WATER RESOURCES PUBLICATIONS

FOR ALABAMA, 1857-1990

By Elizabeth A. Meadows and Hillary H. Jeffcoat

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MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

District Chief
U.S. Geological Survey
520 19th Avenue
Tuscaloosa, Alabama 35401

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CONTENTS

	Page
Abstract	1
Introduction	1
History	2
Surface water	2
Ground water	3
Quality of water	3
Organization of the bibliography	4
Publications listed by author	5
Cross references to publications listed by county	42
Cross reference to publications listed by areas	45
North Alabama	45
Central Alabama	45
South Alabama	45
Statewide	46
Nationwide	46
Cross reference to publications listed by subject	47
Ground water	47
Surface water	47
Springs	47
Streamflow	47
Water quality	47
Floods	48
Sediment studies	48
Ecology	48
Water use	48
Geology	48
Hydrology	48
Water availability/resources	48
Modeling	48
Sinkholes	48
Waste disposal	48
Coal mining effects	48
Cross reference to publications listed by type of publication	49
Bulletins	49
Circulars	49
Geologic investigations atlases	49
Hydrologic investigations atlases	49
Journal and symposium articles	49
Miscellaneous investigations atlases	49
Open-file reports (numbered)	49
Open-file reports (unnumbered)	49
Professional papers	49
Water resources data reports	49
Water-resources investigations reports	49
Water-supply papers	49
Other	50
Alabama Highway Department	50
Geological Survey of Alabama	50
Index	51

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ABSTRACT

This bibliography consists of a listing of water-resources publications for Alabama published since 1857 by the U.S. Geological Survey and two cooperating State agencies, the Geological Survey of Alabama and the Alabama Highway Department. The bibliography includes an alphabetical listing of publications by author, and cross-referenced indexes listed by county, general areas in the State, subject, and type of report. Types of reports included in this bibliography include: Bulletins, Circulars, Geologic Investigations Atlases, Hydrologic Investigations Atlases, journal and symposium articles, Miscellaneous Investigations Atlases, Open-File Reports, Professional Papers, Water-Resources Data Reports, Water-Resources Investigations Reports, and Water-Supply Papers.

INTRODUCTION

The U.S. Geological Survey (USGS), Water Resources Division, has experienced quite a diverse history in Alabama. Since the USGS first established an office in Alabama in the early 1920's, the Alabama District has attempted to fulfill the Division's mission "to provide the hydrologic information and understanding needed for the best use and management of the Nation's water resources for the benefit of the people of the United States."

As in many States, progress in the disciplines of surface water, ground water, and quality of water followed different paths. Prior to 1960, two separate offices existed for surface- and ground-water activities. The operation of surface-water activities was conducted from Montgomery and ground-water activities were conducted from Tuscaloosa. In addition, surface-water activities, primarily operation of gaging stations, within the Tennessee River basin in Alabama were conducted by the Chattanooga, Tennessee USGS office prior to 1948. In 1948, surface-water activities in the Tennessee River basin in Alabama were assumed by the Montgomery office. With the division-wide integration of the various discipline activities, the District office was established in Tuscaloosa in 1961. The results of investigation and data collection activities conducted by the USGS in Alabama are published in a variety of reports. The purpose of this report is to briefly document the history of the U.S. Geological Survey, Water Resources Division, in Alabama and provide a bibliography of water-resources publications from 1857 to 1990.

HISTORY
Surface Water

The earliest record of surface-water activities in the State was in conjunction with the development of hydroelectric power and river navigation. Gage readings collected from a staff gage on the Black Warrior River at Tuscaloosa from 1888 to 1905 comprise the first systematic observations of river stage to be collected in the State. During the early years, work was coordinated through regional offices of the U.S. Geological Survey Hydrologic Branch. In 1904, Maxey R. Hall coordinated data collection activities as district engineer for the southern States, assisted by "local hydrographers." The Federal-State cooperative program had its beginning in Alabama during this period. Dr. Eugene Allen Smith, State Geologist of Alabama, reported in 1896 of the beginning of cooperation with the U.S. Geological Survey on "the water powers of the State."

A multistate USGS district which included Alabama, Louisiana, and Mississippi was formed in 1928. The district boundaries generally conformed to those of the U.S. Army Corps of Engineers because a majority of the work consisted of supplying data to the Corps for inclusion in its reports. By 1947, individual districts had been formed in each of these three States. Much of the early development of the State's water resources occurred in the early 1930's which was marked by the completion of locks and dams on the Tombigbee and Black Warrior Rivers and completion of the dams and generating plants on the Coosa and Tallapoosa Rivers. The gaging station network during this era consisted of 12 stations. Due to the economic conditions in the early to mid-thirties and other factors, the gaging station network remained fairly stable during this period.

The passage of the Flood Control Act in 1936 and the make-work policy of the Works Progress Administration (WPA) in the late 1930's had a profound impact on the gaging station network in Alabama. During the period 1936-40, 39 stations were established or re-established. During the years that followed, the data network would reach a peak of 116 stations in 1957 and decline to a low of 64 stations in 1971. Probably the most important hydrologic event of this period was the severe drought of the mid-fifties that affected the entire State and much of the southeast. In 1988, the gaging station network consisted of 92 continuous record stations, 132 partial record or miscellaneous stations, and 27 stage only stations.

In addition to activities associated with the gaging station network, regional hydrologic studies were conducted. Beginning in about 1950, regional streamflow compilation reports were published. These reports were followed by statewide reports on regionalization of high and low streamflow. The first flood frequency report for Alabama was published in 1954 with subsequent reports in 1973 and 1985. These and other surface water reports are compiled in another section of this report.

Ground Water

The U.S. Geological Survey's ground-water activities in Alabama began with a cooperative program with the Geological Survey of Alabama in 1898. This cooperative program consisted of a modest effort to collect records of wells and springs in the State. This early work was pioneered by Alabama's second State Geologist, Dr. Eugene Allen Smith. The ground-water activities of the two agencies intensified in 1943 in response to major questions regarding location of water supplies for expanding military installations and war industries. Major gaps were identified in the basic information on the geology and ground-water resources of the State. To begin filling these gaps, the first observation well network in Alabama was started in the early 1940's. By 1960, 85 percent of the network wells were instrumented with continuous recording equipment. As the population centers of Huntsville, Montgomery, and Mobile expanded, new demands on the ground-water resources were made. In addition, increases in the use of ground water by Alabama industry and farming further stressed the need for adequate information on the occurrence, quantity, quality, and availability of ground water.

In response to this critical need, a major water-resources program was initiated through the cooperative program with the Geological Survey of Alabama in 1960. This program consisted of regional reconnaissance ground-water studies and detailed county water-availability studies. During the next two decades, these county studies were completed at a rate of about one county study per year. A major product of these studies was a statewide geologic map.

In the seventies and eighties, new program thrusts were identified. Ground-water modeling studies were initiated to assess the effects of present and potential demands for water on the State's aquifers. Also, multi-discipline studies were conducted to evaluate the effects of strip mining of coal in Alabama. During the 1980's, a major highlight of the District program was Regional Aquifer-System Analysis studies. The objective of these studies was to define the geologic, hydrologic, and geochemical framework of large regional aquifer systems. Many publications resulting from these studies are compiled in another section of this report.

Quality of Water

The history of the U.S. Geological Survey's quality of water activities in Alabama is rather brief compared to the history of other activities. In 1962, the Water Quality Branch established a field headquarters in Tuscaloosa. Prior to that time, water-quality activities were directed and chemical analyses were provided by laboratories in Louisiana, Arkansas, and Florida. Water quality problems emerged in the State in the late 1940's when the State Water Improvement Commission conducted a water pollution survey. In the early 1950's, studies in the Birmingham and Mobile areas included the collection of water-quality data as well as surface- and ground-water data. The county studies, previously mentioned, also included a segment on water quality. The current water-quality program includes 6 sites that are part of the National Stream Quality Accounting Network, 2 sites that are in the National Hydrologic Benchmark Network, 28 sites in 3 lake studies, 3 sediment sampling stations, 1 acid rain site, and 22 continuous temperature and specific conducations stations.

ORGANIZATION OF THE BIBLIOGRAPHY

The publications are listed in the following section of this report in alphabetical order by author. A number has been assigned to each publication in the author's listing. These numbers are cross referenced in four auxiliary listings to assit the reader in locating a particular publication. The auxiliary listings are:

- By county.
- By areas (North, South, Central, Statewide, and Nationwide).
- By subject (coal mining effects, ecology, floods, geology, ground water, history, hydrology, modeling, sediment studies, sinkholes, springs, streamflow, surface water, waste disposal, water availability, water quality, water use).
- By type of publication (Atlases, Bulletins, Circulars, Open-File Reports, Professional Papers, Water-Data Reports, Water-Resources Investigations Reports, and Water-Supply Papers, and other).

Some of the more recent publications listed in this bibliography may be availabile for inspection from the Alabama District Office of the U.S. Geological Survey. Inquiries concerning available publications can be made by telephone (205) 752-8104.

Many of the listed publications are out of print and can be obtained only through the National Technical Information Services (NTIS) or from the Survey Text Distribution Center. These offices can be contacted as follows:

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U.S. Department of Commerce
5285 Port Royal Road
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CROSS REFERENCE TO PUBLICATIONS LISTED BY COUNTY

AUTAUGA
40 45 217 225 227 409 428 521 524

BALDWIN
20 21 193 210 227 282 329 330 374
377 418 419 420 421 423 424 425 426

BARBOUR
40 42 44 45 52 126 187 210 270
305 318

BIBB
66 67 184 217 225 227 281 329 330

BLOUNT
24 113 114 184 489

BULLOCK
40 42 44 45 52 187 254 256 410
411

BUTLER
52 53 125 210 234 320 379 380

CALHOUN
144 145 148 184 245 353 433 512 513
514 515

CHAMBERS
5 72 73 186

CHEROKEE
24 58 60 149 184 489

CHILTON
40 41 43 45 46 47 48 111 112
209 214 216 217 225 227 235 292 329
330 428

CHOCTAW
51 97 98 161 210 314 454 455 471
472 476

CLARKE
62 63 98 161 210 232 454 455 474

CLAY
5 78 186 454

CLEBURNE
5 74 76 186

COFFEE
52 210 427 479 481

COLBERT
26 141 142 162 163 164 184 202 212
217 279 329 330

CONECUH
52 53 210 373 381

COOSA
5 186 243

COVINGTON
52 53 210 245 271 272 455 478 480

CRENSHAW
40 45 52 53 210 264 265

CULLMAN
115 116 184 329 330 460

DALE
50 52 210 306 311 417 427 434

DALLAS
40 41 42 44 45 209 214 216 217
225 227 245 281 303 329 330 431 432

DEKALB
24 184 489

ELMORE
40 45 239 240 293 329 330 428

ESCAMBIA
36 37 38 52 53 210 255 455

ETOWAH
24 54 55 146 184 489

FAYETTE
184 194 460

FRANKLIN
26 156 184 334 335 336 337

GENEVA
52 128 210 413 427 430

GREENE
39 40 41 42 43 44 45 46 47
48 99 198 199 209 214 216 217 225
227 232 235 299 301 329 330 504

HALE
40 42 44 45 93 95 281 455

HENRY
52 210 307 315 427

HOUSTON
52 64 127 210 214 245 427 436 473

JACKSON
24 47 48 69 184 209 214 216 217
225 227 235 329 330 489

JEFFERSON
12 34 35 68 141 155 184 195 196
277 310 312 329 330 353 366 385 415
443 475

LAMAR
1 40 45 217 225 460

LAUDERDALE
26 162 165 166 184 212 328

LAWRENCE
26 70 168 169 184 212

LEE
40 45 186 244 245 435

LIMESTONE
26 88 184 212 259 260 263 527

LOWNDES
40 42 44 45 52 320 407 428
522 525

MACON
40 42 44 45 109 187 217 225 227
329 330 408

MADISON
22 23 25 26 130 133 141 142 170
184 212 214 216 221 228 245 247 248
249 250 251 276 285 286 287 329 330
394 395 396 399 400 499 500

MARENGO
40 42 44 45 99 203 210 232 269
304 313 316 319 354 364 365 462

MARION
65 167 184 221 329 330 460

MARSHALL
24 150 152 184 397 398 489

MOBILE
15 16 17 18 19 20 49 143 188
210 252 274 282 329 330 350 375 378
386 422 452 455

MONROE
52 53 177 178 179 210 225 227 329
330 414 429

MONTGOMERY
39 40 41 42 44 45 204 205 214
216 217 225 227 245 291 295 329 330
362 371 372 428 523 526

MORGAN
26 71 100 101 102 184 212 217 329
330

PERRY
40 42 44 45 281 376 382

PICKENS
39 40 42 44 45 92 99 217 225
227 296 302 329 330 364 503 505 506

PIKE
40 45 52 187 210 245 439 441

RANDOLPH
5 186 241 242

RUSSELL
40 42 44 45 52 110 187 412

ST. CLAIR
56 57 153 184 353

SHELBY
184 353 361 440

SUMTER
40 42 44 45 94 96 99 275 278
365 454 455

TALLADEGA
59 61 147 184 329 330 353

TALLAPOOSA
5 75 77 186

TUSCALOOSA
39 41 80 81 99 103 151 174 175
176 184 197 200 214 216 217 225 227
232 267 268 298 300 329 330 333 341
444 447 502

WALKER
184 332 460 508

WASHINGTON
98 161 210 317 455 477

WILCOX
129 210 226 229 230 231 232 233 281
329 330

WINSTON
184 460 507

CROSS REFERENCE TO PUBLICATIONS LISTED BY AREAS

NORTH

1	22	23	24	25	26	54	55	56	57	58	60
65	69	70	71	74	76	88	100	101	102	113	114
115	116	130	133	144	145	146	148	149	150	152	153
156	162	163	164	165	166	167	168	169	170	184	185
189	190	191	194	202	206	212	219	228	247	248	249
250	251	260	263	276	279	280	285	286	287	328	332
335	336	353	367	368	369	394	395	396	397	398	399
400	433	460	489	499	500	507	508	512	513	514	515
516	527										

CENTRAL

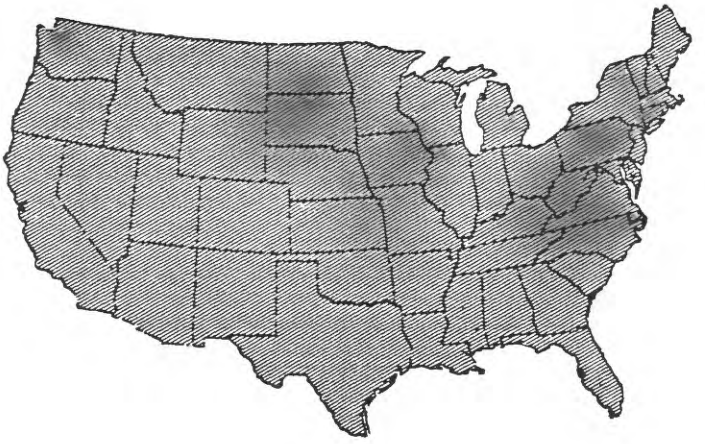
5	12	34	35	46	49	59	61	66	67	68	72
73	75	77	78	80	81	92	93	94	95	96	99
103	111	112	121	147	151	155	174	175	176	185	186
189	190	191	195	196	197	198	199	200	203	206	239
240	241	242	243	244	267	268	269	275	277	280	281
292	293	296	297	298	299	300	301	302	303	304	310
312	313	316	319	333	339	340	341	342	353	354	364
365	366	367	368	369	376	382	385	409	415	416	428
431	432	435	443	444	445	447	462	471	472	474	475
502	503	504	505	506	516	521	524				

SOUTH

15	16	17	18	19	20	21	36	37	38	50	51
52	53	62	63	64	82	83	91	97	98	109	110
122	123	125	126	127	128	129	143	161	177	178	179
187	188	192	193	204	205	207	218	226	229	230	231
232	233	234	252	254	255	256	264	265	270	271	272
273	274	282	291	295	305	306	307	311	314	315	317
318	320	334	337	345	350	352	355	361	362	363	371
372	373	373	374	375	377	378	379	380	381	386	401
407	408	410	411	412	413	414	417	418	419	420	421
422	423	424	425	426	427	428	429	430	434	436	439
440	441	448	455	461	473	476	477	478	479	480	481
518	519	522	523	525	526	528	529				

STATEWIDE

2	3	4	6	7	8	10	11	13	40	79	90	108	120	124	131	132	134	136
137	138	139	140	141	142	154	157	158	159	160	171	180	181	182	183	201	208	210
211	213	216	217	220	221	222	223	224	225	227	235	253	266	278	283	294	308	321
322	323	324	325	326	327	329	330	331	338	343	344	347	348	349	356	357	358	359
360	387	388	389	390	391	392	393	437	438	446	449	450	453	465	466	467	469	470
483	484	485	488	490	491	492	493	494	495	496	497	498	510					



NATIONWIDE

9	14	29	30	31	32	33	39	41	42	43	47	48	84	89	104	105	106	107
117	118	119	135	172	209	214	216	217	225	227	236	237	238	245	246	257	258	284
288	289	290	309	330	351	370	383	384	402	403	404	405	406	442	451	452	457	458
459	463	464	465	466	468	482	486	487	495	496	497	498	501	509	511			

CROSS REFERENCE TO PUBLICATIONS LISTED BY SUBJECT

GROUND WATER

3 5 24 26 27 28 37 38 39 40 41 42 43 44 45 46 47 48 50
51 52 53 55 57 60 61 83 85 90 97 98 99 100 102 118 121 161 162
163 164 166 169 178 179 184 185 186 187 188 192 203 204 205 206 207 208 209
210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228
229 230 233 234 235 245 247 248 249 250 257 258 259 260 263 267 268 277 281
282 319 326 327 329 330 331 333 334 336 337 350 352 353 359 360 362 385 386
387 388 389 390 391 392 393 394 395 396 397 400 401 407 408 409 411 412 427
428 433 438 442 443 445 446 449 450 451 452 453 457 458 459 460 461 462 463
465 466 467 470 471 472 488 490 491 492 493 494 496 498 501 502 503 506 510
514 515

SURFACE WATER

2 4 10 11 13 14 29 30 32 33 70 71 79 80 81 82 92 106 109
110 122 123 124 131 132 134 135 136 137 144 145 146 147 148 149 150 152 153
154 156 174 175 176 180 182 197 198 199 200 201 202 245 252 254 255 256 269
270 271 272 273 275 283 292 293 328 339 340 341 342 344 345 346 366 367 368
369 370 383 387 388 389 390 391 392 393 403 415 416 417 444 445 447 454 456
484 485 486 487 488 490 491 492 493 494 497 499 500 521 522 523 524 525 526
527

SPRINGS

141 142 161 162 210 248 469 511 512

STREAMFLOW

10 11 12 13 31 123 124 133 136 137 158 171 180 181 183 294 296 297 298
299 300 301 302 303 347 363 364 365

WATER QUALITY

2 3 4 9 14 27 40 79 80 81 104 118 119 131 132 133 135 157 159
160 162 172 173 176 184 201 207 210 215 218 222 223 233 236 245 249 250 280
281 282 345 356 359 387 388 389 390 391 392 393 444 445 456 485 488 490 491
492 493 494 496 498

FLOODS

7 8 15 16 17 18 19 20 21 68 107 108 120 138 139 140 143 151 155
193 195 253 274 291 295 321 322 323 324 325 338 343 348 418 419 420 421 422
423 424 425 426 482 483 528 529

SEDIMENT STUDIES

80 81 84 175 447

ECOLOGY

238

WATER USE

6 83 89 105 117 224 246 266 284
288 289 290 349 516 517 518 519

GEOLOGY

5 22 23 24 25 26 34 35 36 38 49 52 53 54 56 57 58 59 60
63 64 65 86 88 91 93 94 95 96 97 98 99 100 101 102 103 115 116
130 162 164 165 166 167 168 169 170 173 177 178 184 185 186 187 188 203 204
205 206 207 210 211 212 213 218 219 222 225 226 229 230 231 232 233 234 247
249 250 251 258 260 261 262 263 264 268 276 278 279 281 282 285 286 287 304
305 306 307 313 319 320 332 333 334 335 336 337 353 354 355 357 361 362 371
372 373 374 375 376 379 398 399 401 410 413 414 427 428 431 432 433 434 437
439 443 448 449 450 453 454 455 457 458 459 460 462 469 471 473 474 476 477
478 481 501 504 505 506 507 508 509 513 514 515 516 517 518 519 520

HYDROLOGY

22 23 24 25 26 33 52 53 91 98 99 157 159 160 170 186 187 188 191
237 275 276 281 282 285 286 287 339 340 353 355 356 357 366 367 368 369 402
427 428 433 434 443 451 460 495 496 497 498

WATER AVAILABILITY/RESOURCES

1 51 52 55 61 62 65 66 67 69 70 71 72 73 74 75 76 77 78
87 92 93 94 95 96 105 109 110 111 112 113 114 115 116 117 125 126 127
128 129 144 145 146 147 148 149 150 152 153 156 161 182 194 196 197 198 199
200 202 222 224 228 233 239 240 241 242 243 244 260 263 265 268 276 311 314
315 316 317 318 319 328 332 333 334 336 337 352 358 377 378 380 381 382 385
386 404 405 406 407 408 409 411 412 429 430 431 432 435 436 440 441 468 472
479 480 499 500 503 506 507 514 515 521 522 523 524 525 526 527

MODELING

121 189 190

SINKHOLES

212 308 309 310 312 464 489

WASTE DISPOSAL

80 351 384 402

COAL MINING EFFECTS

157 159 160 191 201 366 367 368

CROSS REFERENCE TO PUBLICATIONS LISTED BY TYPE OF PUBLICATION

BULLETINS
454

CIRCULARS
8 9 29 30 84 89 106 117 119 133 236 237 238 246 288 289 290 309 338 351 383 385 386 402 403 404 405 437 468 486 487

GEOLOGIC INVESTIGATIONS ATLASES
261 262 399

HYDROLOGIC INVESTIGATIONS ATLASES
14 15 16 17 18 19 20 21 33 85 104 118 258 269 270 271 272 273 406 418 419 420 421 422 423 424 425 426 528 529

JOURNAL AND SYMPOSIUM ARTICLES
44 46 177 192 203 206 207 218 219 221 224 234 235 248 464 501 512

MISCELLANEOUS INVESTIGATIONS ATLASES
34 35

OPEN-FILE REPORTS - NUMBERED
10 81 82 83 122 123 124 131 134 139 143 154 155 157 158 159 160 170 175 176 190 191 193 274 275 280 284 291 292 293 295 296 297 298 299 300 301 302 363 364 365 367 368 438 445 446

OPEN-FILE REPORTS - UNNUMBERED
1 7 50 51 66 69 70 71 73 74 75 95 96 109 110 111 113 115 137 148 149 150 174 179 199 200 208 213 222 240 241 247 250 256 371 432 485 489 499 521 522 523

PROFESSIONAL PAPERS
27 28 86 87 107 173 355 443 456 511

WATER RESOURCES DATA REPORTS
387 388 389 390 391 392 393 484 488 490 491 492 493 494

WATER-RESOURCES INVESTIGATIONS REPORTS
24 26 53 80 91 97 98 99 180 186 187 188 201 281 282 294 303 321 322 323 325 353 354 366 369 427 428 433 434 444 447 457 458 459 460 509 516 517 518 519 520

WATER-SUPPLY PAPERS
13 31 32 39 41 43 47 48 105 141 172 182 189 205 209 214 217 225 227 245 257 283 330 352 384 442 449 450 451 463 465 466 467 482 483 495 496 497 498

OTHER
42 49 181 211 215 220 223 461

ALABAMA HIGHWAY DEPARTMENT
120 138 183 252 253 308 324 343 344 346 348

GEOLOGICAL SURVEY OF ALABAMA

ATLAS SERIES
12 35 68 244 285 286 287 416 417 431

BULLETIN
11 38 40 57 60 61 102 121 142 169 171 178 204 210 228 260 278 336 337
342 345 347 350 397 412 469 470 503 506 507

CIRCULAR
2 3 90 136 140 144 212 277 288 310 327 338 356 361 396 401 502

COUNTY REPORTS
164 166 230 249 263 319 333 341 472 514

INFORMATION SERIES
4 6 37 55 79 100 125 126 127 128 129 130 162 163 195 226 232 233 259
266 267 268 326 329 331 334 349 357 358 360 362 394 395 400 407 408 409 411
462 515

MISCELLANEOUS PAPERS
452

MONOGRAPH
453

OPEN-FILE
22 23 25 185 276 510

SPECIAL MAP
36 54 56 58 59 62 63 64 65 67 72 76 77 78 88 92 93 94 101
103 112 114 116 132 145 146 147 151 152 153 156 165 167 168 194 196 197 198
202 229 231 239 242 243 251 254 255 264 265 279 304 305 306 307 313 314 315
316 317 318 320 328 332 335 359 372 373 374 375 376 377 378 379 380 381 382
398 410 413 414 429 430 435 436 439 440 441 448 455 471 473 474 475 476 477
478 479 480 481 500 504 505 508 513 524 525 526 527

SPECIAL REPORT
5 45 52 161 184 339 340

INDEX

Page

Adams, D.B. 35
Alverson, R.M. 5
Arcement, G.J. 23
Atkins, J.B. 27
Aucott, W.R. 36
Averett, R.C. 7
Avrett, J.R. 5,23,26,29,30, 31,34,35,38

Bailey, B.L. 29
Baker, Jack 5
Baker, R.M. 5
Barnes, H.H., Jr. 5
Becker, Edith 12
Biesecker, J.E. 5
Billingsley, G.A. 31
Bingham, R.H. 5,27,30
Blakey, J.F. 5
Bohman, L.R. 5,6,25,33,34
Bossong, C.R. 6,17,23
Boswell, E.H. 6,7,10
Britton, L.J. 7
Brown, Eugene 31
Bue, C.D. 7
Burks, J.H. 40
Busby, M.W. 7
Butts, Charles 7
Byrd, F.D. 31

Cagle, J.W., Jr. 7
Carlston, C.W. 7,8
Carroon, L.E. 5,29
Carter, R.W. 8
Castleberry, R.D. 8,34
Causey, L.V. 8,9,15,16,23,40
Causseaux, K.W. 9
Chandler, R.V. 9,10,21
Chase, E.G. 10,31
Cherry, R.N. 10
Christensen, R.C. 39
Clarke, F.E. 21
Cobb, R.H. 34,35
Cole, E.F. 10
Cole, P.W. 31
Colson, B.E. 10,23

Page

Cooper, H.H., Jr. 8
Copeland, C.W. 26,29
Crownover, J.E. 10,11
Culbertson, J.K. 10
Curtis, W.F. 10
Cushing, E.M. 6,10

Daniel, T.W. 11
Davis, G.H. 11
Davis, M.E. 11,18,29,34
Dean, Lewis 23
DeJarnette, S.S. 11,29,40,41
Dodson, C.L. 11,12
Downing, H.T. 21
Doyle, F.L. 6
Drahovzal, J.A. 29
Drennen, C.W. 12,27
Duncan, A.C. 29
Durfor, C.N. 12
Durum, W.J. 12
Duvall, T.R. 31

Edelsen, G.W., Jr. 12
Ellard, J.S. 9,12

Faust, R.J. 12
Faye, R.E. 36
Ferreira, R.F. 7
Feth, J.H. 12,13
Ficke, J.F. 13
Floyd, B.L. 7

Gamble, C.R. 13
Gardner, R.A. 10,13,29
Geological Survey of Alabama ... 13
German, E.R. 13,14,29
Geurin, J.W. 37
Giles, I.A. 31
Goddard, J.E. 32
Golden, H.G. .. 23,26,30,31,34-36,38
Green, M.E. 15
Growitz, D.J. 35
Guy, H.P. 14

Page

Hains, C.F. 14
Hall, B.M. 14
Hall, M.R. 14
Hannum, C.H. 14
Hanshaw, B.B. 21
Harkins, J.R. 9,12,14,15,18,27,35,41
Harper, R.M. 15
Harris, H.B. 16,24
Harris, W.F., Jr. ... 6,9,11,12,15,16, 22,34,40
Hastings, E.L. 11
Hawkinson, R.O. 13
Hayes, E.C. 16
Heidel, S.G. 12
Hem, J.D. 12,16
Hill, T.J. 17,30
Hosman, R.L. 6,10
Hubbard, E.F. 16
Hudson, J.W. 41
Hyde, L.W. 26

Ivey, J.B. 16,27,31

Jeffcoat, H.H. 17,24
Jefferson, P.O. 9,11,12,17,22, 27,31,40
Jennings, M.E. 17
Johnson, L.C. 36
Johnson, W.D., Jr. 17

Kam, William 35
Kammerer, J.C. 21
Kidd, R.E. 17,18,32,40
King, F.D. 18
Knight, A.L. 11,14,15,18,26,27
Knowles, D.B. 18,27

Lambert, T.W. 16
LaMoreaux, P.E. 8,17,19,20,22,26 29,30,37
Langdon, D.W., Jr. 36
Lanphere, C.R. 20,21,37
Law, L.R. 35
Leifeste, D.K. 5,21
Leopold, L.B. 5,21

Page

Lines, G.C. 9,10,21,35
Lohr, E.W. 21
Long, A.T. 16
Love, S.K. 21

MacCary, L.M. 7
MacKichan, K.A. 21
Mallory, M.L. 36,40
Malmberg, G.T. 21,22,32
McCain, J.F. 9,22,26,30,34,35,38
McGuinness, C.L. 22
McMaster, W.M. 16,22
McWilliams, R.G. 22,23
Meadows, E.A. 35
Mettee, M.F. 23
Miller, J.D., Jr. 23,27
Miller, J.F. 12
Ming, C.O. 23,25
Ming, E.G. 23,31
Moffett, T.B. 14,23
Monroe, W.H. 23
Moore, G.K. 7,15,16,24
Mooty, W.S. 5,17,24
Moreland, R.S. 8
Moser, P.H. 23,24,39
Murray, C.R. 24
Myers, B.M. 31

Nelson, G.H., Jr. 14,23-25
Newton, J.G. 7,9,18,20,22, 25,26,30,34,37,38

Olin, D.A. 15,26,27
O'Rear, D.M. 15,18,27,37,40,41

Patterson, J.F. 36
Paulson, Q.F. 27
Peace, R.R., Jr. 16,27
Peacock, B.S. 11
Pearman, J.L. 31
Peirce, L.B. 28
Peterson, C.G.B. 28
Piper, A.M. 28
Planert, Michael .. 18,28,29,35,40,41
Powell, W.J. 26,29,31

Page

Pritchett, J.L., Jr. 28,35
Psinakis, W.L. 25,29
Puente, Celso 30

Rainwater, F.J. 30
Reade, H.L., Jr. 18,29,30
Reed, P.C. 30,31
Reeves, E.B. 24
Rickert, D.A. 31,32
Rima, D.R. 31
Robinson, W.H. 31
Robinson, W.J. 31
Rollins, H.C. 31

Sanford, T.H., Jr. 11,22,32
Scarbrough, L.W. 26
Scarbrough, Leon 32
Schneider, W.J. 32,37
Scott, J.C. 5,6,8-10,18,21-23, 29,30-35,38
Sedberry, F.C. 23,31
Shamburger, V.M., Jr. 35
Signor, D.C. 35
Simpson, T.A. 35
Slack, L.J. 35
Smith, E.A. 36
Somers, W.P. 5
Sparkes, A.K. 11,29,36,40
Speer, P.R. 10,36
Spieker, A.M. 31,32

Page

Stricker, V.A. 36
Stricklin, V.E. 36
Stringfield, V.T. 37
Sutcliffe, Horace, Jr. 20,26,27
Swindel, G.W., Jr. 20,27

Thomas, H.E. 37
Toulmin, L.D. 20,26,37
Tucker, J.W. 31,38
Turner, J.D. 26,38

U.S. Geological Survey 38,39

Vanlier, K.E. 39

Wahl, K.D. 9,27,39,40
Wait, R.L. 40
Walter, G.R. 40
Waring, G.A. 40
Warman, J.C. 40
Warren, W.M. 16
West, L.R. 16,31
Whitman, H.M. 34
Williams, J.S. 29,36,40,41
Williams, M.R. 37
Willmon, J.R. 9,12,27,31,41
Wilson, K.V. 12,41
Wood, L.A. 11