
63. Distillation
64. Distribution System
65. Drainage
66. Drilling
67. Drought
68. Dynamic Programming

**E.**

69. Earth Dams
70. Economics
71. Ecosystems
72. Education
73. Energy Budget
74. Energy Use and Conservation
75. Environmental Sanitation
76. Epidemiology
77. Estuaries
78. Estuarine Modeling
79. Eutrophication
80. Evaporation
81. Evapotranspiration

**F.**

82. Fertilizers
83. Fish Ecology

- 84. Fisheries
- 85. Flood Control
- 86. Flood Plan Management
- 87. Fluid Flow
- 88. Fluid Mechanics
- 89. Fungicides

**G.**

- 90. Geochemistry
- 91. Geographic Information
- 92. Geomorphology
- 93. Geophysics
- 94. Geothermal Power
- 95. Glaciers
- 96. Great Lake
- 97. Groundwater Hydrology
- 98. Groundwater Management
- 99. Groundwater Modeling
- 100. Groundwater Movement
- 101. Groundwater Quality
- 102. Groundwater Recharge

**H.**

- 103. Hazardous Waste
- 104. Health Effects
- 105. Heat Budget
- 106. Heavy Metals
- 107. Herbicides
- 108. History
- 109. Hydraulic Structures
- 110. Hydraulics
- 111. Hydrobiology
- 112. Hydrogeology
- 113. Hydrologic Models
- 114. Hydropower
- 115. Hypothermia

**I.**

- 116. Ice
- 117. Impoundments
- 118. Indian Water Issues
- 119. Industrial Wastewater
- 120. Infiltration
- 121. Information Dissemination
- 122. Insecticides
- 123. Insects
- 124. Institutional Relationships
- 125. Instream Flow

- 126. Interbasin Transfers
- 127. Invertebrates
- 128. Ion Exchange
- 129. Irrigation
- 130. Irrigation Management
- 131. Irrigation Scheduling
- 132. Irrigation System
- 133. Isotopes

**K.**

- 134. Karst Hydrology

**L.**

- 135. Lagoons
- 136. Lakes
- 137. Land Use
- 138. Landscape Management
- 139. Land-Water Interactions
- 140. Law
- 141. Leaching

**M.**

- 142. Marketing
- 143. Marinas
- 144. Marine Resources
- 145. Marshes
- 146. Mathematical Models
- 147. Membranes
- 148. Microclimatology
- 149. Mineralogy
- 150. Mining
- 151. Model Studies
- 152. Moisture Uptake
- 153. Mountain Lakes/Streams
- 154. Multiple-Objective Planning

**N.**

- 155. Navigation
- 156. Nitrogen
- 157. Numerical Analysis
- 158. Nutrients

**O.**

- 159. Oil-Water Interfaces
- 160. Open Channels
- 161. Operation Research
- 162. Optimization
- 163. Organic Compounds

164. Osmosis  
 165. Oxidation  
 166. Ozonation
- P.**
167. Perched Water Table  
 168. Percolation  
 169. Pest Management  
 170. Pesticides  
 171. Phosphorus  
 172. Photosynthesis  
 173. Phreatophytes  
 174. Physical Chemistry  
 175. Planning  
 176. Plant Growth  
 177. Plant Pathology  
 178. Plant Stress  
 179. Plant-Water Relationships  
 180. Policy Analysis  
 181. Pollutants  
 182. Pollution Control  
 183. Ponds  
 184. Port Facilities  
 185. Powerplants  
 186. Public Health  
 187. Pumps
- R.**
188. Rainfall  
 189. Rainfall-Runoff Models  
 190. Rainfall-Runoff Processes  
 191. Range Management  
 192. Recreation  
 193. Reefs  
 194. Regulatory Permits  
 195. Remote Sensing  
 196. Reservoir Management  
 197. Reservoir Modeling  
 198. Resource Development  
 199. Resource Planning  
 200. Reverse Osmosis  
 201. Riparian Vegetation  
 202. Risk Analysis  
 203. Risk Management  
 204. River Basin Development  
 205. River Beds  
 206. Rivers  
 207. Runoff
- S.**
208. Saline Soils  
 209. Saline-Freshwater Interfaces  
 210. Salinity  
 211. Sanitary Landfills  
 212. Saturated Flow  
 213. Seawater  
 214. Sedimentation  
 215. Seismology  
 216. Septic Tanks  
 217. Sewer System  
 218. Shellfish  
 219. Shipping  
 220. Shore Birds  
 221. Shore Protection  
 222. Sludge  
 223. Snow  
 224. Socioeconomic Issues  
 225. Soil Chemistry  
 226. Soil Erosion  
 227. Soil Microbiology  
 228. Soil Physics  
 229. Soil-Water Relationships  
 230. Solar Energy  
 231. Solute Transport  
 232. Springs  
 233. Statistics  
 234. Stochastic Hydrology  
 235. Stochastic Processes  
 236. Storm Water Management  
 237. Streams  
 238. Subsidence  
 239. Subsurface Drainage  
 240. Surface Drainage  
 241. Surface-Ground Relationships  
 242. Suspended Sediments  
 243. Synthetic Hydrology  
 244. Synthetic Organics  
 245. Systems Analysis  
 246. System Engineering
- T.**
247. Thermodynamics  
 248. Tidelands  
 249. Time-Series Analysis  
 250. Tourism  
 251. Toxic Substances

- 252. Trace Elements
- 253. Trace Organics
- 254. Tropics
  
- U.**
- 255. Underground Storage Tanks
- 256. Unsaturated Flow
- 257. Urban Drainage
- 258. Urban Hydrology
- 259. Urban Planning
- 260. Urban Water System
  
- V.**
- 261. Viruses
  
- W.**
- 262. Waste Disposal
- 262. Wastewater
- 263. Wastewater Irrigation
- 264. Wastewater Treatment
- 265. Water Chemistry
- 266. Water Demand
- 267. Water Harvesting
- 268. Water Law
- 269. Water Levels
- 270. Water Quality
- 271. Water Quality Control
  
- 272. Water Quality Management
- 273. Water Quality Modeling
- 274. Water Quality Monitoring
- 275. Water Quality Standards
- 276. Water Resources Development
- 277. Water Reuse
- 278. Water Rights
- 279. Water Softening
- 280. Water Treatment
- 281. Water Treatment Facilities
- 282. Water Use Data
- 283. Water Use Efficiency
- 284. Water Use Monitoring
- 285. Watershed Management
- 286. Waves
- 287. Weather Data Collection
- 288. Weather Forecasting
- 289. Weather Modification
- 290. Weeds
- 291. Well Hydraulics
- 292. Wetlands
- 293. Wildlife Management
  
- Z.**
- 294. Zooplankton
- 295. Zoning