

GWPD 7—Estimating discharge from a naturally flowing well

VERSION: 2010.1

PURPOSE: To estimate the discharge from a naturally flowing well from a vertical pipe.

Materials and Instruments

1. Small hand level
2. L-shaped measuring device (carpenter's square), graduated by inches
3. Clamp
4. Support rod for the measuring device
5. Field notebook
6. Pencil or pen, blue or black ink. Strikethrough, date, and initial errors; no erasures
7. Ground-Water Site-Inventory (GWSI) System Ground-water Site Schedule, Form 9-1904-A

Data Accuracy and Limitations

1. Under ordinary field conditions, with reasonable care, measurements may be made in which the error seldom exceeds 10 percent.
2. Not accurate for small flows of 30 gallons per minute or less, or when the crest of the flow is less than 1.5 inches. For small flows, connect a pipe tee to the top of the well casing and measure the well discharge with a bucket and stopwatch.
3. The most accurate estimated discharge will be obtained when the pipe is truly vertical.

Advantages

1. Fast and simple means of approximating the flow from vertical pipes.
2. No special training needed to use this method.

Disadvantages

1. Method provides only an approximate discharge from wells with vertical pipes.
2. Well flow must be constant so that the height of water above the pipe does not vary appreciably.

Assumptions

1. The discharge pipe does not have a circular orifice weir.
2. The discharge pipe does not have an in-line flowmeter.
3. The pipe is vertical.

Instructions

1. Measure the height of the crest of the water flow, in inches, above the top of the vertical pipe. This measurement can be made using a small hand level, an L-shaped measuring device, a clamp, and a support rod. Figure 1 shows how to set up the equipment to measure the height of the crest of flow from a vertical pipe.

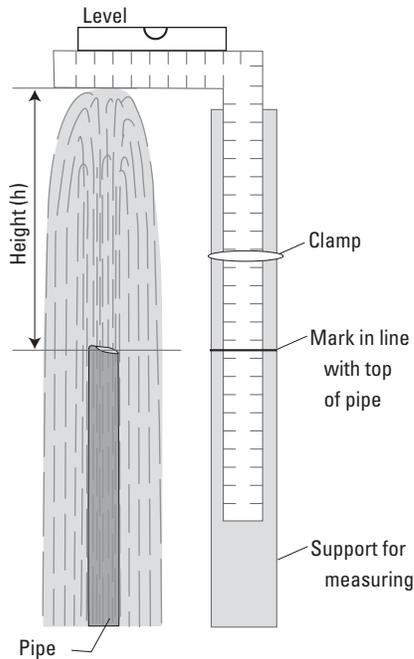


Figure 1. Measuring the height of the crest of flow from a vertical pipe. (Driscoll, 1966, p. 97)

2. Measure the inside diameter of the discharge pipe, in inches.
3. Estimate well discharge from the discharge curves shown in figure 2 for vertical standard pipes. Find the number that corresponds to the height of the crest of the water flow on the y-axis. Move horizontally to the right along that line to the curve that represents the inside diameter of the well. Read the discharge, in gallons per minute, from the x-axis corresponding to that point. If the inside diameter of the well for which discharge is being estimated is not one of the given curves in figure 2, estimate the well discharge by interpolating between the curves. Read the discharge, in gallons per minute, and record the results in the field notebook and in the discharge data section of the GWSI Groundwater Site Schedule (fig. 3, Form 9-1904-A).

Data Recording

Data are recorded in a field notebook. Discharge data also should be recorded in the discharge data section of the GWSI Groundwater Site Schedule (fig. 3, Form 9-1904-A). This is best described as a trajectory method and should be coded as "T" in field C152 on Form 9-1904-A.

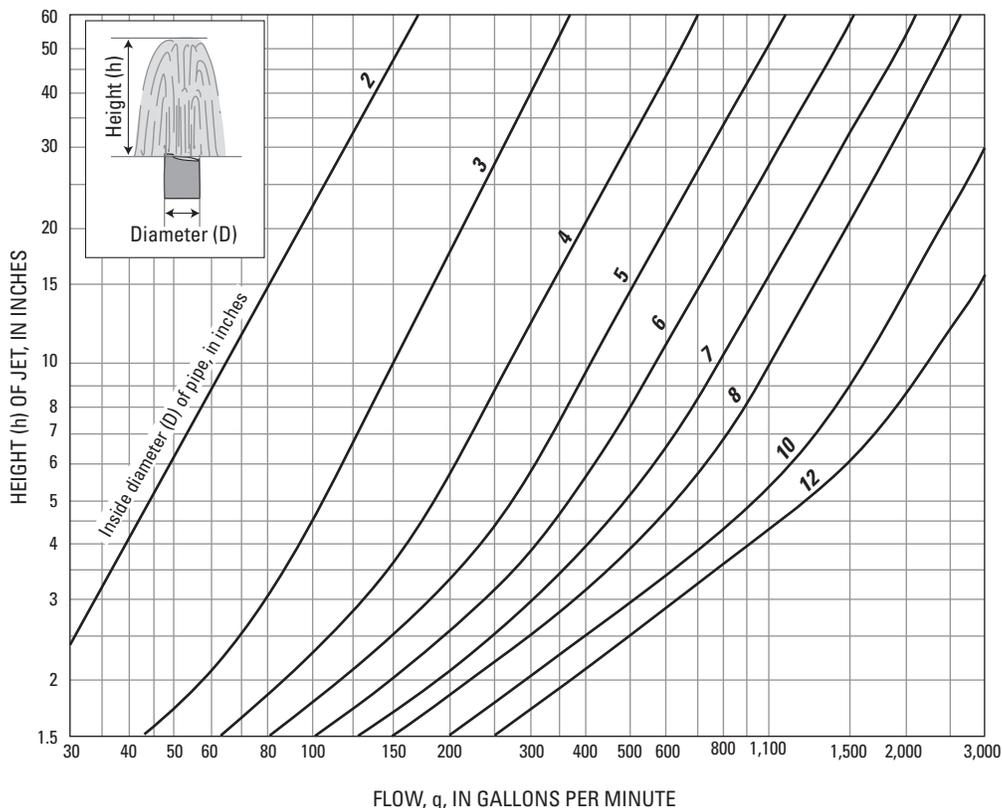


Figure 2. Discharge curves for measurement of flow from vertical standard pipes. The curves are based on data from experiments of Lawrence and Braunworth (1906). (From Bureau of Reclamation. 1967, p. 199)

FORM NO. 9-1904-A
Revised Sept 2009, NWIS 4.9

File Code _____

Coded by _____
Checked by _____
Entered by _____

U.S DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY

Date _____

GROUNDWATER SITE SCHEDULE
General Site Data

AGENCY CODE (C4) **USGS** SITE ID (C1) _____ PROJECT (C5) _____

STATION NAME (C12/900) _____

SITE TYPE (C802) Primary Secondary DISTRICT (C6) _____ COUNTRY (C41) _____ STATE (C7) _____

COUNTY or TOWN (C8) _____ COUNTY code _____

LATITUDE (C9) _____ LONGITUDE (C10) _____ LAT/LONG ACCURACY (C11) **H 1 5 S R F T M U**
Hndrth sec. tenth sec. half sec. 3 sec. 5 sec. 10 sec. min. Un-known

LAT/LONG METHOD (C35) **C D G L M N R S U** LAT/LONG DATUM (C36) **NAD27 NAD83** ALTITUDE (C16) _____
land net DGPS GPS LORAN map inter-polated digital map reported survey un-known North American Datum of 1927 North American Datum of 1983

ALTITUDE ACCURACY (C18) _____ ALTITUDE METHOD (C17) **A D G I J L M N R U** ALTITUDE DATUM (C22) **NGVD29 NAVD88**
altimeter DGPS GPS IFSAR LIDAR Level map DEM reported un-known National Geodetic Vertical Datum of 1929 North American Vertical Datum of 1988

LAND NET (C13) _____ S _____ T _____
1/4 1/4 1/4 section township range meridian

TOPO-GRAPHIC SETTING (C19) **A B C D E F G H K L M O P S T U V W**
alluvial fan playa stream channel depression dunes flat flood-plain hill-top sink-hole lake or mangrove off-shore pedi-ment hill-side ter-race undu-lating valley flat upland draw

HYDROLOGIC UNIT CODE (C20) _____ DRAINAGE BASIN CODE (C801) _____ STANDARD TIME ZONE (C813) _____ DAYLIGHT SAVINGS TIME FLAG (C814) Y OR N N

MAP NAME (C14) _____ MAP SCALE (C15) _____

AGENCY USE (C803) **A D I L M O R** 2 NATIONAL WATER-USE (C39) _____
active no/na discon-tinued inactive site active written active oral inventory remediated site

DATA TYPE (C804)
Place an 'A' (active), an 'I' (inactive), or an 'O' (inventory) in the appropriate box
WL cont WL int QW cont QW int PR cont PR int EV cont EV int wind vel. tide cont tide int sed. con sed. ps peak flow low flow state water use

INSTRUMENTS (C805)
(Place a "Y" in the appropriate box):
digital rec-order graphic rec-order tele-metry land line tele-metry radio tele-metry satellite AHDAS crest-stage gage tide gage deflec-tion meter bubble gage stilling well CR type recorder weigh-ing rain gage tipping bucket rain gage acoustic velocity meter electro-magnetic flowmeter pressure transducer

DATE INVENTORIED (C711) _____ RECORD READY FOR WEB (C32) **Y C P L**
month day year ready to display condi-tional propri-etary local use only

REMARKS (C806) _____

FOOTNOTES

1 SITE TYPE (C802)

GL	Glacier	OC	Ocean	GW	Well	SB	Subsurface
WE	Wetland	OC -CO	Coastal	GW -CR	Collector or Ranney type well	SB-CV	Cave
AT	Atmosphere	LK	Lake, Reservoir, Impoundment	GW -EX	Extensometer well	SB-GWD	Groundwater drain
ES	Estuary			GW -HZ	Hyporheic -zone well	SB-TSM	Tunnel, shaft, or mine
LA	Land	SP	Spring	GW -IW	Interconnected wells	SB-UZ	Unsaturated zone
LA-EX	Excavation	ST	Stream	GW -TH	Test hole not completed as a well		
LA-OU	Outcrop	ST-CA	Canal	GW -MW	Multiple wells		
LA-SNK	Sinkhole	ST-DCH	Ditch				
LA-SH	Soil hole	ST-TS	Tidal stream				
LA-SR	Shore	FA-WIW	Waste-Injection well				

2 **WS DO CO IN IR MI LV PH ST RM TE AQ**

water supply	domestic	commer-cial	industrial	irrigation	mining	livestock	power hydro-electric	waste water treatment	remedia-tion	thermo-electric power	aqua-culture
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C22 Other (see manual for codes)
C36 Other (see manual for codes)
C39 is mandatory for all sites having data in SWUDS.

Figure 3. Groundwater Site Schedule, Form 9-1904-A.

CONSTRUCTION HOLE DATA (3 sets shown)

RECORD TYPE (C756) **HOLE** RECORD SEQUENCE NO. (C724) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF INTERVAL (C73) . DEPTH TO BOTTOM OF INTERVAL (C74) . DIAMETER OF INTERVAL (C75) .

RECORD SEQUENCE NO. (C724)

DEPTH TO TOP OF INTERVAL (C73) . DEPTH TO BOTTOM OF INTERVAL (C74) . DIAMETER OF INTERVAL (C75) .

RECORD SEQUENCE NO. (C724)

DEPTH TO TOP OF INTERVAL (C73) . DEPTH TO BOTTOM OF INTERVAL (C74) . DIAMETER OF INTERVAL (C75) .

CONSTRUCTION CASING DATA (4 sets shown)

RECORD TYPE (C758) **CASNG** RECORD SEQUENCE NO. (C725) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF CASING (C77) . DEPTH TO BOTTOM OF CASING (C78) . DIAMETER OF CASING (C79) .

4 CASING MATERIAL (C80) CASING THICKNESS (C81) .

RECORD SEQUENCE NO. (C725) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF CASING (C77) . DEPTH TO BOTTOM OF CASING (C78) . DIAMETER OF CASING (C79) .

4 CASING MATERIAL (C80) CASING THICKNESS (C81) .

RECORD SEQUENCE NO. (C725) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF CASING (C77) . DEPTH TO BOTTOM OF CASING (C78) . DIAMETER OF CASING (C79) .

4 CASING MATERIAL (C80) CASING THICKNESS (C81) .

RECORD SEQUENCE NO. (C725) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF CASING (C77) . DEPTH TO BOTTOM OF CASING (C78) . DIAMETER OF CASING (C79) .

4 CASING MATERIAL (C80) CASING THICKNESS (C81) .

FOOTNOTE:

4 CASING MATERIAL CODES	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	4	6
	abs	brick	concrete	copper	PTFE	Fiber-glass	galv-iron	Fiber-glass	wrought-iron	Fiber-glass	thread-ed	PVC	glass	other metal	PVC	PVC or FEP	rock or stone	steel	tile	coated steel	stain-less steel	wood	steel carbon	steel galva-nized	other mat.	stain-less 304	stain-less 316

CONSTRUCTION OPENINGS DATA (3 sets shown)

RECORD TYPE (C760) **OPEN** RECORD SEQUENCE NO. (C726) SEQUENCE NO. OF PARENT RECORD (C59)

DEPTH TO TOP OF INTERVAL (C83) DEPTH TO BOTTOM OF INTERVAL (C84) DIAMETER OF INTERVAL (C87)

⁵ MATERIAL TYPE (C86) ⁶ TYPE OF OPENING (C85) LENGTH OF OPENING (C89) WIDTH OF OPENING (C88)

RECORD SEQUENCE NO. (C726)

DEPTH TO TOP OF INTERVAL (C83) DEPTH TO BOTTOM OF INTERVAL (C84) DIAMETER OF INTERVAL (C87)

⁵ MATERIAL TYPE (C86) ⁶ TYPE OF OPENING (C85) LENGTH OF OPENING (C89) WIDTH OF OPENING (C88)

RECORD SEQUENCE NO. (C726)

DEPTH TO TOP OF INTERVAL (C83) DEPTH TO BOTTOM OF INTERVAL (C84) DIAMETER OF INTERVAL (C87)

⁵ MATERIAL TYPE (C86) ⁶ TYPE OF OPENING (C85) LENGTH OF OPENING (C89) WIDTH OF OPENING (C88)

FOOTNOTES:

⁵ TYPE OF MATERIAL CODES FOR OPEN SECTIONS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z	4	6	
ABS	brass	concrete	ceramic	PTFE	fiber-glass	galv. iron	fiber-glass	wrought iron	fiber-glass	epoxy	PVC threaded	glass	other metal	PVC glued	PVC	FEP	stainless steel	steel	tile	brick	mem-brane	steel carbon	steel galva-rized	other	stain-less 304	stain-less 316

⁶ TYPE OF OPENINGS CODES

F	L	M	P	R	S	T	W	X	Z
fractured rock	louvered or shutter-type	mesh screen	perforated, porous or slotted	wire-wound screen	screen (unk.)	sand point screen	walled or shored	open hole	other

CONSTRUCTION MEASURING POINT DATA

RECORD TYPE (C766) **MIPNT** RECORD SEQUENCE NO. (C728) BEGINNING DATE (C321) - - ENDING DATE (C322) - -

M.P. HEIGHT (C323) ALTITUDE OF MEASURING POINT (C325) ALTITUDE METHOD (C326) ALTITUDE ACCURACY (C327)

ALTITUDE DATUM (C328) M.P. REMARKS (C324)

RECORD READY FOR WEB (C857)

Y C P L
 ready to display condi-tional proprie-tary local use only

CONSTRUCTION LIFT DATA

RECORD TYPE (C752) **L I F T** RECORD SEQUENCE NO. (C254) TYPE OF LIFT (C43) **A B C J P R S T U X Z**
air bucket centrifugal jet piston rotary submersible turbine unknown no lift other

DATE RECORDED (C38) - - PUMP INTAKE DEPTH (C44) TYPE OF POWER (C45) **D E G H L N S W Z**
month day year diesel electric gaso-line hand LP gas natural gas solar windmill other

HORSE-POWER RATING (C46) . MANUFACTURER (C48) SERIAL NO. (C49)

POWER COMPANY (C50) POWER COMPANY ACCOUNT NUMBER (C51)

POWER METER NUMBER (C52) PUMP RATING (C53) (million gallons/units of fuel) . ADDITIONAL LIFT (C255)

PERSON OR COMPANY MAINTAINING PUMP (C54) RATED PUMP CAPACITY (gpm) (C268) STANDBY POWER (C56) (see TYPE OF POWER)

HORSEPOWER OF STANDBY POWER SOURCE (C57) .

MISCELLANEOUS OWNER DATA

RECORD TYPE (C768) **O W N E R** RECORD SEQUENCE NO. (C718) DATE OF OWNERSHIP (C159) - -

WU OWNER TYPE (C350) **CP GV IN MI OT TG WS** END DATE OF OWNERSHIP (C374) - -
Corporation Government Individual Military Other Tribal Water Supplier

OWNER'S NAME (C161)
 EXAMPLES: JONES, RALPH A.
 JONES CONSTRUCTION COMPANY

OWNER'S PHONE NUMBER (C351) ACCESS TO OWNER'S NAME (C352) **0 1 2 3 4**
Public Access Cooperator Only USGS District Proprietary Only

OWNER'S ADDRESS (LINE 1) (C353)

OWNER'S ADDRESS (LINE 2) (C354)

OWNER'S CITY NAME (C355)

STATE (C356) OWNER'S ZIP CODE (C357)

OWNER'S COUNTRY NAME (C358)

ACCESS TO OWNER'S PHONE/ADDRESS (C359) **0 1 2 3 4**
Public Access Cooperator Only USGS District Proprietary Only

MISCELLANEOUS VISIT DATA

RECORD TYPE (C774) **V I S I T** RECORD SEQUENCE NO. (C737) DATE OF VISIT (C187) - -
month day year

NAME OF PERSON (C188)

MISCELLANEOUS OTHER ID DATA (2 sets shown)

RECORD TYPE (C770) **O T I D** RECORD SEQUENCE NO. (C736) OTHER ID (C190)

ASSIGNER (C191)

RECORD SEQUENCE NO. (C736) OTHER ID (C190)

ASSIGNER (C191)

MISCELLANEOUS OTHER DATA

RECORD TYPE (C772) **O T D T** RECORD SEQUENCE NO. (C312)

OTHER DATA TYPE (C181)

OTHER DATA LOCATION (C182) **C D R Z** DATA FORMAT (C261) **F M P Z**

Cooperator's Office, District Office, Reporting Agency, other files, machine readable, published, other

MISCELLANEOUS LOGS DATA (3 sets shown)

RECORD TYPE (C778) **L O G S** RECORD SEQUENCE NO. (C739) TYPE OF LOG (C199)

BEGINNING DEPTH (C200) . ENDING DEPTH (C201) . SOURCE OF DATA (C202) **A D G L M O R S Z**

other gov't, driller, geologist, logs, memory owner, other reported, reporting agency

DATA FORMAT (C225) **F M P Z** OTHER DATA LOCATION (C226)

files, machine readable, published, other

RECORD TYPE (C778) **L O G S** RECORD SEQUENCE NO. (C739) TYPE OF LOG (C199)

BEGINNING DEPTH (C200) . ENDING DEPTH (C201) . SOURCE OF DATA (C202) **A D G L M O R S Z**

other gov't, driller, geologist, logs, memory owner, other reported, reporting agency

DATA FORMAT (C225) **F M P Z** OTHER DATA LOCATION (C226)

files, machine readable, published, other

RECORD TYPE (C778) **L O G S** RECORD SEQUENCE NO. (C739) TYPE OF LOG (C199)

BEGINNING DEPTH (C200) . ENDING DEPTH (C201) . SOURCE OF DATA (C202) **A D G L M O R S Z**

other gov't, driller, geologist, logs, memory owner, other reported, reporting agency

DATA FORMAT (C225) **F M P Z** OTHER DATA LOCATION (C226)

files, machine readable, published, other

- | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ACOUSTIC LOG:
 AS Sonic
 AV Acoustic velocity
 AW Acoustic waveform
 AT Acoustic televiewer</p> <p>CALIPER LOG:
 CP Caliper
 CS Caliper, single arm
 CT Caliper, three arm
 CM Caliper, multi arm
 CA Caliper, acoustic</p> <p>DRILLING LOG:
 DT Drilling time
 DR Drillers
 DG Geologists
 DC Core</p> <p>ELECTRIC LOG:
 EE Electric
 ER Single-point resistance
 EP Spontaneous potential
 EL Long-normal resistivity
 ES Short-normal resistivity
 EF Focused resistivity
 ET Lateral resistivity
 EN Microresistivity
 EC Microresistivity, forused
 EO Microresistivity, lateral
 ED Dipmeter</p> | <p>ELECTROMAGNETIC LOG:
 MM Magnetic log
 MS Magnetic susceptibility log
 MI Electromagnetic induction log
 MD Electromagnetic dual induction log
 MR Radar reflection image log
 MV Radar direct-wave velocity log
 MA Radar direct-wave amplitude log</p> <p>FLUID LOG:
 FC Fluid conductivity
 FR Fluid resistivity
 FT Fluid temperature
 FF Fluid differential temperature
 FV Fluid velocity
 FS Spinner flowmeter
 FH Heat-pulse flowmeter
 FE Electromagnetic flowmeter
 FD Doppler flowmeter
 FA Radioactive tracer
 FY Dye tracer
 FB Brine tracer</p> <p>NUCLEAR LOG:
 NG Gamma
 NS Spectral gamma
 NA Gamma-gamma
 NN Neutron
 NT Neutron activation
 NM Neuclear magnetic resonance</p> | <p>OPTICAL LOG:
 OV Video
 OF Fisheye video
 OS Sidewall video
 OT Optical televiewer</p> <p>COMBINATION LOG:
 ZF Gamma, fluid resistivity, temperature
 ZI Gamma, electromagnetic induction
 ZR Long/short normal resistivity
 ZT Fluid resistivity, temperature
 ZM Electromagnetic flowmeter, fluid resistivity, temperature
 ZN Long/short normal resistivity, spontaneous potential
 ZP Single-point resistance, spontaneous potential
 ZE Gamma, long/short normal resistivity, spontaneous potential, single-point resistance, fluid resitivity, temperature</p> | <p>WELL CONSTRUCTION LOG:
 WC Casing collar
 WD Borehold deviation</p> <p>OTHER LOG:
 OR Other</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MISCELLANEOUS NETWORK DATA (3 types shown)

RECORD TYPE (C780) **NETW** RECORD SEQUENCE NO. (C730) TYPE OF NETWORK (C706) **QW** BEGINNING YEAR (C115) ENDING YEAR (C116)
water quality

TYPE OF ANALYSIS (C120) **A B C D E F G H I J K L M N P Z**
physical properties common ions trace elements pesticides nutrients sanitary analysis codes D&B codes B&E codes B&C codes B&F codes D&E codes C,D&E all or most codes B&C&radioactive codes B,C&A other

SOURCE AGENCY (C117) ⁷FREQUENCY OF COLLECTION (C118) ANALYZING AGENCY (C307) ⁸PRIMARY NETWORK SITE (C257) ⁸SECONDARY NETWORK SITE (C708)

RECORD TYPE (C780) **NETW** RECORD SEQUENCE NO. (C730) TYPE OF NETWORK (C706) **WL** BEGINNING YEAR (C115) ENDING YEAR (C116)
water level

SOURCE AGENCY (C117) ⁷FREQUENCY OF COLLECTION (C118) ⁸PRIMARY NETWORK SITE (C257) ⁸SECONDARY NETWORK SITE (C708)

RECORD TYPE (C780) **NETW** RECORD SEQUENCE NO. (C730) TYPE OF NETWORK (C706) **WD** BEGINNING YEAR (C115) ENDING YEAR (C116)
pumpage or withdrawals

SOURCE AGENCY (C117) ⁷FREQUENCY OF COLLECTION (C118) METHOD OF COLLECTION (C133) **C E M U Z** ⁸PRIMARY NETWORK SITE (C257) ⁸SECONDARY NETWORK SITE (C708)
calculated estimated metered unknown

FOOTNOTES:

⁷ FREQUENCY OF COLLECTION CODES **A B C D F I M O Q S W Z 2 3 4 5 X**
annually bi-monthly continuously daily semi-monthly inter-mittent monthly one-time only quarterly semi-annually weekly other bi-annually every 3 years every 4 years every 5 years every 10 years

⁸ NETWORK SITE CODES **1 2 3 4**
national, district, project, co-operator,

MISCELLANEOUS REMARKS DATA (4 types shown)

RECORD TYPE (C788) **R|M|K|S** RECORD SEQUENCE NO. (C311) DATE OF REMARK (C184) - -
month day year

Subsequent entries may be used to continue the remark. Miscellaneous remarks field is limited to 256 characters.

RECORD TYPE (C788) **R|M|K|S** RECORD SEQUENCE NO. (C311) DATE OF REMARK (C184) - -
month day year

Subsequent entries may be used to continue the remark. Miscellaneous remarks field is limited to 256 characters.

DISCHARGE DATA

RECORD SEQUENCE NO. (C147)

DATE DISCHARGE MEASURED (C148) month - day - year

TYPE OF DISCHARGE (C703) P F
pumped, flow

DISCHARGE (gpm) (C150) .

ACCURACY OF DISCHARGE MEASUREMENT (C310) E G F P
excellent (LT 2%), good (2%-5%), fair (5%-8%), poor (GT 8%)

SOURCE OF DATA (C151) A D G L M O R S Z
other gov't, driller, geologist, logs, memory, owner, other reported, reporting agency, other

METHOD OF DISCHARGE MEASUREMENT (C152) A B C D E F M O P R T U V W X Z
acoustic meter, bailer, current meter, Doppler meter, estimated, flume, totaling meter, orifice, pitot-tube, reported, trajectory, venturi meter, volumetric meas, weir, unknown, other

PRODUCTION WATER LEVEL (C153) .

STATIC WATER LEVEL (C154) .

SOURCE OF DATA (C155) A D G L M O R S Z
other gov't, driller, geologist, logs, memory, owner, other reported, reporting agency, other

METHOD OF WATER LEVEL MEASUREMENT (C156) A B C E G H L M N R S T U V Z
airline, recorder, calibrated airline, estimated, pressure gage, calibrated press. gage, geophysical logs, manometer, non-rec. gage, reported, steel tape, electric tape, unknown, calibrated elec. tape, other

PUMPING PERIOD (C157) .

SPECIFIC CAPACITY (C272) .

DRAWDOWN (C309) .

GEOHYDROLOGIC DATA

RECORD TYPE (C748) G E O H

RECORD SEQUENCE NO. (C721)

DEPTH TO TOP OF UNIT (C91) .

DEPTH TO BOTTOM OF UNIT (C92) .

UNIT IDENTIFIER (C93)

LITHOLOGY (C96)

CONTRIBUTING UNIT (C304) P S N U
principal aquifer, secondary aquifer, no contribution, unknown

LITHOLOGIC MODIFIER (C97)

GEOHYDROLOGIC AQUIFER DATA

RECORD TYPE (C750) A Q F R

RECORD SEQUENCE NO. (C742)

SEQUENCE NO. OF PARENT RECORD (C256)

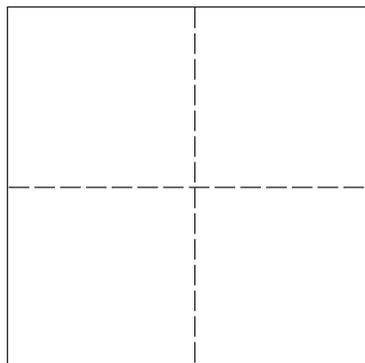
DATE (C95) month - day - year

STATIC WATER LEVEL (C126) .

CONTRIBUTION (C132)

SITE LOCATION SKETCH AND DIRECTIONS

Township _____ Range _____
Section # _____



References

- Bureau of Reclamation, 1967, Water measurement manual, A water resources technical publication: Washington, D.C., U.S. Government Printing Office, p. 199.
- Driscoll, F.G., 1966, Groundwater and wells: St. Paul, Minnesota, Johnson Filtration Systems, Inc., 440 p.
- Hoopes, B.C., ed., 2004, User's manual for the National Water Information System of the U.S. Geological Survey, Ground-Water Site-Inventory System (version 4.4): U.S. Geological Survey Open-File Report 2005-1251, 274 p.
- Lawrence, F.E., and Braunworth, P.L., 1906, Fountain flow of water in vertical pipes: Transactions of the American Society of Civil Engineers, v. 57, p. 265-306.

