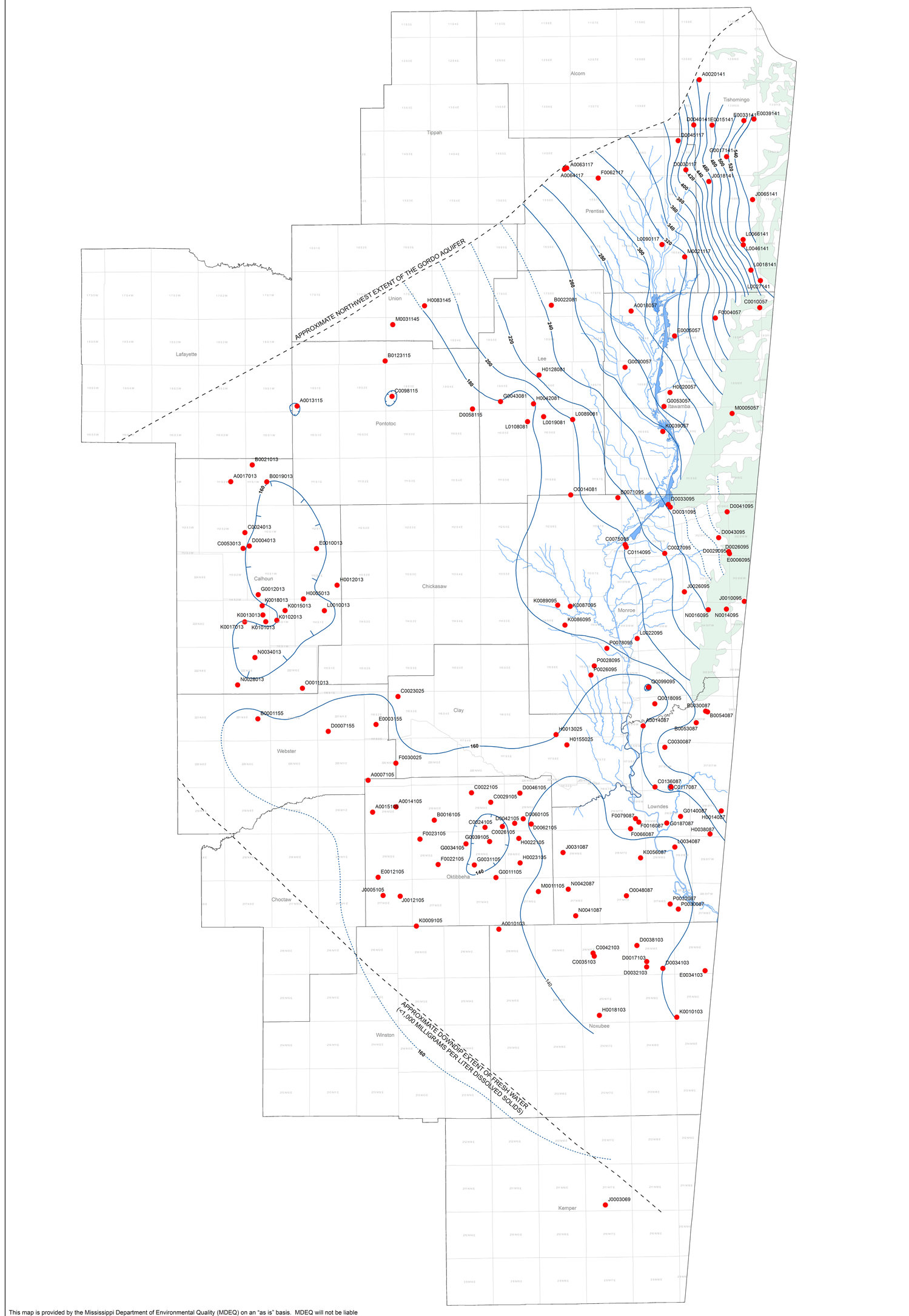
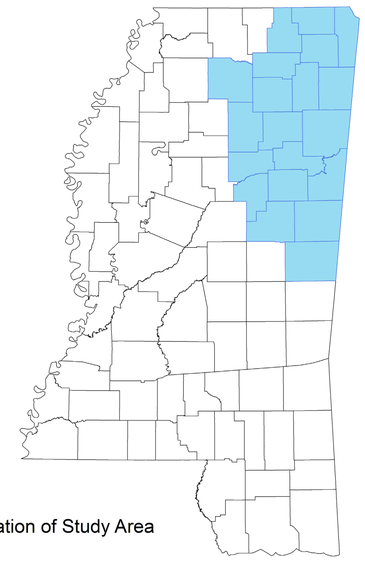
OLWR Hydrologic Map 11-1

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF LAND AND WATER RESOURCES



POTENTIOMETRIC MAP OF THE GORDO AQUIFER IN NORTHEASTERN MISSISSIPPI 2008 TO 2011

John V. Banks, RPG
June, 2011



Location of Study Area

County	Well Number	Head Value in Feet Relative to MSL	Owner	Date Measured
CALHOUN	A0017013	167.74	MT COMFORT WA	7/12/2010
CALHOUN	B0019013	160.00	MT COMFORT WA	7/12/2010
CALHOUN	B0021013	166.00	MT COMFORT WA	7/12/2010
CALHOUN	C0024013	168.00	MT COMFORT WA	7/12/2010
CALHOUN	C0053013	162.30	BRUCE, TOWN OF	7/26/2010
CALHOUN	D0004013	157.93	BRUCE, TOWN OF	7/26/2010
CALHOUN	E0010013	154.94	POPLAR SPRINGS WA	8/24/2010
CALHOUN	G0012013	155.73	MACEDONIA WA	7/20/2010
CALHOUN	H0005013	158.28	NEW LIBERTY WA	8/24/2010
CALHOUN	H0012013	165.06	POPLAR SPRINGS WA	8/24/2010
CALHOUN	K0013013	165.45	CALHOUN CITY	7/20/2010
CALHOUN	K0014013	159.40	DERMA, TOWN OF	7/20/2010
CALHOUN	K0015013	156.79	DUNCAN HILL WA	7/26/2010
CALHOUN	K0017013	159.48	BIG CREEK WA	7/26/2010
CALHOUN	K0018013	162.70	MACEDONIA WA	7/20/2010
CALHOUN	K0101013	160.75	CALHOUN CITY	7/20/2010
CALHOUN	K0102013	162.21	DERMA, TOWN OF	7/20/2010
CALHOUN	L0010013	156.46	VARDAMAN, TOWN OF	7/20/2010
CALHOUN	N0028013	163.93	SLATE SPRINGS WA	7/20/2010
CALHOUN	N0034013	151.52	CROSSROADS WA	8/26/2010
CALHOUN	O0011013	174.30	CROSSROADS WA	8/26/2010
CLAY	C0023025	162.72	SILOAM WA	3/3/2011
CLAY	F0030025	158.08	SUN CREEK WA	3/2/2011
CLAY	H0013025	161.90	DANOVSKY	5/3/2011
CLAY	H0155025	141.03	WEST POINT, CITY OF	3/3/2011
ITAWAMBA	A0018057	292.95	HOUSTON WA	9/18/2008
ITAWAMBA	C0010057	466.80	NE ITAWAMBA WA	9/17/2008
ITAWAMBA	E0005057	313.82	USACE	9/1/2009
ITAWAMBA	F0004057	382.30	NE ITAWAMBA WA	9/17/2008
ITAWAMBA	G0030057	273.20	MANTACHIE WA	9/16/2008
ITAWAMBA	G0053057	282.01	FULTON, TOWN OF	9/16/2008
ITAWAMBA	H0020057	283.10	FULTON, TOWN OF	9/16/2008
ITAWAMBA	K0039057	257.40	USACE	9/1/2009
ITAWAMBA	M0005057	333.40	TREMONT WA	9/18/2008
KEMPER	J0003069	168.45	T W PUCKETT	1/28/2010
LEE	B0022081	244.90	GUNTOWN, TOWN OF	2/4/2009
LEE	G0043081	174.45	TUPELO, CITY OF	2/5/2009
LEE	H0042081	176.55	TUPELO, CITY OF	2/5/2009
LEE	H0128081	224.80	BIG OAK GOLF CLUB	2/4/2009
LEE	L0019081	194.30	TUPELO, CITY OF	2/5/2009
LEE	L0089081	201.65	TOMBIGBEE PARK	2/5/2009
LEE	L0108081	175.45	TUPELO, CITY OF	2/5/2009
LEE	O0014081	196.36	NETTLETON, TOWN OF	9/1/2009
LOWNDES	A0014087	158.59	COLUMBUS AFB	11/17/2010
LOWNDES	B0030087	190.29	CALEDONIA, TOWN OF	11/9/2010
LOWNDES	B0053087	180.17	CALEDONIA, TOWN OF	11/9/2010
LOWNDES	B0054087	197.48	CALEDONIA, TOWN OF	11/9/2010
LOWNDES	C0030087	190.86	T S HODGES	11/4/2010
LOWNDES	C0117087	143.73	EAST LOWNDES WA	11/9/2010
LOWNDES	C0136087	161.68	DIXIE LAND AND WATER CO.	11/10/2010
LOWNDES	F0016087	155.98	BRUCE LUMBER CO.	10/20/2010
LOWNDES	F0066087	145.91	SQWINCHER CORP.	10/20/2010
LOWNDES	F0079087	144.27	WEYERHAEUSER CO.	10/20/2010
LOWNDES	G0140087	157.57	AIRLINE MFG. CO.	10/20/2010
LOWNDES	G0187087	157.12	APAC - MS INC	11/10/2010
LOWNDES	H0014087	184.01	EAST LOWNDES WA	11/9/2010
LOWNDES	H0038087	150.49	EAST LOWNDES WA	11/9/2010
LOWNDES	J0031087	134.60	ARTESIA, TOWN OF	9/15/2010
LOWNDES	K0056087	129.78	WEST, RONNIE AND STEVE	10/27/2010
LOWNDES	L0034087	134.52	AKZO NOBEL, INC.	11/4/2010
LOWNDES	N0041087	134.68	CRAWFORD WA	11/9/2010
LOWNDES	N0042087	136.00	SOUTH LOWNDES WA	11/9/2010
LOWNDES	O0048087	131.21	MAST, GLENN	10/21/2010
LOWNDES	P0030087	133.93	HIEBERT, LLOYD, EST. OF	10/21/2010
LOWNDES	P0032087	133.24	UNRUH, STANLEY L	10/21/2010
MONROE	B0071095	215.20	CASON WA	9/22/2010
MONROE	C0027095	220.81	HATLEY WATER DIST.	9/23/2010
MONROE	C0075095	185.92	AMORY, CITY OF	9/23/2010
MONROE	C0114095	205.66	AMORY, CITY OF	9/23/2010
MONROE	D0026095	294.08	QUINCY WA	9/22/2010
MONROE	D0029095	293.69	QUINCY WA	9/22/2010
MONROE	D0031095	241.69	SMITHVILLE, TOWN OF	9/23/2010
MONROE	D0033095	240.73	USACE	9/22/2010
MONROE	D0041095	328.48	SMITHVILLE, TOWN OF	9/23/2010
MONROE	D0043095	293.66	HATLEY, TOWN OF	9/23/2010
MONROE	E0006095	290.30	QUINCY WA	9/22/2010
MONROE	J0010095	272.50	GATTMAN WA	9/22/2010
MONROE	J0026095	228.50	QUINCY WA	9/22/2010
MONROE	K0086095	182.86	KOEHN, STEVEN	9/23/2010
MONROE	K0087095	178.23	KOEHN, STEVEN	9/23/2010
MONROE	K0089095	183.68	LEE, ANDREW	9/23/2010
MONROE	L0022095	192.76	MAHLON VAUGHN	10/12/2010
MONROE	N0014095	271.42	GATTMAN, TOWN OF	9/22/2010
MONROE	N0016095	242.83	HAMILTON WA	9/22/2010
MONROE	P0026095	167.33	H W DODD	10/12/2010
MONROE	P0028095	172.88	UNIMIN	11/10/2010
MONROE	P0078095	176.11	AMERICAN COLLOID	10/7/2010
MONROE	Q0018095	150.06	APAC - MS INC	11/10/2010
MONROE	Q0099095	115.53	KERR MCGEE	10/12/2010
NOXUBEE	A0010103	142.55	US FISH AND WILDLIFE	4/29/2010
NOXUBEE	C0035103	134.45	BROOKSVILLE, TOWN OF	5/4/2010
NOXUBEE	C0042103	132.85	BROOKSVILLE, TOWN OF	5/4/2010
NOXUBEE	D0017103	128.75	DEERBROOK FARMS	3/23/2010
NOXUBEE	D0032103	134.30	PARKS UTILITY	4/29/2010
NOXUBEE	D0034103	139.95	JOHN JOST	3/23/2010
NOXUBEE	D0038103	126.86	CHANCELLOR	1/27/2011
NOXUBEE	E0034103	150.71	ELGIN SCHMIDT	3/23/2010
NOXUBEE	H0018103	135.50	BORDEN FOODS	4/15/2010
NOXUBEE	K0010103	140.74	UNRUH, LARRY	4/15/2010
OKTIBBEHA	A0007105	158.64	MABEN, TOWN OF	6/4/2010
OKTIBBEHA	A0014105	145.41	CENTER GROVE WA	5/13/2010
OKTIBBEHA	A0015105	153.10	DOUBLE SPRINGS WA	5/13/2010
OKTIBBEHA	B0016105	149.83	ADATON WA	5/13/2010
OKTIBBEHA	C0022105	148.53	TRIM CANE WA	5/26/2010
OKTIBBEHA	C0024105	131.11	STARKVILLE, CITY OF	5/6/2010
OKTIBBEHA	C0026105	139.79	MS STATE UNIVERSITY	5/26/2010
OKTIBBEHA	C0029105	145.89	ROCK HILL WA	5/26/2010
OKTIBBEHA	D0042105	140.11	CLAYTON VILLAGE WA	6/2/2010
OKTIBBEHA	D0046105	149.70	CLAYTON VILLAGE WA	6/2/2010
OKTIBBEHA	D0060105	143.78	MS STATE UNIVERSITY	5/26/2010
OKTIBBEHA	D0062105	138.68	GOLDEN TRIANGLE WA	6/2/2010
OKTIBBEHA	E0012105	147.39	WAKE FOREST WA	5/6/2010
OKTIBBEHA	F0022105	147.29	LONGVIEW WA	6/4/2010
OKTIBBEHA	F0023105	148.13	CRABTREE INC.	6/2/2010
OKTIBBEHA	G0011105	144.91	OKTOC WA	5/13/2010
OKTIBBEHA	G0033105	137.97	TALKING WARRIOR WA	6/2/2010
OKTIBBEHA	G0034105	144.03	BLUEFIELD WA	5/26/2010
OKTIBBEHA	G0039105	132.38	STARKVILLE, CITY OF	5/6/2010
OKTIBBEHA	H0022105	149.13	BLACK JACK WA	5/13/2010
OKTIBBEHA	H0023105	145.86	MSU DAIRY RESEARCH	5/26/2010
OKTIBBEHA	J0005105	147.20	STURGIS, TOWN OF	5/6/2010
OKTIBBEHA	J0012105	156.20	CRAIG SPRINGS WA	5/6/2010
OKTIBBEHA	K0009105	150.98	MORGAN CHAPEL WA	5/6/2010
OKTIBBEHA	M0011105	137.83	PLEASANT GROVE WA	5/13/2010
PONTOTOC	A0013115	154.55	TOCCOPOLA WA	6/1/2009
PONTOTOC	B0123115	162.80	ECRU, TOWN OF	6/10/2009
PONTOTOC	C0098115	143.70	PONTOTOC, CITY OF	6/3/2009
PONTOTOC	D0058115	156.10	MERRITT, G. D.	6/2/2009
PRENTISS	A0063117	301.30	JUMPERTOWN WA	9/25/2008
PRENTISS	A0064117	295.00	JUMPERTOWN WA	9/25/2008
PRENTISS	D0030117	419.82	USACE	9/2/2009
PRENTISS	D0045117	365.40	HOLCUT CAIRO WA	9/24/2008
PRENTISS	F0062117	307.40	BOONEVILLE, CITY OF	9/26/2008
PRENTISS	L0090117	311.40	NEW SITE WA	9/25/2008
PRENTISS	M0021117	315.21	USACE	7/9/2008
TISHOMINGO	A0020141	442.51	USACE	9/30/2008
TISHOMINGO	D0040141	418.91	USACE	9/2/2009
TISHOMINGO	E0015141	474.21	USACE	9/30/2008
TISHOMINGO	E0033141	509.30	USACE	9/2/2009
TISHOMINGO	E0039141	559.38	IUKA	9/2/2009
TISHOMINGO	G0017141	511.82	USACE	9/2/2009
TISHOMINGO	J0018141	446.40	USACE	9/2/2009
TISHOMINGO	J0065141	546.74	TISHOMINGO, TOWN OF	9/2/2009
TISHOMINGO	L0018141	485.32	BELMONT, TOWN OF	9/2/2009
TISHOMINGO	L0027141	525.60	GOLDEN WA	9/17/2008
TISHOMINGO	L0046141	521.03	DENNIS WA	10/1/2008
TISHOMINGO	L0066141	532.74	DENNIS WA	10/1/2008
UNION	H0083145	183.60	WALLERVILLE WA	5/13/2009
UNION	M0031145	161.55	INGOMAR WA	5/13/2009
WEBSTER	B0001155	156.98	BELLEFONTAINE WA	3/30/2010
WEBSTER	D0007155	144.25	SAVANNAH WA	4/6/2010
WEBSTER	E0003155	154.25	NATCHEZ TRACE	4/6/2010

Legend

- Observation Well — *Observation Well and Number*
- Potentiometric Contour — *Contour interval is 20 feet. Datum is sea level.*
- Outcrop Area of Gordo Formation

N

1:375,000

0 5 10 20 30 40 Miles

Basic Overview and Proper Uses of Potentiometric Maps

Groundwater occurs under unconfined and confined conditions in aquifers. In cases where water only partially fills an aquifer, the water surface is free to rise and fall, and the water is unconfined. Wells that are screened in unconfined aquifers are water-table wells, and the water level in them indicates the position of the water table in the surrounding aquifer. Water levels in wells in unconfined aquifers are subject to the influences of topography, geology, and climate that are highly localized and site-specific. Any attempt to accurately depict the surface of the zone of saturation in an unconfined aquifer beyond a very limited area would require such a large number of control points as to be impractical. In cases where water completely fills an aquifer that is overlain by a confining bed so that the water is under pressure greater than atmospheric pressure, the aquifer is confined.

Wells that are screened in confined aquifers are artesian wells, and the water level in such wells will stand at some height above the top of the aquifer but will not necessarily rise above land surface. The static water levels in tightly cased wells screened in confined aquifer represent the level of the potentiometric surface of the aquifer.

A Potentiometric map of a confined aquifer is a depiction of the pressure in the aquifer. This pressure is measured by the height to which water from a given aquifer rises above the top of the aquifer. Such a map is of value to anyone who is interested in the development of water supplies. A potentiometric map can be utilized in conjunction with land surface altitude to estimate the minimum depth necessary for a pump to be installed in a well to produced water at a given location. By comparing the potentiometric surface with the altitude of the top of the aquifer, available drawdown can be estimated at a given location. Analysis of the configuration of equipotential contours (lines of equal water-level altitude) can be useful in determining areas of recharge and discharge, general directions of groundwater flow, and areas of significant drawdown in response to large withdrawals of water. The general direction of groundwater flow is perpendicular to the contours in the direction of decreasing hydraulic heads. A potentiometric map is not a depiction of depth-to-water and should not be utilized for such a purpose.

The potentiometric map is based upon limited water-level data and is not intended to be a substitute for site-specific information. The map is intended to provide a generalized regional description of water levels. One limitation in application of this map is related to the degree to which water levels measured in the wells represent true static water levels. Most of the water-level measurements were from active production wells. Although some pumps may have been turned off for several hours or days prior to measurement of water levels, most pumps were turned off for as little as fifteen minutes to two hours to allow water levels to recover from pumping levels. Furthermore, pumping from nearby wells may have continued, thus influencing water levels at the measured well. A second limitation is related to the complexity of the configuration of the water-bearing sand bodies that comprise a major aquifer system. More than one sand bed may be present within the interval that is considered to constitute a particular aquifer. These sand beds may be vertically separated by beds of clay, resulting in hydraulic isolation and different static water levels for the individual sands within the aquifer at a specific location; however, they may be hydraulically interconnected on a scale covering a larger area. As a result, a well screened in a sand bed other than that from which data was collected for this report could have water levels different that those indicated on the map.