NORTH CAROLINA

DEPARTMENT OF CONSERVATION AND DEVELOPMENT

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Information Circular 18

THE FORCE OF GRAVITY AT SELECTED LOCALITIES IN NORTH CAROLINA

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RALEIGH

1963

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INTRODUCTION

Since the publication of the Bouguer gravity map of North Carolina[1], numerous inquiries have been received by the Geology Department of the University of North Carolina at Chapel Hill from industries, government, and schools for specific values of the earth's gravitational field at selected localities. In response to these requests the data for gravitational acceleration at 220 locations in North Carolina are being released.

As much as possible the accompanying list arranged alphabetically according to counties, consists of gravity stations established in cities and villages. When possible three stations are presented for each county; however, sometimes only two, (or even only one), stations are listed for a county. In such cases the other stations not listed, were located in a place not readily accessible to the public; hence, they were omitted. I believe that this list will suffice for nearly all needs; however, if additional data are required, the present writer will be pleased to furnish upon request such additional information as is available.

Whenever possible, each station was placed at a known geographic position or elevation, such as a bench mark, standard rivet, or a railroad track in front of a station. For this reason, each gravity station can be easily relocated, and the exact elevation recorded for future computations. Where gravity values were not obtained at a point of known elevation, height above sea level was determined by a Paulin altimeter which could be read to the nearest foot. For the purposes of this paper, elevations are listed for

1. Mann, Virgil I., 1962, Bouguer Gravity Map of North Carolina, SOUTHEASTERN GEOLOGY, Vol. 3, p. 207-219.

general information for minor computations; they are strictly a supplement to the more important gravity data.

All gravity readings were taken with a Worden gravimeter and compared to the known value at Chapel Hill located by Dr. George P. Wollard in 1956. A gravity meter is an instrument used for measuring relative gravity values. Hence, in order to establish absolute gravity values, a tie must be made with a relative meter between a station where "g" is known and the unknown station. The known station for the state, hence, was that located at Chapel Hill; the value of the Chapel Hill station was established through a tie with the known station at the Commerce Building in Washington, D.C., with the geodetic gravity meter, Worden #10.

A grid of stations in the state was located by Virgil I. Mann with Worden meter #14, in 1959, and all these were tied to the Chapel Hill Station. The remainder of the stations were located by graduate students at the University of North Carolina Geology Department with Worden meter #121. Each of these in turn were tied to the grids established earlier, and thus, all values were made absolute. The work was conducted under the sponsorship of the Geology Department of the University of North Carolina, and paid for by National Science Foundations Grants Number NSF G-5042, and NSF G-13359. Most of the stations in the Coastal Plain were recorded by Lee Fournier, and in the Piedmont by Frank Zablocki, Ralph Guidroz, Ben Morgan, and Dale Glover. In the mountains most of the stations were located by Floyd Ackerman, Dale Glover, and Kenneth Walker. Later regional cross checking of this work was done by Virgil I. Mann, and at the time of publication, most of the stations in the state appear to me to be evaluated properly and those presented are correct.

Values for "g", the gravitational acceleration, are given to the fourth decimal place, which represent .1 milligal. (In magnitude a milligal is equi-

valent to a millidyne). The instruments used could be read to an accuracy of .01 milligal, but because of a great number of possible small errors in reading which could accumulate to more than .03 milligals, the nearest .1 milligal value is offered. This should suffice, because except for the most delicate computations, "g" values accurate to only 1 milligal are most satisfactory. Those interested in additional information may write for it to the Department of Geology, University of North Carolina, Chapel Hill, N.C.

The tables are arranged alphabetically according to counties. Column 2 contains the name of the village or city in each county where the station is located. Next is a rather complete field description of the location of the station. Most stations can be related to a bench mark, (BM K 34, or USCGS, or USGS, etc.); rivet, (Std. Rvt.); or top rail at a railroad station (Top Rail RR); however, some were located at courthouses, banks, hotels, churches, schools, and even at road intersections. The least recoverable are the road intersections. Most buildings, even though abandoned usually can be located for many years. To destroy a mark of known elevation is a federal offense; hence, most bench marks can be located for 50 years or more.

Elevations are given in feet above mean sea level. The value presented is that of the station, and not always the same value as that of the bench mark. Sometimes the bench mark is embedded in the side of a building, but the reading had to be taken on the ground beside the building. In such cases differences of 5 feet or more could be noted between the station elevation and the bench mark elevation.

I trust that these stations will be of value to local scientists and to classes in chemistry, earth science, physics, astronomy and mathematics. Needless to say, it will serve as a center for local gravity surveys by companies in search of mineral resources in the state. The industrial companies

have staffs trained to use this information; however, many teachers of high schools have not thought about this subject for some time. Therefore, some general remarks might serve to remind those of the details necessary for using these data.

Teachers who are attempting to establish the value of "g" at their school by pendulum experiments, will find that the values given in these tables are far more accurate than they can determine in the laboratory. A normal pendulum station experiment will be accurate to about 4 places, whereas these data in the tables are accurate to 7 places. Hence, in areas where topographic relief is slight, the figure given here might be transferred to another part of town which is at approximately the same elevation without too great an error. However, in mountainous sections of the state, a similar transfer could introduce a significant error. A correction should be made to the known reading for such a transfer. Further, corrections should be made if the reading is transferred from the ground floor to the second or third floor. For ease of computation, the following generalities are given:

If the position of the station is not changed, but elevation is increased (such as merely going up in an elevator in a building), the value of "g" will decrease at a rate of .09 milligals/foot. Thus, in a building 30 feet high, the value of "g" will be .09x30, or 2.7 milligals (.0027 gals) less at the top of the building than it is at ground floor.

If, however, one wished to transfer the value from one location to another, he may do this by estimation with reasonable confidence, provided he uses a general value of .06 milligals/foot decrease for each foot he raises the station. Such a value includes the decrease of gravity of .09 milligals/foot noted above, as well as the increase of gravity caused by the attraction of the underlying rock mass. This second factor was not important when we

were concerned only with elevation; however, it does become important if we consider the strong pull caused by a rock mass very close to our instrument. Actually the value we use depends upon the type of rock, however, the most common value used for general computation is .03 milligals/foot, with a sign opposite that of the elevation factor. Hence, the combined value for both elevation and rock most commonly used is .06 milligals/foot. This value is to be subtracted from the measured gravity reading if the elevation of new station is higher than the measured station. Thus, for example, if you transferred the value "g" from where it was recorded at a Post Office to the ground floor of the schoolhouse, and the school were 25 feet higher, then you must subtract 25x.06 or 1.5 milligals (.0015 gals), from the value recorded at the Post Office. Once you have the new value in the school, then it is an easy matter to transfer this to any floor of the school by using the .09 value as described above.

With the above factors, many problems in Earth Science and Physics classes may be set up for class computations. Further, experiments may be worked out and checked with the data given in the tables.

Thus, the information listed in the following tables can be used by teachers to strengthen classroom work in Earth Science and Physics as well as be used by government and industry to assist in locating mineral resources in the state.

LIST OF GRAVITY STATIONS

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals)
1. ALAMANCE	Graham	Top rail opp. RR Sta.	656	979.8477
	Burlington	RR Sta. opp top rail	663	979.8451
	Mebane	RR blinker, NE cor of Sta. at (BM, RV560)	677	979.8472
2. ALEXANDER	Taylorsville	Alexander County Courthouse yard at Bm Q86	1247	979.6809
	Hiddenite	Hwy. 90 at base of stop sign on traffic isl near town sign	1146	979.6945
3. ALLEGHANY	Sparta	County Courthouse at BM Y87 1935	2939	979.6061
	Stratford	Jct. hwy 221 & S. rd. NE cor of jct.	2609	979.6274
4. ANSON	Wadesboro	BM Y50 in bldg. across fr Seaboard RR sta	429	979.7284
	Pee Dee	BM (F52) 90' W of Seaboard Air-line Rwy. Sta at crossing of St. Hwy. 802	237	979.7554
	Ansonville	Above BM R50 at RR overpass	348	979.7373
5. ASHE	Jefferson	Ashe County Courthouse, base of frt steps, in frt of door leading to hwy 221	2943	979.6102
	Warrensville	At jct hwy 88 and hwy 194, by hwy marker	2753	979.6239
	Clifton	At jct of hwy 88 & Copeland Rd., 100' S of bridge over N. Fork New R.	2808	979.6141
6. AVERY	Ingals	Jct hwy 19E with hwy 194 at BM (El 1934, USCGS) 100' fr jct.	2775	979.5721
	Banner Elk	USCGS BM FH7 1934, at NW cor of College Bldg., the "No. Car. Bldg."	3740	979.5246
	Montezuma	BM K61, 1934 USCGS: in yd of crh on hwy 181 at Bm about 1 block E of Linville Riv. Rwy. Sta.	3837	979.5142

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING
7. BEAUFORT	Washington	At BM at P.O., BM Z25 1932	12	979.7714
	Belhaven	On hwy 264 & 264A jct-East side	13	979.7880
	Edward	On Rt 33 at crossrds between Esso & Texaco Sta.	46	979.7578
8. BERTIE	Windsor	At King & Greenville Sts, NW cor of brick P.O., BM (H-67 1934)	9	979.8416
	Kelford	At SE cor jct 308 & crossrd, by Bapt Crh, elev 88'	88	979.8460
9. BLADEN	Elizabethtown	7 mi NW on 701 at S end of bridge over Cape Fear Riv., Elev 76'	76	979.6936
	Bladenboro	9 mi NW 82 at BM L80,1934	111	979.6912
	Clarkton	At RR Xing on 701, 105 yrd N of jct of 701 & 211, Elev 88'	88	979.6979
10.BRUNSWICK	Bolivia	At steps of high sch, Elev 41'	41	979.6337
	Winnabow	At SE cor bridge over Town Creek, Elev 25'	25	979.6496
11.BUNCOMBE	Asheville	On frt steps of new P.O. at BM USGS 2216	2216	979.6064
	Leicester	In frt of Bell Methodist Crh on hwy 63, 15' from crh steps along rd at BM W 127	2147	979.6122
	Black Mtn.	At Black Mtn. drug store cor State & Broad Sts., BM N8 1929 (USGS)	2395	979.5876
12.BURKE	Morganton	U.S.G.S. BM in Courthouse	1181	979.6593
	Connelly Springs	Opp So. RR Sta, top of S rail	1192	979.5885
	Hildebran	By W end RR Sta near site of BM E 31	1149	979.6773
13.CABARRUS	Concord	At Courthouse yd by Confed. Memorial, BM T 78	704	979.7443
	Harrisburg	31' E of E end of So. RR Sta & 21' S of S rail. BM M78 1935	610	979.7632

COUNTY	TOWN	STATION LOCATION	Elev.(ft)	READING
	Mt. Pleasant	53' E of Cty line of hwy 73, 97' S of S face of the Mt. P. Hosiery Mills Bldg. BM Y78 1935	628	979.7511
14. CALDWELL	Lenoir	County Courthouse on US 321 USGS 1182.265	1179	979.6689
	Patterson	BM, 1933 USGS off hwy 321 at "Celu-Products" Plant in wall	1248	979.6643
	Granite Falls	BM, 1933 USGS in wall of Moore Bros. Store at hwy 321	1208	979.6720
15. CAMDEN	Camden	BM at Norfolk So. RR Sta.	9	979.8444
16. CARTERET	Morehead City	BM at City Hall USGS Tidal 1	9	979.7266
	Davis	At rd jct by Sinclair Gas Sta, Elev 6'	6	979.7252
17. CASWELL	Yanceyville	Cor of NE quadrant Town Sq. Stand. disc, "J 98 1935"	620	979.8289
18. CATAWBA	Newton	At County Courthouse, NE cor USGS BM 996	993	979.7032
	Maiden	BM 892 USCGS, "891.130 Columbia 1900" in N face of F.F. & Clyde Abernathy Store	889	979.7055
	Conover	So. RR Xing over hwy 321 at base of RR signal BM "Check 15"	1062	979.6982
19. CHATHAM	Pittsboro	NW cor Courthouse yd. by granite mark, "Jeff Davis Hwy" Old BM 104 (destr.)	409	979.8120
	Siler City	BM at Furniture Store at cor of N Raleigh and Birch St.	594	979.8032
	Moncure	At site of BM 011; jct NW side US 1 by driveway. Elev 194'	222	979.7973
0. CHEROKEE	Murphy	BM X-53 on hwy 19 near L & N RR Sta at NW end bridge over Hiwassee Riv.	1534	979.6133
	Ranger	BM 410 (L & N RR) at bridge 18' over Nottley Riv. 30' W of W end	1573	979.6047

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING
	Andrews	At So. RR Sta. at BM G 54, 1933	1773	979.6017
21. CHOWAN	Edenton	BM C 25 at Fire Dept in middle of east wall	12	979.8329
22. CLAY	Hayesville	In city square at sq stone post labeled NCGS, US+GS 1900	1884	979.5825
23. CLEVELAND	Shelby	BM M 77, 1935 at Seaboard Air Line RR Sta	852	979.6715
	Grover	Hwy 26 S at BM F-40, 1932, USCGS on RR St, 200 yds NE of jct hwy 29	877	979.6574
	Waco	Hwy 150 at RR Sta BM S 77, next to S rail	916	979.6732
24. COLUMBUS	Whiteville	BM Y 29 1932 at Atlantic Coast Line RR Sta	61	979.6764
	Chadbourne	BM C 30 1932 at Water Tower	108	979.6803
	Fair Bluff	Near BM, A 53 315' E of RR Sta between track & street	70	979.6829
25. CRAVEN	New Bern	Cor Stone, City, Courthouse at BM 16 USGS	14	979.7374
	Cove City	6.5 mi E 46 at top rail at Old RR Sta	58	979.7411
26. CUMBERLAND	Fayetteville	BM 106 USGS at P.O. Bldg in N Wall	104	979.7375
	Wade	Top rail opp pole at SE cor Atlantic Coast Line Sta at BM 69	135	979.7609
27. CURRITUCK	Moyock	On 168-170 at dirt RR Xing N end of RR Sta	4	979.8582
	Bertha	At SE cor jct 3 & 158	4	979.8096
	Point Harbor	On 158 at curve to bridge in front of P.O.	3	979.7932
28. DARE	Kill Devil Hills	Tomahawk Motel, in front Room 8	3	979.7962
	Hatteras Inlet	Hatteras Inlet on Ocracoke Isl at Ferry Sign	1	979.7604

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING (gals)
29. DAVIDSON	Lexington	At County Courthouse by USGS, BM	810	979.7570
	Newsome	At BM R 96 near RR Sta at rd Xing	559	979.7807
	Southmont	At NC Triangulation 396 SW of WSS RR Sta	669	979.7741
30. DAVIE	Mocksville	At Southern RR Sta near Brick Bldg. across St. to W. BM L 42	814	979.7316
31. DUPLIN	Kenansville	BM N 69 1934 at County Courthouse	125	979.7194
	Warsaw	BM Z 31 1932 in SW foundation of pier of water tank	158	979.7266
	Wallace	Opp RR Sta 22' E of E rail, BM Y 82 (dest.)	53	979.6997
32. DURHAM	Durham	In N wall at County Courthouse, BM #406 RESET	403	979.8344
	Rougemont	BM M 93 70' SE of SE cor of Rwy Sta opp mi post L 96	562	979.8454
	Willardville	At RR Xing, 30' from BM 93, 1935	445	979.8454
33. EDGECOMBE	Tarboro	At BM C 34 in W wall P.O.	55	979.8081
	Rocky Mt.	BM W33 1932 in E wall at RR Sta	116	979.7934
	Whitakers	BM K 35 at Branch Bk Bldg in NW wall	131	979.8063
34. FORSYTH	Winston-Salem	S wall of old Union Sta, BM A 43 (now RR Express off)	844	979.7279
	Clemmons	P.O. step 300' W of intersection hwy 59 & Hampton Rd.	843	979.7287
	Rural Hall	Site of BM Q 88 off hwy 52, 2 mi NE along hwy 65 opp mi post 32 on Atl & Yad RR	987	979.7154
35. FRANKLIN	Louisburg	At BM on cor of Main & Nash, in E wall of 1st Nat'l Bank	223	979.8052
	Bunn	At jct 98 & 39, NE cor of Appliance Store	287	979.7775

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gal.
	Youngsville	SE cor jct 1A & 96	457	979.8018
36. GASTON	Gastonia	N wall of Freight Sta, 2' W of NE cor, BM R 40 1932	825	979.7097
	Lowell	100' W of So RR Sta at SW cor of St. Xing, at drain, RV 88	766	979.7039
	Belmont	On E side of main St 200' N of RR on W.R. Ford Hrdw. BM X 40	680	979.7211
37. GATES	Sunbury	At SE cor jct 32 & 158	38	979.8610
38. GRAHAM	Robbinsville	At site of Old Courthouse where BM GWM 127 was located, new bldg over old spot; on sidewalk to side entrance on Hwy 109	2064	979.5942
39. GRANVILLE	Oxford	NW cor intersection of West & Broad Sts in E wall of Imperial Tobacco Warehouse 1' N of SE cor, "476" USGS	475	979.8512
	Cozart	At BM 332 USGS, on So RR opp switch, app. 90' E of track	332	979.8432
	Providence	At RR Xing near old station	436	979.8518
40. GREENE	Snow Hill	N shoulder of jct St. 58 & US 13 1 mi W of Snow Hill	67	979.7860
41. GUILFORD	Greensboro	At BM Q 43 in S wall of So. RR Sta	836	979.8045
	Guilford College	So. RR 742 yrd E of mi post 4, opp Bapt. Crh, at S drain of rd Xing in top of SW stone head wall ---RV 162	935	979.7786
	Browns Summit	250' S of old Sta, top of concrete base, auto signal RV 181	800	979.7883
42. HALIFAX	Halifax	In front of E entrance to Courthouse	126	979.8536
	Littleton	At BM P 3 1918 at Seaboard RR Sta in S wall	387	979.8214
	Weldon	At BM A 36 at Coca Cola bottling works	78	979.8673

COUNTY	TOWN	STATION LOCATION	ELEV. (ft)	READING (gals)
43. HARNETT	Lillington	NE side jct US 421 & RR tracks	174	979.7610
	Angier	Top rail opp. RR Sta, NC 230 at jct Williams & Brand St.	295	979.7697
44. HAYWOOD	Waynesville	BM RV 25 at So. Rwy Sta in SE curb of concrete platform	2639	979.5684
	Clyde	On hwy 19 & 23 at Bank Bldg in S wall BM N 38 1932	2535	979.5778
	Canton	BM S 38 1932 USCGS in N Wall Police Sta.	2605	979.5755
45. HENDERSON	Hendersonville	At P.O. off hwy 25 in center town, BM V56	2147	979.5616
	Naples	BM P 39 USCGS off hwy 25 6 mi S of Skyland at RR Signal	2081	979.5804
	Skyland	Off hwy 25 beneath overhead bridge over So RR at edge of tracks near cemetary at BM J 39	2257	979.5834
46. HERTFORD	Ahoskie	At BM W 66 in bldg SE RR Sta	53	979.8612
47. HOKE	Raeford	At S edge of town on State 211 at town line	244	979.7251
48. HYDE	Englehard	On 264 in front of P.O.	4	979.7622
	Ocracoke	120' NE entrance USCG Sta, 140' N. Ferry dock	3	979.7515
49. IREDELL	Statesville	BM M 44 in Peoples Loan & Savings Bank, top step	922	979.7211
	Elmwood	About 1' E old So RR Sta at site of USGS BM 838	834	979.7370
	Mooresville	In W wall So RR Sta, 4' from SW cor, BM U 41 1932	905	979.7133
50. JACKSON	Sylva	BM Y 37 1932 at Allen St Bridge near So. RR & City Hall	2035	979.5945
	Cashiers	Jct hwy 64, hwy 107 at SW cor; BM LHT 1657	3486	979.4649

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals
51. JOHNSTON	Smithfield	BM Smithfield 1934 at Municipal Water plant in S end of sed basin	140	979.7617
	Four Oaks	At BM 211 USGS in brick bldg owned by B.B. Adams near RR Sta	209	979.7573
	Benson	At BM in Bank bldg NW cor of Main & N RR Sts (Benson 1934)	244	979.7528
52. JONES	Maysville	At Bank bldg BM D 27 site in face of E wall	41	979.7114
53. LEE	Sanford	SE cor of Seaboard Air Line RR Sta at BM H 11 1918 about 100' W of track	370	979.7760
	Osgood	RR Xing at site BM L 11	248	979.7892
54. LENOIR	La Grange	At BM D 36 in old National Bank bldg on RR St cor in N brick wall	108	979.7501
55. LINCOLN	Lincolnton	SE cor County Courthouse "BM Lincolnton 1933"	860	979.6883
	Crouse	At BM USGS 855 75 yd E of E end RR Sta in S wall of bldg	855	979.6814
56. MCDOWELL	Marion	At County Courthouse BM USGS 1437 on Main St side of bldg	1435	979.6313
	Nebo	Top of S Rail, opp So RR Sta	1281	979.6406
	Old Fort	At site of BM G-143, E of Indian Trail Monument at Jct of Hwy 70 & 64 30' NE of Con. Soldier Mem. Mon.	1438	979.6303
57. MACON	Franklin	BM F 47 1932 in small park opp Courthouse	2113	979.5941
	Highlands	BM H 55 1934, on Hwy 64 (Main St) near jct Hwy 282	3833	979.4412
58. MADISON	Marshall	At BM 475' SE RR Sta	1650	979.6352
	Barnard	At RR Sta, BM Z 136 B, 1935	1535	979.6316

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals)
	Hot Springs	At BM "L 58 1934" 2 blks W of So RR Sta near jct Hwy 25 & 209	1332	979.6452
59. MARTIN	Williamston	At BM Q 27 at City Hall in S wall	69	979.8198
	Robersonville	BM P 34 on Hwy 64 in front of High Sch (W wall)	70	979.8204
60. MECKLENBURG	Charlotte	Jct hwy 29 & E 36th St by BM N+C #309	410	979.7362
	Derita	At RV 111 (SRY) 15' SE So. RR Sta Signboard, 9' W of W rail	813	979.7329
	Davidson	Davidson College Campus SW cor Presby, Crh, about 3.5' above ground, PT S 2A USGS	826	979.7212
61. MITCHELL	Spruce Pine	Clinchfield RR Sta main rail opp load platform site BM E 3.	2518	979.5897
62. MONTGOMERY	Troy	At 1934 BM site at Courthouse lawn	664	979.7436
	Star	BM 31 USFS on Norfolk So. RR at S end of brdg on 220 over RR track	649	979.7543
63. MOORE	Carthage	Courthouse at SE cor 4' below Mason Square Sign	561	979.7472
	Southern Pines	At BM U 10 at drug store across from RR Sta	511	979.7362
64. NASH	Nashville	In S wall County Courthouse at BM V 67 1934	176	979.8007
	Rocky Mt.	RR Sta in E wall at BM W 33 1932	116	979.7934
	Battleboro	At BM G 35 1932 2 doors S of P.O. in mid of E wall of brick bldg	131	979.7974
65. NEW HANOVER	Wilmington	USCGS BM O 21 at ACRR Sta, cor Red X & N Front St.	28	979.6699
66. NORTHAMPTON	Jackson	At jct 305 N & 158 near Texaco Sta SW cor jct	103	979.8594

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals
	Conway	BM C 66 at Seaboard RR Sta	105	979.8726
67. ONSLOW	Jacksonville	At water tower USCGS #3, 1953	14	979.7113
	Hollyridge	Jct 50 & 17 at RR Xing, BM V 27 1932 (dest)	66	979.6706
68. ORANGE	Hillsboro	BM NW cor of old County Courthouse USGS 543	540	979.8507
	Chapel Hill	Lower front step New East bldg	488	979.8182
69. PAMLICO	Bayboro	At NW cor jct 35 & 304	15	979.7514
	Hobucken	Intracoastal Waterway Bridge at SE cor bridge	6	979.7748
70. PASQUOTANK	Elizabeth City	BM N 24 1932 at city water tower in SW cor of western most concrete footing	9	979.8493
71. PENDER	Burgaw	150 yds S of Atlantic Coast RR Sta, BM Q 82 (Dest)	49	979.6891
	Rocky Point	BM K 82 0.1 mi N RR Sta 19' E of E rail of sidetrack	39	979.6946
72. PERQUIMANS	Hertford	BM 14 USGS at county Courthouse steps W side of front entrance	13	979.8476
73. PERSON	Roxboro	NE cor RR Sta by Std Rivet RV 83.1	671	979.8435
74. PITT	Winterville	BM 75, USGS at RR Sta	73	979.7841
	Farmville	At jct 264-264A NW cor	73	979.7881
75. POLK	Columbus	Hwy 108 County Courthouse on front steps, BM USCGS 1109	1109	979.6198
	Saluda	BM 2096 (USGS 1903) SW cor brick bldg 50' N of So RR along hwy 176	2095	979.5552
	Tryon	BM D 40 USCGS in wall of Blue Ridge Weavers bldg on Hwy 176	1079	979.6181

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals)
76. RANDOLPH	Asheboro	At cor Sunset & Church St. BM(USE) near P.O.	846	979.7828
	Seagrove	.5 mi N of old train sta on hwy 220 16' N of center of gravel rd, site B-G 91	717	979.7555
77. RICHMOND	Rockingham	BM K 52 1933 at SW cor RR Sta	208	979.7539
	Hamlet	BM P 52 1933 at City Hall in E wall at NE cor	345	979.7215
78. ROBESON	Lumberton	BM U 30 1932 at County Courthouse in S wall	143	979.6765
	St. Pauls	Site of destroyed BM C 31 1932 2.2 mi N along Vir & Car So RR	205	979.6971
79. ROCKINGHAM	Mayodan	300 yds N of train sta BM 590 (USGS) 42' W of W rail	589	979.7626
	Stoneville	700' N of train sta, 150' NW of auto signal on old US 220 at site of BM PTS 21 W	822	979.7554
	Reidsville	In W wall of So RR Pass Sta 841.245 A 44, 1932	836	979.7808
80. Rowan	Salisbury	SE wall So RR Sta BM 754. 182 J 49 1933	749	979.7492
	Barber	BM-C 42 beside old water tank	754	979.7562
	Granite Quarry	BM M49 1933 1000' N of Yadkin RR Sta, 60' W of center lin of track at front cut to tele. off	802	979.7817
81. RUTHERFORD	Forest City	Clinchfield RR Sta BM F 76 1935 USCGS 30' E of E rail	869	979.6566
	Logan	BM L 76 Clinchfield RR Sta, 100 yds W of hwy 64	861	979.6611
82. SAMPSON	Clinton	BM S 31 1932 at water tower in top of NE foundation pier	157	979.7460
	Roseboro	Grade School front entrance to basement, M 31	134	979.7377

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals)
83. SCOTLAND	Laurinburg	SE of E. Laurinburg on US 74 opp RR mile post 270.	218	979.7046
84. STANLEY	Albemarle	R.J. Tucker Warehouse, BM F 50 in W wall	457	979.7657
	Norwood	Opp MP 345 on N & S RR, BM 367 level with rail	365	979.7545
	New London	BM A 50 130' NW of NW end at Yadkin RR tracks at water tank	683	979.7605
85. STOKES	Danbury	County Courthouse yard, SW cor BM C 94 1935	825	979.7307
	Walnut Cove	Top of rail at X over of So RR and N & W RR	634	979.7396
86. SURRY	Dobson	In E wall Courthouse near SE cor, BM W 45	1263	979.6907
	Mt. Airy	Blue Ridge Hotel, E side of Hotel steps	1110	979.7074
87. SWAIN	Bryson City	In concrete floor of front porch Swain County Courthouse USGS BM R 9 1928	1736	979.6052
	Cherokee	About 0.3 mi N along hwy 441 at school BM G 57 reset 1943	1945	979.5994
88. TRANSYLVANIA	Brevard	On front steps County Courthouse at BM H 56 USCGS 1934	2229	979.5436
	Rosman	Off hwy 64, top of rail opp So RR Sta.	2183	979.5353
	Cedar Mtn.	On hwy 276, at Rocky Hill Church at top of 1st set of steps in front of doors	2675	979.5073
89. TYRRELL	Columbia	County Courthouse at BM N 245 1948	4	979.8087
90. UNION	Monroe	BM S 51 in Seaboard Sta in N wall	653	979.7217
	Waxhaw	About 115' S of center line of RR in wall of Waxhaw Banking & Trust Co. 3' higher than sidewalk, BM Y 51	669	979.6979

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91. VANCE	Henderson	At BM K 7 in NE cor P.O. bldg	511	979.8137
92. WAKE	Raleigh	BM 1, top step Mann Hall (C E bldg. N.C. State College)	394	979.7836
	Fuquay-Varina	Site BM X 92, 60 yds SE of SE end of Nor So RR Sta 28.7' SW of SW rail of D & So Rwy	427	979.7638
93. WARREN	Warrenton	At NW cor jct 158-401 W. Macon and N Main Sts	394	979.8258
	Norlina	BM N 5 across from RR Sta in front face of stone bldg	435	979.8203
	Macon	BM across from RR Sta on 158	383	979.8356
94. WASHINGTON	Plymouth	BM L 25 1932 at County Courthouse N end of steps to W entrance	19	979.8069
95. WATAUGA	Boone	At BM B 48 SW cor Northwestern Bank on W side of Depot St.	3228	979.5647
	Blowing Rock	BM G 48 1933 US 321, in N wall of old P.O. now called Parkway Restaurant	3575	979.5276
	Cove Creek	At Church on hwy 284, BM N 144	2615	979.5705
96. WAYNE	Goldsboro	In top steps of P.O. BM U 32 1932	111	979.7615
	Fremont	At BM B 33 at RR Sta in W wall	153	979.7765
97. WILKES	N. Wilkesboro	At BM B87 1935 at P.O. 1' south of NE cor on Hwy 421	1042	979.6826
98. WILSON	Wilson	BM J 33 1932 at Atlan Coast RR Sta in S wall	141	979.7944
	Elm City	BM F 33 1932 at RR Sta in E wall	143	979.8036
99. YADKIN	Yadkinville	Jct hwy 421 and hwy 601 next to fire hydrant on cor with new Courthouse	967	979.6974

COUNTY	TOWN	STATION LOCATION	ELEV.(ft)	READING(gals)
	Brooks Cross-Roads	Jct hwy 21 & old hwy 421 at brick home 50' E & 96' N at BM B 45	1069	979.6864
100. YANCEY	Burnsville	City square BM LHT 810	2814	979.5848
	Green Mountain	Top of main rail opp Clinch-field RR Sta off hwy 197, about 3/4 mi, 7 mi from Burns-ville	2154	979.6269
	Pensacola	At Laurel Branch Baptist Church, near jct with Cat Tail Rd & hwy 197. BM LHT 828 1938	2860	979.5775