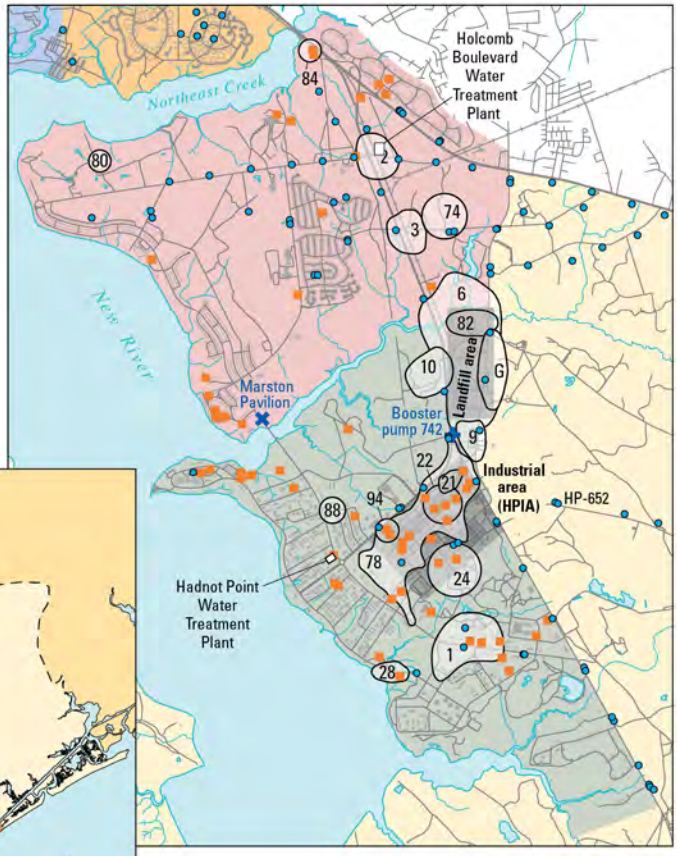
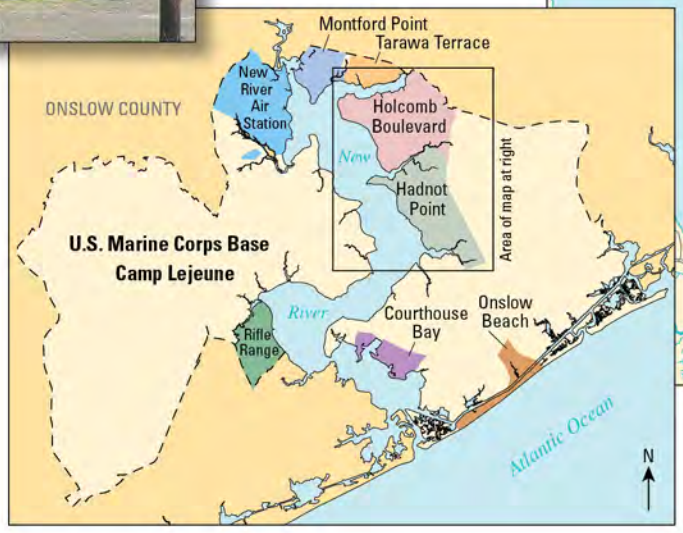
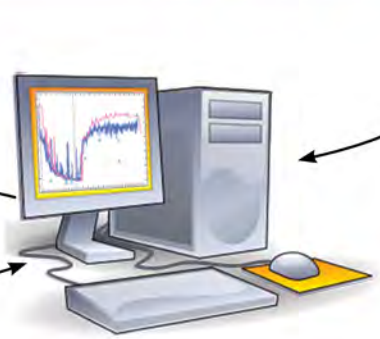
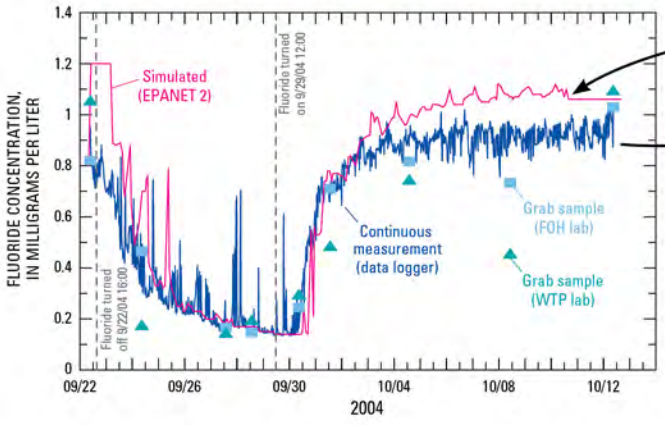
Analyses and Historical Reconstruction of Groundwater Flow, Contaminant Fate and Transport, and Distribution of Drinking Water Within the Service Areas of the Hadnot Point and Holcomb Boulevard Water Treatment Plants and Vicinities, U.S. Marine Corps Base Camp Lejeune, North Carolina

Chapter A—Supplement 1
Descriptions and Characterizations of Data Pertinent to Water-Supply Well Capacities, Histories, and Operations









DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

Atlanta, Georgia—March 2013

Front cover: Historical reconstruction process using data, information sources, and water-modeling techniques to estimate historical contaminant concentrations.

Maps: U.S. Marine Corps Base Camp Lejeune, North Carolina; Holcomb Boulevard and Hadnot Point areas showing extent of sampling at installation restoration program sites (white numbered areas), above-ground and underground storage tank sites (orange squares), and water-supply wells (blue circles).

Photograph (upper): Hadnot Point water treatment plant (Building 20).

Photograph (lower): Well house building for water-supply well HP-652.

Graph: Measured fluoride data and simulation results for Paradise Point elevated storage tank (S-2323) for tracer test of the Holcomb Boulevard water-distribution system, September 22–October 12, 2004; simulation results obtained using EPANET 2 water-distribution system model assuming last-in first-out plug flow (LIFO) storage tank mixing model. [WTP lab, water treatment plant water-quality laboratory; FOH lab, Federal Occupational Health Laboratory]

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Descriptions and Characterizations of Data Pertinent to Water-Supply Well Capacities, Histories, and Operations

By Jason B. Sautner, Barbara A. Anderson, René J. Suárez-Soto, and Morris L. Maslia

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March 2013

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See the Glossary section in Chapter A of this report for definitions of terms and abbreviations used throughout this supplement.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry or the U.S. Department of Health and Human Services.

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Descriptions and Characterizations of Data Pertinent to Water-Supply Well Capacities, Histories, and Operations

By Jason B. Sautner, Barbara A. Anderson, René J. Suárez-Soto, and Morris L. Maslia

Introduction

This supplement of Chapter A (Supplement 1) provides specific documentation for 96 water-supply wells—in terms of operations, capacities, and histories—that operated during the period 1942–June 2008 and provided groundwater to the Hadnot Point and Holcomb Boulevard water treatment plants (HPWTP and HBWTP, respectively, Figure S1.1). Hundreds of documents and reports were reviewed and numerous discussions with former and current water treatment plant (WTP) operators took place as part of an information source identification and data mining process. Notable information was recorded and analyzed for each specific water-supply well to determine the chronological record of a well's operation (well history) starting from the time the well was placed into service and ending with the time the well was abandoned. A listing of the documented historical well operations has been created for each water-supply well and can be used to better understand how the Hadnot Point and Holcomb Boulevard water-distribution systems were historically operated. This information and data are used to assist with the reconstruction of historical monthly operations for each well when little or no information is available (see Telci et al. 2013). Tabulated well histories from the 96 water-supply wells described in this supplement were used to reconstruct historical monthly operations for water-supply wells, which were necessary to conduct groundwater-flow and contaminant fate and transport modeling as part of the historical reconstruction process. The purpose of this supplement, therefore, is to develop a detailed chronological record of operation (well history)—based on available information and data—starting from the time a well was placed into service and ending with the time the well was abandoned for each water-supply well. Well histories for each of the 96 historical and present-day (2008) water-supply wells reported herein are listed in Appendix S1.1 for the HPWTP service area and in Appendix S1.2 for the HBWTP service area.

Background

U.S. Marine Corps Base (USMCB) Camp Lejeune is located in the Coastal Plain of North Carolina, in Onslow County, south of the City of Jacksonville and about 70 miles northeast of the City of Wilmington, North Carolina. The focus of this investigation is the areas served by the HPWTP and HBWTP, herein called the Hadnot Point–Holcomb Boulevard (HPHB) study area. In general, the HPHB study area is bordered on the north by Northeast Creek and North Carolina Highway 24 (SR 24), to the west by New River, to the south by Frenchs Creek, and generally to the east by the drainage divides of upstream tributaries of Wallace and Frenchs Creeks (Figure S1.1).

Previous Agency for Toxic Substances and Disease Registry (ATSDR) historical reconstruction analyses have been conducted for the Tarawa Terrace base housing area and vicinity as part of the agency's health studies at USMCB Camp Lejeune. Results of these detailed analyses have been published and are available in the public domain and scientific literature (Maslia et al. 2007, 2009).[1] The purpose of the current (2013) historical reconstruction analyses is to reconstruct historical concentrations of volatile organic compounds (VOCs) such as tetrachloroethylene (PCE), trichloroethylene (TCE), and benzene in water-supply wells and in finished water[2] of the HPWTP and the Holcomb Boulevard family housing areas. Since Base operations began during 1942, all finished water provided to bachelor and family housing units and all other facilities within the HPHB study area was supplied by the HPWTP. Subsequent to about June 1972, finished water provided to family housing areas of Berkeley Manor, Midway Park, Paradise Point, and Watkins Village (Figure S1.1) was supplied by the HBWTP (Scott A. Brewer, USMCB Camp Lejeune, written communication, September 29, 2005).[3]

The first wells that supplied the HPWTP were completed by the fall of 1942 (Faye et al. 2010). Historically, 96 wells have supplied groundwater to the HPWTP and HBWTP. Data pertinent to water-supply well operational chronology—a critical component of the historical reconstruction process—are very limited or unavailable. Based on disparate sources of information and data (see section on Information and Data Sources), including numerous detailed conversations with Camp Lejeune water utility staff and former WTP operators and workers, an operational chronology was developed for the 96 water-supply wells that have historically provided water to the HPWTP and HBWTP (Figure S1.2). Specifically, the numbers of wells that have been supplying groundwater to the HPWTP (since 1942) and the HBWTP (since 1972) are 72 and 24, respectively. In addition to the wells supplying raw water to the WTPs, one well (HP-656) was constructed but never placed into service, one well (HP-37) was used as emergency standby for the Naval Hospital, and two wells [R(1950) and S-190A] were used for golf course irrigation (Figures S1.1 and S1.2; Faye et al. 2010).

[1] The Tarawa Terrace report series is available on the ATSDR Web site at *http://www.atsdr.cdc.gov/sites/lejeune/tarawaterrace.html*.

[2] For this study, finished water is defined as groundwater that has undergone treatment at a WTP and was subsequently delivered to a family housing unit or other facility.

[3] Based on information contained in the written communication from USMCB Camp Lejeune, the start of continuous operations at the HBWTP is estimated to be about June 1972.

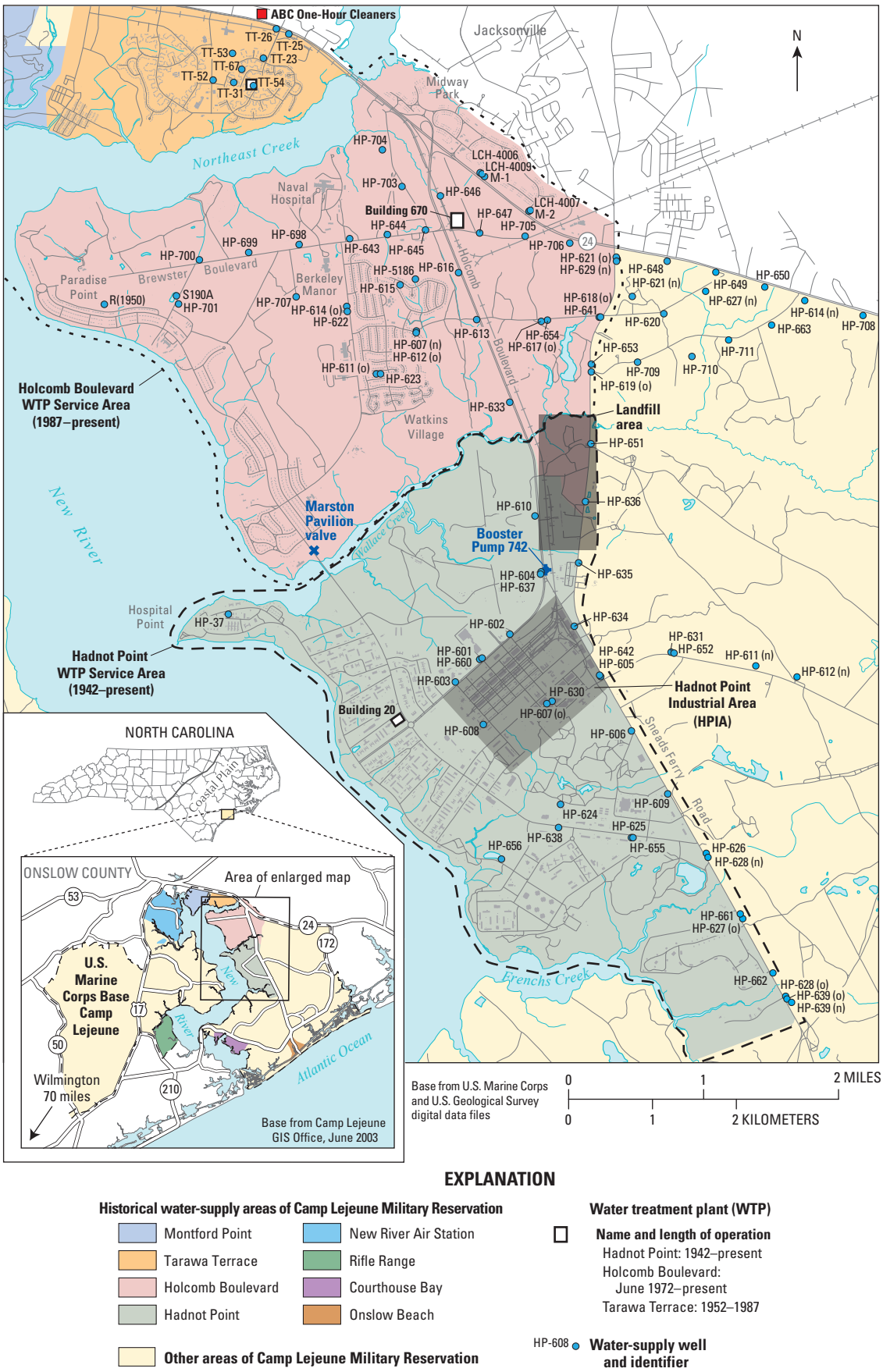

Figure S1.1. Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina.

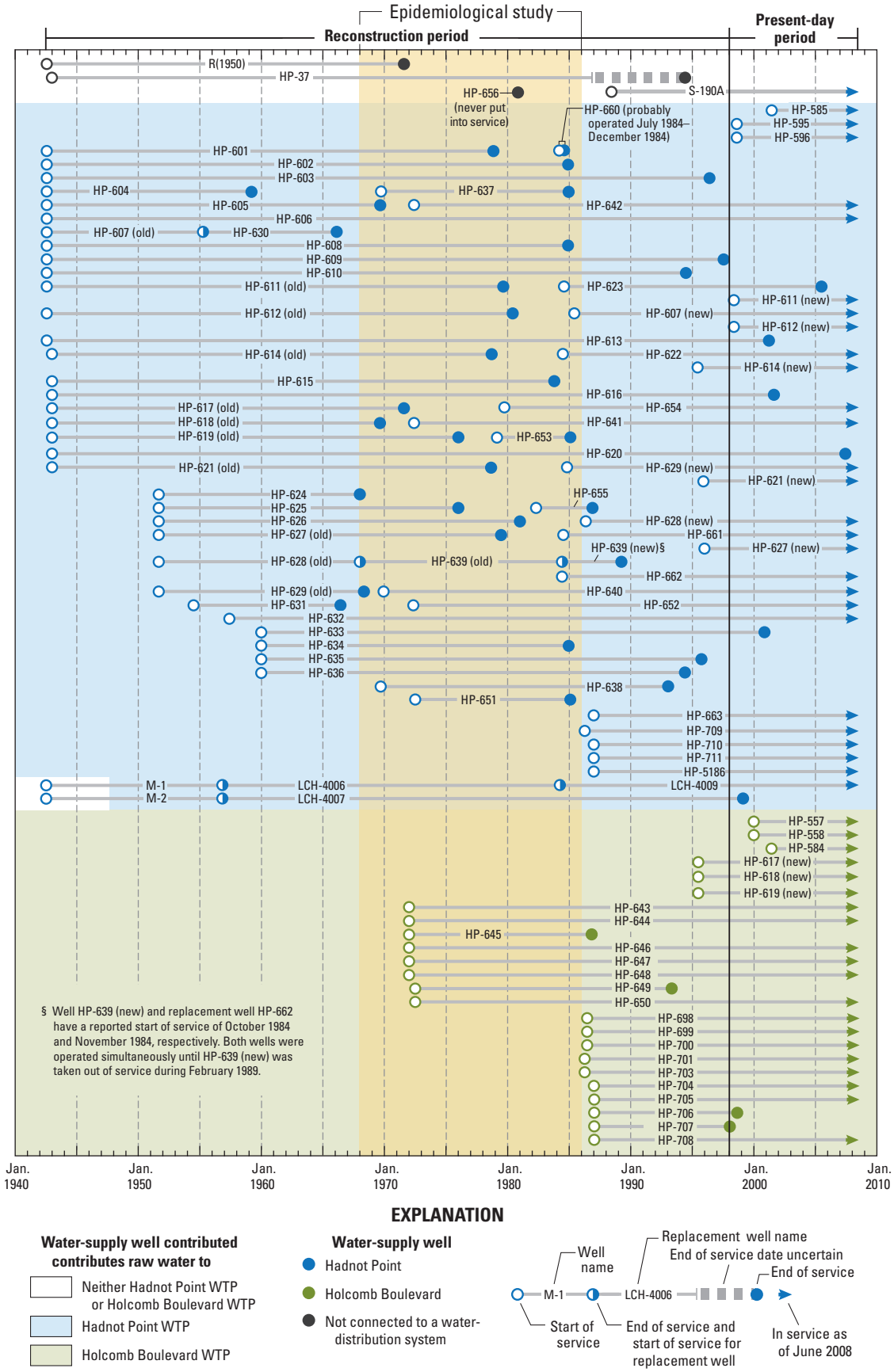

Figure S1.2. Operational chronology of Hadnot Point and Holcomb Boulevard water-supply wells, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina, 1942–2008.

Information and Data Sources[4]

Four types of data sources pertinent to water-supply well operational records and WTP raw water records are used in this supplement report. These are

1. Daily log for well pumps, January 1998–June 2008 (Scott R. Williams, USMCB Camp Lejeune, electronic communication, December 22, 2008),
2. Camp Lejeune Historic Drinking Water Consolidated Document Repository records (CLHDW CDR 2011),[5]
3. Camp Lejeune Water Documents (CLW 2007), and
4. U.S. Geological Survey (USGS) operation records (USGS operation records, written communication, March 2004).

In addition to the aforementioned data sources, numerous conference calls and meetings were held with Camp Lejeune Public Works Department, Utility Section staff and former WTP operators to refine understanding on specifics related to water-supply well and WTP operations. (Meetings and conference calls occurred on the following dates: April 15, 2008; June 5, 2008; June 25, 2008; July 17, 2009; and July 23, 2009.) Other relevant data sources used to determine the historical operation of wells include (1) raw-water supply data, (2) well data lists, (3) WTP service lists, (4) well-pump information lists (CLW #3542), (5) building dimension lists, (6) well survey sheets, (7) operation records (e.g., monthly drawdown measurements), (8) well log books (CLW #6974–#8755, not consecutively available), and (9) operational records (e.g., total monthly hours pumped). Table S1.1 lists these types of data sources, the dates of the data, a generalized description of the information and data, and the source for the information and data. In creating the well histories, the following studies, reports, and data files also were used:

1. March 1991 wellhead management program engineering study (Geophex, Ltd. 1991),
2. January 1994 wellhead monitoring study (Greenhorne and O'Mara, Inc. 1994),
3. August 2002 wellhead protection plan update (AH Environmental Consultants 2002), and
4. September 2004 Microsoft Excel™ file listing of water-supply wells (AH Environment Consultants, Inc., electronic communication, September 3, 2004).

[4] Certain documents have been provided to ATSDR by the Department of the Navy (Headquarters Marine Corps, Eastern Area Counsel Office, and Marine Corps Base Camp Lejeune) under the terms of "For Official Use Only" (FOUO). Some of the documents are not releasable by ATSDR under the terms of FOUO.

[5] The Camp Lejeune Historic Drinking Water Consolidated Document Repository was formerly known as the Booz-Allen-Hamilton (BAH) repository and the U.S. Marine Corps Base Camp Lejeune Consolidated Repository Index.

Methods

Prior to 1998, daily well-operational data are limited or unavailable. Well packets[6] obtained from the Camp Lejeune Public Works Department, Utility Section, were used to understand and best determine each water-supply well's pre-1998 historical operations. Well packets consist of multiple sources of well-specific information dating back to the construction of a well. Typical well-packet data include (1) driller's logs, (2) well construction drawings, (3) well capacity tests, (4) water-quality sampling records, (5) USGS site schedule forms, and (6) USGS well reconnaissance information. The 72 Hadnot Point and 24 Holcomb Boulevard water-supply well histories are listed in Appendixes S1.1 and S1.2, respectively. Well histories also are used to estimate water-supply well capacity,[7] which is required to quantify monthly pumping rates—a critical model input parameter required for simulation of groundwater flow and contaminant fate and transport.

With the exception of a few missing months, daily WTP raw-water volumes for the HPWTP and HBWTP are available subsequent to December 1994. From 1989 to 1994, raw-water volume information was not located in any of the available records (Table S1.1), hence raw-water volume was estimated using delivered-water flow data during this period. Monthly raw-water volumes are available for most months between 1980 and 1988; yearly volumes are available for various years prior to 1980.

For the HPWTP service area (Figure S1.1), documented maximum delivered raw-water volume data prior to 1959 are available solely for years 1942, 1944, 1948, 1953, and 1957. Thereafter, delivered raw-water volume data are annually available (documented or estimated), except as noted in Table S1.2. For the HBWTP service area, raw-water volume data for 1972–1974 were unavailable. For these years, raw-water volume was estimated using 1975 data and assuming a constant per capita use rate based on the known number of occupied housing units, which ranged from 1,885 to 1,891 (Faye et al. 2010) during this period (Table S1.1) .

Annualized daily average flows of raw water treated at the HPWTP (1942–2008) and HBWTP (1972–2008) are listed in Tables S1.2 and S1.3, respectively. In these tables, when raw-water flows for every month of a year are not available, a yearly total is not listed; in its place the symbol "—" (not available) is listed. For example, daily raw-water volumes for the HPWTP and HBWTP are available for every month during 1996 except February. Because raw-water flow values are not available for all 12 months during this year, a 1996 yearly total for the HPWTP and HBWTP is not listed, and the "—" entry is used instead.

[6] A well packet is defined as a packet of information obtained from USMCB Camp Lejeune, North Carolina, that includes information on driller's logs, well construction drawings, well capacity tests, and other water-supply well specific records.

[7] Well capacity is defined as the maximum volume of flow that can be delivered by a water-supply well.

Table S1.1. Description of documents used to determine historical operations of water-supply wells, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina.

[USGS, U.S. Geological Survey; USMCB, U.S. Marine Corps Base; ATSDR, Agency for Toxic Substances and Disease Registry; DVD, digital video disc; WTP, water treatment plant; HPWTP, Hadnot Point water treatment plant]

Document name or type	Pertinent dates for data	Generalized description of document	Document and data source
Building dimension list	Aug. 03, 1971	List of active water-supply wells	USGS written communication, March 2004 [1]
Camp Lejeune Historic Drinking Water Consolidated Document Repository (CLHDW CDR)	1942–present day	Documents provided on electronic media to ATSDR, For Official Use Only	USMCB Camp Lejeune written communication, June 30, 2009
Camp Lejeune Water Documents (CLW)	1942–present day	Documents provided on DVD format (Maslia et al. 2007)	USMCB Camp Lejeune written communication, December 2005
Daily log for well pumps	Jan. 1998–June 2008	Tables of daily operational status (ON/OFF) for active water-supply wells	USMCB Camp Lejeune written communication, date unknown
Operation records	Jan. 1978–Apr. 1986	Tables of monthly airline and drawdown measurements for active water-supply wells	CLW #3559–#4051 (not consecutive); USGS written communication, March 2004 [1]
Operational records	Oct/Nov/Dec. 1988; Jan/Feb/Mar. 1989	List of active wells, total number of hours pumped each month, and average monthly pumping rate	USGS written communication, March 2004 [1]
Raw-water supply data	1942–1966	Nonconsecutive yearly summary of new water-supply wells, well capacity totals, maximum delivery to WTP, and WTP capacity	USGS written communication, March 2004 [1]
Raw-water supply list	Feb. 07, 1966; Aug. 25, 1969	List of water-supply wells and pumping rates	USGS written communication, March 2004 [1]
U.S. Geological Survey	1942–present day	Documents released to the public domain	USGS written communication, March 2004 [1]
Well data list	Nov. 16, 1944	List of active water-supply wells and design capacities	USGS written communication, March 2004 [1]
Well log books	Apr. 01, 1978–Jan. 15, 1987	Nonconsecutive daily water utility log of activities and occurrences to the water-supply wells, water-distribution system, and WTPs	CLW #6974–#8755
WTP service list	Sept. 22, 1955–Jan. 20, 1957	Nonconsecutive and arbitrary daily summary of water-supply wells operating and total flow to HPWTP	USGS written communication, March 2004 [1]
Well pump information list	Sept. 27, 1966	List of active wells and year drilled	CLW #3542
Well survey sheet	Mar. 03, 1977; June 20, 1984	List of active water-supply wells, rated (design) capacities, and pumping rates	USGS written communication, March 2004 [1]

[1] Original source document provided to USGS by USMCB Camp Lejeune for analyses reported in Harned et al. (1989) and Cardinell et al. (1993).

Table S1.2. Annualized daily average flow rate of raw water treated at the Hadnot Point water treatment plant, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina, 1942–2008.

[E, estimated; MGD, million gallons per day; —, not available; WTP, water treatment plant; USMCB, U.S. Marine Corps Base]

Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD
1942	[1]5.0	1959	[2]4.90	1976	[3]3.75	1993	[6]2.77 (E)
1943	—	1960	[2]4.92	1977	[3]3.69	1994	—
1944	[1]4.8	1961	[2]4.96	1978	[3]3.71	1995	[7]3.10
1945	—	1962	[2]5.07	1979	[3]3.42	1996	—
1946	—	1963	[2]5.14	1980	[4]3.46	1997	—
1947	—	1964	[2]4.60	1981	[3]3.37	1998	[7]3.07
1948	[1]4.8	1965	[2]4.69	1982	[3]3.43	1999	—
1949	—	1966	[2]4.72	1983	[3]3.21	2000	[7]3.15
1950	—	1967	[2]4.80	1984	[4]3.54	2001	[7]3.04
1951	—	1968	[3]4.34	1985	[3]3.23	2002	[7]3.09
1952	—	1969	—	1986	[3]3.00	2003	[7]2.84
1953	[2]4.65	1970	—	1987	[5]3.85	2004	[7]2.63
1954	—	1971	[3]4.13	1988	[5]3.34	2005	[7]2.59
1955	—	1972	—	1989	[6]3.15 (E)	2006	[7]2.59
1956	—	1973	—	1990	[6]3.01 (E)	2007	[7]2.38
1957	[2]4.82	1974	[3]3.50	1991	[6]2.90 (E)	2008	[7]2.34
1958	—	1975	[3]3.39	1992	[6]2.92 (E)		

[1]Unknown author, USMCB Camp Lejeune, Raw-Water Supply Data, "combined max. delivered to plant," written communication, 1969(?).

[2]CLHDW CDR (#2292, p. 179–183).

[3]Unknown author, USMCB Camp Lejeune, "Raw Water Treated Hadnot Point WTP Camp Lejeune, NC," written communication, date unknown.

[4]CLW #4436–#4483.

[5]U.S. Geological Survey, Raw Water Treated, Holcomb Boulevard WTP, written communication, March 2004.

[6]Raw-water flow estimated from delivered-water flow, CLW #5004.

[7]Report of Operation (on CD–ROM), John R. Townson, Environmental Management Division, USMCB Camp Lejeune, August 14, 2009.

Table S1.3. Annualized daily average flow rate of raw water treated at the Holcomb Boulevard water treatment plant, Hadnot Point–Holcomb Boulevard study, area, U.S. Marine Corps Base Camp Lejeune, North Carolina, 1972–2008.

[E, estimated; MGD, million gallons per day; —, not available; WTP, water treatment plant; USMCB, U.S. Marine Corps Base]

Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD	Year	Average annual treated raw water, in MGD
1972	[1]0.71	1982	[2]1.23	1992	[5]2.38 (E)	2002	[6]1.60
1973	[1]0.71	1983	[2]1.26	1993	[5]2.40 (E)	2003	[6]1.63
1974	[1]0.71	1984	[3]1.22	1994	—	2004	[6]1.63
1975	[2]0.71	1985	[2]1.26	1995	[6]2.54	2005	[6]1.60
1976	[2]0.78	1986	[2]1.23	1996	—	2006	[6]1.38
1977	[2]0.92	1987	[4]1.89	1997	—	2007	[6]1.63
1978	[2]1.12	1988	[4]2.20	1998	[6]2.08	2008	[6]1.57
1979	[2]1.05	1989	[5]2.27 (E)	1999	—		
1980	[2]1.04	1990	[5]2.39 (E)	2000	[6]2.31		
1981	[2]1.17	1991	[5]2.17 (E)	2001	[6]1.95		

[1]Estimated treated raw-water value based on 1975 data, see text for details.

[2]Unknown author, USMCB Camp Lejeune, "Raw Water Treated Holcomb Boulevard WTP Camp Lejeune, NC", written communication, date unknown.

[3]CLW #4436–#4483.

[4]U.S. Geological Survey, Raw Water Treated, Holcomb Boulevard WTP, written communication, March 2004.

[5]Raw-water flow estimated from delivered-water flow, CLW #5004.

[6]Report of Operation (on CD–ROM), John R. Townson, Environmental Management Division, USMCB Camp Lejeune, August 14, 2009.

Results

Results derived from assessing information sources and extracting relevant data from the information sources (Table S1.1) to determine water-supply well capacities, histories, and operations for the HPWTP and HBWTP service areas are discussed below.

Hadnot Point Water Treatment Plant Service Area

Monthly averaged annual rates of raw water delivered to the HPWTP and the maximum monthly total water volume that can be produced by all operating wells are shown in Figure S1.3. The diamond symbols in Figure S1.3 show the monthly averaged annual rates of raw water delivered to the HPWTP; the circle symbols show the rates of raw water that were estimated from delivered-water values. The line in Figure S1.3 indicates the maximum water volume that can be produced by all operating wells assuming that they operate for an entire month at full capacity. The small fluctuations on this line are due to varying numbers of days for different months (e.g., January, 31 days; February, 28 or 29 days), and larger changes in values reflect important system modifications.

The following is an example of such a system modification using data shown in Figure S1.3. During January 1943 there is a sudden increase in the maximum production volume (line) when the maximum volume produced by all operating wells increases from 155 million gallons (Mgal) to 213 Mgal. This sudden increase of 58 Mgal can be explained as follows. As shown in Figure S1.2, the number of operating wells prior to 1943 is 13. After January 1943, the number of operating wells increases to 21; this explains the sudden increase in the maximum production volume shown in Figure S1.3.

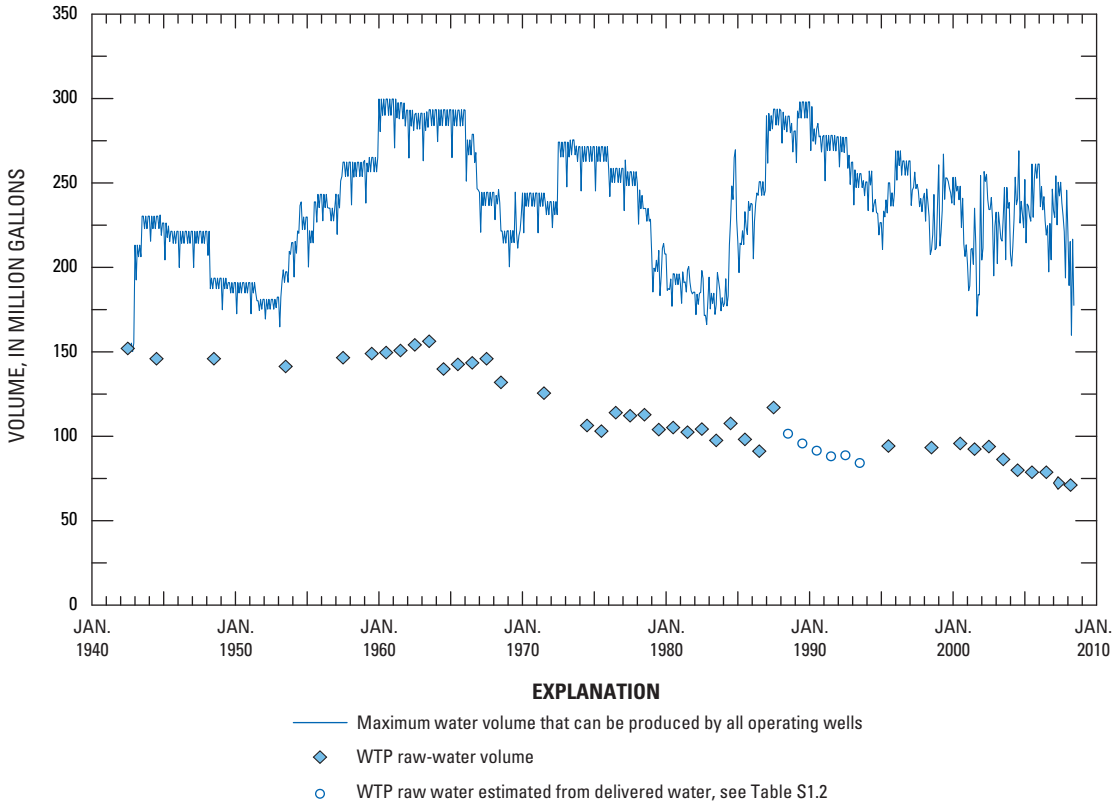

Figure S1.3. Monthly averaged annual water treatment plant (WTP) raw-water volume data and maximum monthly water volume produced by all operating water-supply wells, Hadnot Point water treatment plant service area, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina.

Holcomb Boulevard Water Treatment Plant Service Area

Until the summer of 1972, all finished water distributed to bachelor and family housing units and all other facilities within the Holcomb Boulevard area was supplied by water-supply wells servicing the HPWTP. It is estimated that the HBWTP began operations during June 1972 (Scott A. Brewer, USMCB Camp Lejeune, written communication, September 29, 2005) with a capacity of about 2 million gallons per day (MGD) and was originally serviced by eight water-supply wells numbered sequentially from HP-643 to HP-650 (Faye et al. 2010). These water-supply wells provided raw water to the HBWTP to service the Midway Park, Berkeley Manor, and Paradise Point base housing areas (Figure S1.1). During 1977 and 1978, the Watkins Village base housing area was constructed and was also serviced by the HBWTP. The treatment capacity of the HBWTP was expanded from 2 MGD to 5 MGD during 1986 and 1987 (Naval Facilities Engineering Command, Atlantic Division, 1986, Camp Lejeune Water Document CLW #4938), requiring wells HP-698, HP-699, HP-700, HP-701, HP-703, HP-704, HP-705, HP-706, HP-707, and HP-708 to be constructed and put in service (Figure S1.2). During 1986, well HP-645 was taken out of service; in 1993, well HP-649 was taken out of service. Between 1995 and 2001, water-supply wells HP-557, HP-558, HP-584, HP-617 (new), HP-618 (new), and HP-619 (new) were added to the HBWTP raw-water distribution system. During 1998, use of wells HP-706 and HP-707 was terminated (Figure S1.2).

Monthly averaged annual rates of raw water delivered to the HBWTP and the maximum monthly total water volume that can be produced by all operating wells are shown in Figure S1.4. The diamond symbols in Figure S1.4 show the monthly averaged annual rates of raw water delivered to the HBWTP, and the circle symbols show the rates of raw water that were estimated from delivered-water values. The line in Figure S1.4 indicates the maximum water volume that can be produced by all operating wells assuming that they operate for the entire month at full capacity. The small fluctuations on the line in Figure S1.4 come from the varying numbers of days for different months (e.g., January, 31 days; February, 28 or 29 days), and larger changes in values reflect important system modifications.

The following example of such a system modification is noteworthy. The line in Figure S1.4 shows a sudden increase in maximum volume for 1987 when the maximum volume produced by all operating wells increases approximately from 75 Mgal to 175 Mgal. This sudden increase of 100 Mgal can be explained by analyzing Figure S1.2. The number of operating wells prior to 1987 is reported as eight. After 1987, the number of operating wells increases to 17, which explains the sudden increase seen in the line in Figure S1.4.

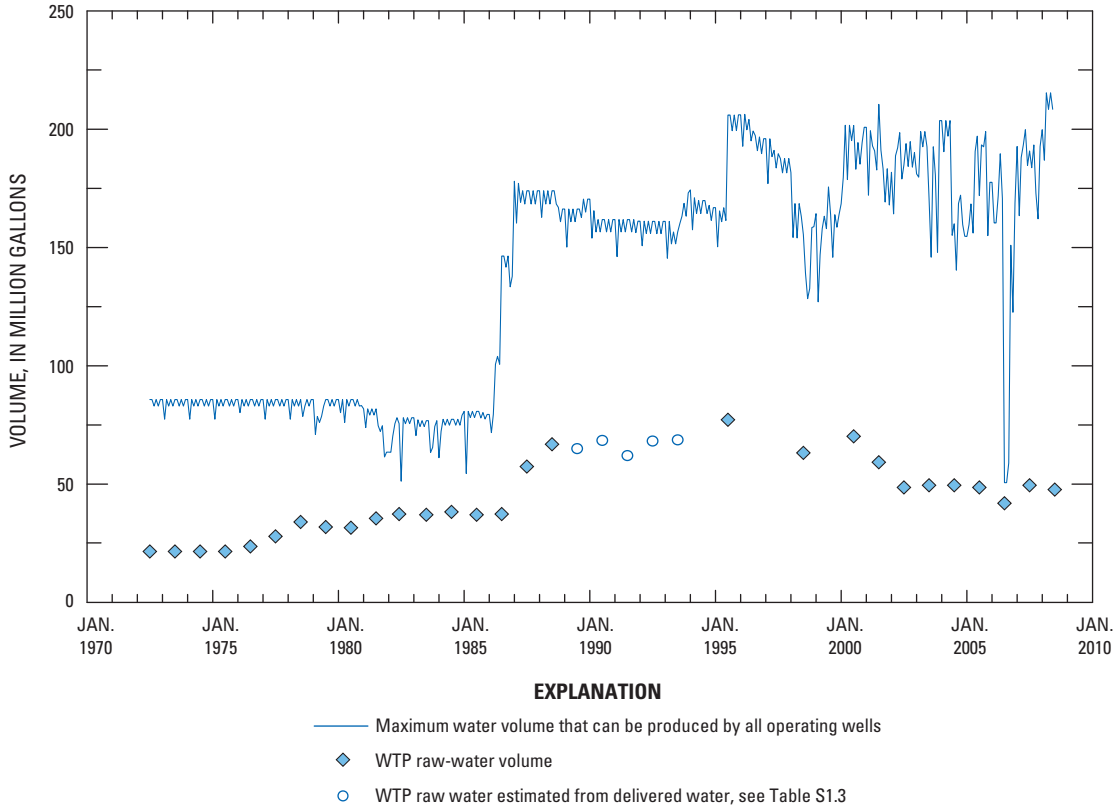

Figure S1.4. Monthly averaged annual water treatment plant (WTP) raw-water volume data and maximum monthly water volume produced by all operating water-supply wells, Holcomb Boulevard water treatment plant service area, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina.

Discussion

The information and data contained in this supplement of the Chapter A report (Supplement 1) represent a comprehensive compilation, organization, and tabulation of well histories for 96 water-supply wells providing raw water (groundwater) to the HPWTP and HBWTP service areas (Figure S1.1). Every attempt has been made to locate well history data from daily pump logs, USMCB Camp Lejeune finished-water records, and other disparate information sources documented herein and in the Chapter A report (Maslia et al. 2013). The purpose of conducting this comprehensive compilation of water-supply well histories is to provide data for model input databases used as part of the historical reconstruction process. Monthly water-supply well operations are necessary and critical for groundwater-flow and contaminant fate and transport model calibration and simulation because a modeling approach was used to reconstruct monthly mean finished-water concentrations at the HPWTP and in Holcomb Boulevard family housing areas. To the knowledge of the authors, the compilation of water-supply well histories presented in this supplement represents the most complete compilation of historical and present-day (2008) water-supply well histories, capacities, and operations to date (2013).

A few points are worth additional discussion to understand limitations assigned to the characterization of data pertinent to water-supply well capacities, histories, and operations. Several water-supply well capacity data were obtained from notes, log books, reports, and verbal discussions with former and current WTP operators and USMCB Camp Lejeune public works utility personnel. The data sources cited herein are reliable; however, data found in hand-written notes or log book entries can be subject to misinterpretation or taken out of context due to unreadable handwriting or poor-quality facsimiles and photocopies. Multiple quality assurance and quality control checks by ATSDR water-modeling staff were conducted to assure unanimous agreements on interpretations of hand-written notes or difficult-to-read facsimiles and photocopies.

The assumption that a water-supply well's capacity is constant for all times between documented capacity measurements also imposes limitations on the accuracy of water-supply well capacity histories and operations. For example, if a water-supply well capacity for a specific well was measured to be 250 gallons per minute (gpm) during May 1976, it was assumed that the well retained its capacity of 250 gpm until the next capacity measurement, which may have been months or years later. In practice, continuous well capacity values for a specific well are not constant, but often decrease over time due to factors such as clogging of well screens by sediment and pump efficiency degradation.

Daily water-supply operational data were available during the period January 1998–June 2008 with the exception of some data gaps. There are still limitations, however, associated with specific knowledge of the on-off cycling operations of water-supply wells pertaining to the data gaps. When data gaps were encountered, the known status of the water-supply well preceding the missing daily status was used. For example, a water-supply well was assumed to be either continuously operating or turned off until specific data (notes) indicated that the well was turned back off or on. Thus, continuous documentation of on-off cycling operations for each water-supply well was available but had data gaps which led to assumptions and acknowledged limitations. For the purpose of the current analyses, the aforementioned assumptions and limitations are viewed as acceptable to the general understanding of synthesizing and reconstructing water-supply well capacity histories for the intended need of reconstructing monthly mean finished-water VOC concentrations required for the ATSDR epidemiological studies.

Summary and Conclusions

This supplement of Chapter A (Supplement 1) of the HPHB study area report series provides specific documentation for 96 water-supply wells—in terms of operations, capacities, and histories—that operated during the period 1942–June 2008 and provided groundwater to the HPWTP and HBWTP. The data presented herein were used to reconstruct historical monthly operations for water-supply wells (Telci et al. 2013), which were necessary to conduct groundwater-flow and contaminant fate and transport modeling as part of the historical reconstruction process. For each water-supply well, detailed chronological records of operation (well history), starting from the time a well was placed into service and ending with the time the well was abandoned, are presented in Appendixes S1.1 and S1.2.

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[8] Certain documents have been provided to ATSDR by the Department of the Navy (Headquarters Marine Corps, Eastern Area Counsel Office, and Marine Corps Base Camp Lejeune) under terms of "For Official Use Only" (FOUO). Some of these documents are not releasable by ATSDR under the terms of FOUO.

Appendix S1.1. Capacity and operational histories for water-supply wells, Hadnot Point water treatment plant service area, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina

Well HP-585

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
8/10/2000	—	Construction completed	Driller[1]
10/10/2000	—	—	Well capacity test
5/2001	—	In service	Daily log for well pumps
3/4/2002	290	In service	Well capacity test
2003	—	In service	2003 well run[2]
2004	—	In service	2004 well run[2]
2005	—	In service	2005 well run[2]
2006	—	In service	2006 well run[2]
2007	—	In service	2007 well run[2]
2008	—	In service	Daily log for well pumps

[1] Matthew Cunningham, A.C. Schultes of Carolina, written communication, no date

[2] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 2002 to 2008 that contain more detailed information

Well HP-595

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
6/5/1997	101.6	Construction completed	Driller[1]
8/12/1997	143.8	—	Well capacity test
9/1998	—	In service	Daily log for well pumps
9/28/1998	183	In service	Well capacity test
7/25/2000	190	In service	Camp Lejeune supply-well inventory sheet
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] S.H. Barner, S.H. Barner, Inc., written communication, August 26, 1998

[2] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-596

[gpm, gallon per minute; —, no data; U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/20/1997	203.3	Construction completed	Driller[1]
5/27/1997	—	—	Well capacity test
9/1998	—	In service	Daily log for well pumps
9/28/1998	239	In service	Well capacity test
7/24/2000	239	In service	USGS well reconnaissance
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] S.H. Barner, S.H. Barner, Inc., written communication, August 26, 1998

[2] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-601

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	240	—	Well production records table [1]
9/1941	—	Construction completed	Driller [2]
7/1/1942	—	In service	Estimated date
11/1/1944	220	In service	Well production records table [1]
11/16/1944	—	In service	Well data list
4/9/1945	180	In service	Well capacity test
4/1/1948	170	In service	Well production records table [1]
7/1/1949	180	In service	Well production records table [1]
10/1/1951	130	In service	Well production records table [1]
11/10/1952	160	In service	Well capacity test
7/22/1954	—	In service	Well capacity test
9/22/1955	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
2/3/1960	—	In service	Water-quality sampling record
11/8/1961	164	In service	Well capacity test
2/7/1966	200	In service	Raw-water supply list
11/8/1966	164	In service	Well capacity test
9/4/1969	143	In service	Well capacity test
8/3/1971	—	In service	Building dimensions list
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
3/1978	—	In service	Operation records
12/1978	—	Out of service	Operation records
8/1979	—	“Out”	Operation records
8/1979	—	Out of service	Operation records
7/1980	—	“Down”	Operation records
7/1980	—	Out of service	Operation records
1/1981	—	“Caved”	Operation records
1/1981	—	Service terminated	Operation records
1/1986	—	Abandonment	AH Environmental Consultants[3]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] J. Womeldurf, Layne Atlantic Company, written communication, September 1941

[3] AH Environmental Consultants, Inc., electronic communication, September 3, 2005

NOTE: HP-601 replaced by HP-660

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, and 3772–3774

Well HP-602

[gpm, gallon per minute; —, no data; WTP, water treatment plant; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	140	—	Well production records table [1]
11/29/1941	—	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	150	In service	Well production records table [1]
11/16/1944	—	In service	Well data list
5/7/1945	150	In service	Well capacity test
4/1/1948	124	In service	Well production records table [1]
7/1/1949	130	In service	Well production records table [1]
10/1/1951	98	In service	Well production records table [1]
6/3/1954	140	In service	Well capacity test
9/22/1955	—	In service	WTP service list
10/24/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/4/1958	—	In service	Well capacity test[3]
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	108	In service	Well capacity test
2/7/1966	100	In service	Raw-water supply list
11/2/1966	100	In service	Well capacity test
8/11/1969	50	In service	Well capacity test
9/4/1969	30	In service	Well capacity test
11/5/1969	108	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
7/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	Operation records
1/16/1979	96	In service	Well capacity test
4/1979	—	Out of service	Operation records
11/1979	—	In service	Operation records
10/1981	—	“Out”	Operation records
10/1981	—	Out of service	Operation records
11/1981	—	In service	Operation records
1/25/1982	—	In service	Well capacity test
1/1983	—	In service	Operation records
8/17/1983	130	In service	Well capacity test
6/20/1984	100	In service	Well survey sheet
10/24/1984	154	In service	Well capacity test
11/30/1984	—	Out of service	CLW-4913 [4]
11/30/1984	—	Service terminated	CLW-4913 [4]
6/1994	—	Abandonment	AH Environmental Consultants[5]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] J. Womeldurf, Layne Atlantic Company, written communication, November 29, 1941

[3] New pump installed

[4] Well secured due to VOC contamination

[5] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-603

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	265	—	Well production records table [1]
12/1/1941	—	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	220	In service	Well production records table [1]
11/16/1944	—	In service	Well data list
4/1/1948	163	In service	Well production records table [1]
7/1/1949	175	In service	Well production records table [1]
10/1/1951	150	In service	Well production records table [1]
7/22/1954	183	In service	Well capacity test
1/26/1955	—	"Pump shaft locked"	Well capacity test [3]
1/26/1955	—	Out of service	Well capacity test [3]
7/19/1955	—	"Pump in operation"	Well capacity test [3]
7/19/1955	—	In service	Well capacity test [3]
6/13/1956	—	"Pump pulled"	Well capacity test [3]
6/13/1956	—	Out of service	Well capacity test [3]
5/28/1957	—	"…pump in operation"	Well capacity test [3]
5/28/1957	—	In service	Well capacity test [3]
5/5/1958	201	In service	Well capacity test [4]
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	167	In service	Well capacity test
2/7/1966	160	In service	Raw-water supply list
11/28/1966	50	In service	Well capacity test
8/11/1969	100	In service	Well capacity test
8/25/1969	160	In service	Raw-water supply list
8/3/1971	—	In service	Building dimension list
5/3/1973	190	In service	Well capacity test
10/4/1973	100	In service	Well capacity test
7/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
3/1978	—	In service	Operation records
1/16/1979	157	In service	Well capacity test
8/1979	—	"Out"	Operation records
8/1979	—	Out of service	Operation records
9/1979	—	In service	Operation records
1/1980	—	In service	CLW-4039
1/1981	—	In service	Operation records
1/1982	157	In service	USGS site schedule form[5]
10/1/1982	119	In service	Well capacity test

Well HP-603—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
9/29/1983	104	In service	Well capacity test
6/20/1984	175	In service	Well survey sheet
10/18/1984	140	In service	Well capacity test
1/1985		In service	Operation records
10/23/1986		In service	USGS well reconnaissance
4/8/1987		In service	USGS well reconnaissance
12/31/1987	157	In service	Well capacity test
2/16/1989	149	In service	Operational records
3/26/1990	128	In service	Well capacity test
11/21/1991	129	In service	Wellhead Management Program Study[6]
10/6/1993	133	In service	Well capacity test
2/3/1995		In service	CLW-2541 and CLW-2544
6/1996		Out of service	Estimated date
6/1996		Service terminated	Estimated date
6/1996		Abandonment	AH Environmental Consultants[7]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] J. Womeldurf, Layne Atlantic Company, written communication, December 1, 1941

[3] Well operated sporadically between January 26, 1955, and May 5, 1958

[4] New pump installed

[5] USGS Site Schedule, written communication, June 4, 1982

[6] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[7] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-604

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1941	—	Construction completed	Estimated date
7/1/1941	150	—	Well production records table [1]
7/1/1942	—	In service	Estimated date
11/1/1944	155	In service	Well production records table [1]
11/16/1944	—	In service	Well data list
4/1/1948	122	In service	Well production records table [1]
7/1/1949	190	In service	Well production records table [1]
10/1/1951	115	In service	Well production records table [1]
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	Out of service	Capacity drawdown curve[2]
3/15/1959	—	Service terminated	Capacity drawdown curve[2]
3/15/1959	—	Abandoned	Capacity drawdown curve

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] "Out of service" and "Service terminated" prior to March 15, 1959

NOTE: HP-604 replaced by HP-637

Well HP-605

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	250	—	Well production records table[1]
12/1/1941	246	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	270	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	250	In service	Well production records table[1]
7/1/1949	305	In service	Well production records table[1]
10/1/1951	210	In service	Well production records table[1]
9/22/1955	—	In service	WTP service list
1/22/1956	—	In service	WTP service list
1/20/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
10/31/1961	224	In service	Well capacity test
2/7/1966	150	In service	Raw-water supply list
8/25/1969	—	Out of service	Raw-water supply list[3]
8/25/1969	—	Service terminated	Raw-water supply list[3]
8/3/1971	—	“Abandoned”	Building dimension list[4]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] J. Womeldurf, Layne Atlantic Company, written communication, December 1, 1941

[3] “Out of service” and “Service terminated” prior to August 25, 1969

[4] “Abandoned” prior to August 3, 1971

NOTE: HP-605 replaced by HP-642

Well HP-606

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	250	—	Well production records table[1]
12/1941	—	Construction completed	Driller[2]
12/1941	250	—	USGS site schedule form[3]
7/1/1942	—	In service	Estimated date
11/1/1944	210	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	144	In service	Well production records table[1]
7/1/1949	265	In service	Well production records table[1]
10/1/1951	142	In service	Well production records table[1]
9/22/1955	—	In service	WTP service list
1/22/1956	—	In service	WTP service list
1/20/1957	—	In service	WTP service list
9/17/1958	—	In service	Water-quality sampling record
3/15/1959	—	In service	Capacity drawdown curve
3/1/1960	—	In service	Water-quality sampling record
10/31/1961	183	In service	Well capacity test
2/7/1966	180	In service	Raw-water supply list
11/21/1966	232	In service	Well capacity test
8/3/1969	—	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	Operation records
1/16/1979	212	In service	Well capacity test
3/1980	—	In service	Operation records
1/1981	—	In service	Operation records
9/29/1982	187	In service	Well capacity test
1/1983	—	In service	Operation records
10/26/1984	183	In service	Well capacity test
1/1985	—	In service	Operation records
1/1986	—	In service	Operation records
10/21/1986	—	In service	USGS well reconnaissance
1/5/1988	137	In service	Well capacity test
2/13/1989	128	In service	Well capacity test
3/21/1989	317	In service	Well capacity test[4]
3/26/1990	267	In service	Well capacity test
11/21/1991	267	In service	Wellhead Management Program Study[5]
6/22/1994	—	In service	CLW-2357

Well HP-606—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
10/12/1994	226	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
7/16/1997	197	In service	Well capacity test
1998	—	In service	Daily log for well pumps
1999	—	In service	Daily log for well pumps
2000	—	In service	Daily log for well pumps
2001	—	Out of service	AH Environmental Consultants[6]
2002	—	In service	2002 well run[7]
6/2003	—	Out of service	AH Environmental Consultants[8]
2004	—	Out of service	2004 well run[7]
2005	—	Out of service	2005 well run[7]
2006	—	Out of service	2006 well run[7]
2007	—	In service	2007 well run[7]
2008	—	In service	Daily log for well pumps

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] J. Womeldurf, Layne Atlantic Company, written communication, (not dated)

[3]USGS Site Schedule, written communication, June 4, 1982

[4]New pump installed

[5]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[6]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[7]Well run, Scott Williams, electronic communication, June 6, 2008

[8]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-607 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
8/21/1984	275	Construction completed	Driller[1]
7/1/1985	—	In service	Estimate date
4/22/1986	270	In service	Well capacity test
10/17/1988	266	In service	Well capacity test
2/1989	266	In service	Operational records
3/26/1990	246	In service	Well capacity test
11/21/1991	246	In service	Wellhead Management Program Study[2]
10/6/1993	157	In service	Well capacity test
7/14/1994	293	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/14/1997	289	In service	Well capacity test
1998	—	In service	Daily log for well pumps
1999	—	In service	Daily log for well pumps
2000	—	In service	Daily log for well pumps
7/25/2000	289	In service	Well survey sheet
2001	—	In service	AH Environmental Consultants[3]
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]Carolina Well & Pump Company, written communication, August 21, 1984

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-607 (new) replaced HP-612 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-607 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1941	—	Construction completed	Estimated date
7/1/1941	200	—	Well production records table [1]
7/1/1942	—	In service	Estimated date
11/1/1944	170	In service	Well production records table [1]
11/16/1944	—	In service	Well data list
4/1/1948	165	In service	Well production records table [1]
7/1/1949	85	In service	Well production records table [1]
10/1/1951	100	In service	Well production records table [1]
9/22/1955	—	In service	WTP service list
9/23/1955	—	Out of service	Estimated date[2]
9/23/1955	—	Service terminated	Estimated date[2]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] Estimated "Out of service" and "Service terminated" dates from WTP Service List because HP-607 not listed as pumping after 9/22/1955 and was replaced by HP-630

NOTE: HP-607 (old) replaced by HP-630

Well HP-608

[gpm, gallon per minute; —, no data; WTP, water treatment plant; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	190	—	Well production records table[1]
3/1942	—	Construction completed	Driller[2]
7/1/1942	190	In service	Estimated date
11/1/1944	205	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	175	In service	Well production records table[1]
7/1/1949	185	In service	Well production records table[1]
10/1/1951	162	In service	Well production records table[1]
7/22/1954	201	In service	Well capacity test
7/22/1954	—	"in operation 2 weeks…cut off"	Well capacity test
8/5/1954	—	Out of service	Well capacity test
7/19/1955	—	"put back in operation"	Well capacity test
7/19/1955	—	In service	Well capacity test
1/2/1956	—	In service	WTP service list
2/28/1957	—	In service	WTP service list
1/6/1959	230	In service	Well capacity test[3]
10/31/1961	180	In service	Well capacity test
2/7/1966	180	In service	Raw-water supply list
11/22/1966	201	In service	Well capacity test
8/3/1969	162	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	Out of service	Operation records[4]
7/1978	—	"Down for repair"	Operation records
7/1978	—	Out of service	Operation records
8/1979	—	"Out"	Operation records
8/1979	—	Out of service	Operation records
9/12/1979	214	In service	Well capacity test
2/13/1980	146	In service	Well capacity test
1/1981	—	In service	Operation records
5/7/1982	165	In service	Well index[5]
11/2/1983	115	In service	Well capacity test

Well HP-608—Continued

[gpm, gallon per minute; —, no data; WTP, water treatment plant; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/1984	—	"Down"	Operation records
1/1984	—	Out of service	Operation records
2/1984	—	In service	Operation records
3/21/1984	226	In service	Well capacity test
11/15/1984	207	In service	Well capacity test
12/6/1984	—	"Shut down"	Wellhead Management Program Study[6]
12/6/1984	—	Out of service	Wellhead Management Program Study[6]
12/6/1984	—	Service terminated	CLW-4913[7]
6/1994	—	Abandonment	AH Environmental Consultants[8]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] Layne Atlantic Company, written communication, April 13, 1942

[3] New pump installed

[4] "Out of service" because operation records do not list HP-608 among active wells

[5] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[6] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[7] Well secured due to VOC contamination

[8] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-609

[gpm, gallon per minute; —, no data; WTP, water treatment plant; <, less than; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	205	—	Well production records table[1]
4/14/1942	165	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	210	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	200	In service	Well production records table[1]
7/1/1949	235	In service	Well production records table[1]
10/1/1951	146	In service	Well production records table[1]
11/10/1952	—	In service	Well capacity test
5/28/1954	156	In service	Well capacity test[3]
9/22/1955	—	In service	WTP service list
1/2/1956	—	In service	WTP service list
4/3/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
10/31/1961	137	In service	Well capacity test
4/26/1963	187	In service	Well capacity test[3]
2/7/1966	180	In service	Raw-water supply list
12/12/1966	190	In service	Well capacity test
3/13/1968	30	In service	Well capacity test
8/11/1969	133	In service	Well capacity test
9/4/1969	133	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/12/1979	104	In service	Well capacity test
2/13/1980	95	In service	Well capacity test
10/8/1981	100	In service	Well capacity test
1/1982	—	In service	Operation records
9/23/1983	104	In service	Well capacity test
10/26/1984	119	In service	Well capacity test
6/1985	—	Out of service	Operation records
7/1985	—	“Down…wiring”	Operation records
7/1985	—	Out of service	Operation records
10/1985	—	In service	Operation records
4/1986	—	In service	Operation records
3/22/1988	100	In service	Well capacity test
2/1989	100	In service	Operational records

Well HP-609—Continued

[gpm, gallon per minute; —, no data; WTP, water treatment plant; <, less than; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
8/10/1990	199	In service	Well capacity test
11/21/1991	199	In service	Wellhead Management Program Study[4]
10/5/1994	162	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
3/1997	—	"Down"	Daily log for well pumps
3/1997	—	Out of service	Daily log for well pumps
1998	—	"Cave In 1998"	AH Environmental Consultants[5]
1998	—	Out of service	AH Environmental Consultants[5]
1998	—	"Down"	Daily log for well pumps
1998	—	Out of service	Daily log for well pumps
1998	—	Service terminated	AH Environmental Consultants[5]
<2001	—	Abandonment	AH Environmental Consultants[6]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] N.H. Kellam, Layne Atlantic Company written communication, April 14, 1942

[3] New pump installed

[4] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1997 to 2000 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-610

[gpm, gallon per minute; —, no data; WTP, water treatment plant; TCE, trichloroethylene; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	250	—	Well production records table[1]
4/20/1942	—	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	265	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	240	In service	Well production records table[1]
7/1/1949	215	In service	Well production records table[1]
10/1/1951	160	In service	Well production records table[1]
4/1953	225	In service	Well capacity test[3]
6/4/1953	200	In service	Well capacity test
9/9/1953	200	In service	Well capacity test
1/28/1954	—	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/2/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
8/13/1958	—	In service	Well capacity test[3]
3/15/1959	—	In service	Capacity drawdown curve
10/31/1961	201	In service	Well capacity test
2/7/1966	190	In service	Raw-water supply list
11/1/1966	199	In service	Well capacity test
8/11/1969	130	In service	Well capacity test
9/4/1969	130	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/1/1977	128	In service	Well capacity test
1/1978	—	In service	Operation records
2/12/1979	—	“Pulled 2/12/79”	Operation records
2/12/1979	—	Out of service	Operation records
8/1979	—	“Out”	Operation records
8/1979	—	Out of service	Operation records
11/1979	—	In service	Operation records
3/1980	—	“Out”	Operation records
3/1980	—	Out of service	Operation records
4/1980	—	In service	Operation records
6/4/1981	128	In service	Well index[4]
10/1981	—	“Out”	Operation records
10/1981	—	Out of service	Operation records

Well HP-610—Continued

[gpm, gallon per minute; —, no data; WTP, water treatment plant; TCE, trichloroethylene; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/1985	—	In service	Operation records
3/29/1985	195	In service	Well capacity test
9/10/1985	200	In service	Well capacity test
4/1986	—	In service	Operation records
9/20/1988	222	In service	Well capacity history
2/1989	222	In service	Operational records
4/3/1990	214	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[5]
10/1/1992	—	In service	1994 Well Head Monitoring Study[6,7]
6/23/1994	—	Out of service	CLW-2357[8]
6/23/1994	—	Service terminated	CLW-2357[8]
10/1995	—	Abandonment	AH Environmental Consultants[9]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]Layne Atlantic Company, written communication, April 20, 1942

[3]New pump installed

[4]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[5]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[6]1994 Well Head Monitoring Study, written communication, January 1994

[7]HP-610 contaminated with TCE on 10/1/1992

[8]Estimated "Out of service" and "Service terminated" dates

[9]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, and 3775–3777

USGS, operation records, written communication, March 2004

Well HP-611 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
3/24/1997	144	Construction completed	Driller[1]
4/1/1997	—	—	Well capacity test
1/1/1998	—	In service	Estimated date
9/1998	—	In service	Daily log for well pumps
9/22/1998	—	In service	Well capacity test
7/25/2000	144	In service	Well survey sheet
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1]S.H. Barner Inc., written communication, August 26, 1998

[2]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-611 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	280	—	Well production records table[1]
6/27/1942	—	Construction completed	Driller[2]
7/1/1942	280	In service	Estimated date
11/1/1944	270	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	310	In service	Well production records table[1]
7/1/1949	235	In service	Well production records table[1]
10/1/1951	180	In service	Well production records table[1]
5/5/1954	260	In service	Well capacity test[3]
9/22/1955	—	In service	WTP service list
1/22/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/6/1958	—	In service	Well capacity test[3]
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	256	In service	Well capacity test
2/7/1966	250	In service	Raw-water supply list
12/13/1966	162	In service	Well capacity test
8/13/1969	224	In service	Well capacity test
9/4/1969	244	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/10/1979	235	In service	Well capacity test
1/1979	—	In service	Operation records
8/1979	—	Out of service	Operation records
3/1980	—	“Caved”	Operation records
3/1980	—	Service terminated	Operation records
6/1982	—	Abandonment	AH Environmental Consultants[4]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellam, Layne Atlantic Company, written communication, June 27, 1942

[3]New pump installed

[4]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-611 (old) replaced by HP-623

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, and 3644–3646

Well HP-612 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
4/8/1997	102	Construction completed	Driller[1]
4/29/1997	—	—	Well capacity test
1/1/1998	—	In service	Estimated date
9/1998	—	In service	Daily log for well pumps
9/28/1998	170	In service	Well capacity test
7/25/2000	170	In service	Well survey sheet
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1]S.H. Barner Inc., written communication, August 26, 1998

[2]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 and contain more detailed information

Well HP-612 (old)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	220	—	Well production records table[1]
6/22/1942	190	Construction completed	Driller[2]
7/1/1942	—	In service	Estimated date
11/1/1944	240	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
6/11/1945	170	In service	Well capacity test
4/1/1948	195	In service	Well production records table[1]
7/1/1949	180	In service	Well production records table[1]
10/1/1951	59	In service	Well production records table[1]
4/1953	200	In service	Well capacity test[3]
9/19/1953	200	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Well drawdown curve
11/9/1961	164	In service	Well capacity test
2/7/1966	150	In service	Raw-water supply list
11/9/1966	111	In service	Well capacity test
8/11/1969	30	In service	Well capacity test
9/4/1969	108	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
3/1/1977	222	In service	Well capacity test
1/11/1978	230	In service	Well capacity test
2/13/1978	—	“Pump pulled”	Well log book[4]
2/13/1978	—	Out of service	Well log book[4]
2/23/1978	—	In service	Well log book[4]
1/1979	—	In service	Operation records
5/1980	—	In service	Operation records
6/1980	—	“CI”[5]	CLW-3606
6/1980	—	Out of service	CLW-3606
6/1980	—	Service terminated	CLW-3606

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellum, Layne Atlantic Company written communication, June 22, 1942

[3]New pump installed

[4]BAH Report: 2392_00FC441-004-010, electronic communication, May 2009

[5]Caved in

NOTE: HP-612 (old) replaced by HP-607 (new)

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, and 3644–3646

Well HP-613

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	290	—	Well production records table[1]
5/15/1942	310	Construction completed	Driller[1]
7/1/1942	—	In service	Estimated date
11/1/1944	305	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	110	In service	Well production records table[1]
7/1/1949	195	In service	Well production records table[1]
10/1/1951	95	In service	Well production records table[1]
4/1953	250	In service	Well capacity test[3]
9/16/1953	185	In service	Well capacity test
10/19/1953	250	In service	Well capacity test
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	219	In service	Well capacity test
2/7/1966	195	In service	Raw-water supply list
11/8/1966	167	In service	Well capacity test
8/7/1969	197	In service	Well capacity test
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1978	—	“Down”	Operation records
3/1978	—	Out of service	Operation records
1/1979	—	“Down”	Operation records
1/1979	—	Out of service	Operation records
2/1980	—	“Out”	Operation records
2/1980	—	Out of service	Operation records
2/1981	—	“In service 2-27-81”	Operation records
2/27/1981	162	In service	Well index[4]
9/24/1982	151	In service	Well capacity test
11/18/1983	190	In service	Well capacity test
10/1984	—	“No elect power”	Operation records
10/1984	—	Out of service	Operation records
1/1985	—	In service	Operation records
4/1986	—	In service	Operation records
3/20/1988	175	In service	Well capacity test
3/1989	175	In service	Operational records
3/28/1990	140	In service	Well capacity test
12/26/1990	159	In service	Well capacity test
11/21/1991	157	In service	Wellhead management program[5]
10/12/1993	162	In service	Well capacity test

Well HP-613—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
6/17/1998	—	In service	CLW-2963
2/2001	—	"Down"	Daily log for well pumps
2/2001	—	Out of service	Daily log for well pumps
2002	—	Out of service	2002 well run[6]
2003	—	Out of service	2003 well run[6]
6/2003	—	Service terminated	AH Environmental Consultants[7]

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] N.H. Kellam, Layne Atlantic Company, written communication, May 15, 1942

[3] New pump installed

[4] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[5] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[6] Well run, Scott Williams, electronic communication, June 6, 2008

[7] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-614 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
12/20/1994	227	Construction completed	Driller[1]
2/3/1995	—	—	CLW-2541 and CLW-2544[2]
7/1/1995	—	In service	Estimated date
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[3]
11/2/2001	246	In service	Well capacity test
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]Scott H. Barner, S.H. Barner, Inc., written communication, December 22, 1994.

[2]Operational status not known because CLW-2541 and CLW-2544 do not list HP-614 (new) among active wells

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-614 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	275	—	Well production records table[1]
8/1/1942	225	Construction completed	Driller[2]
1/1/1943	—	In service	Estimated date
11/1/1944	245	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	236	In service	Well production records table[1]
7/1/1949	245	In service	Well production records table[1]
10/1/1951	167	In service	Well production records table[1]
6/4/1953	—	In service	Well capacity test
5/21/1954	250	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
1/20/1957	—	In service	WTP service list
6/4/1957	—	“Pump out of order”	Well capacity test
6/4/1957	—	Out of service	Well capacity test
4/15/1958	230	In service	Well capacity test[3]
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	222	In service	Well capacity test
2/7/1966	200	In service	Raw-water supply list
11/8/1966	190	In service	Well capacity test
8/5/1969	130	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
4/1/1977	115	In service	Well capacity test
1/1978	—	In service	Operation records
1/1979	—	“Caved”	Operation records
1/1979	—	Out of service	Operation records
1/1980	—	Out of service	Operation records
1/1981	—	Out of service	Operation records
6/1982	—	Service terminated	AH Environmental Consultants[3]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellam, Layne Atlantic Company, written communication, August 1, 1942

[3]New pump installed

[4]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-614 (old) replaced by HP-622

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, and 3644–3646

Well HP-615

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	260	—	Well production records table[1]
7/2/1942	225	Construction completed	Driller[2]
1/1/1943	—	In service	Estimated date
11/1/1944	255	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	188	In service	Well production records table[1]
7/1/1949	165	In service	Well production records table[1]
10/1/1951	70	In service	Well production records table[1]
9/30/1953	167	In service	Well capacity test[3]
4/18/1955	—	In service	Well capacity test
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	201	In service	Well capacity test
2/7/1966	200	In service	Raw-water supply list
11/3/1966	128	In service	Well capacity test
11/29/1967	—	In service	Well capacity test
3/12/1968	232	In service	Well capacity test[3]
8/11/1969	252	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
2/1978	—	In service	Operation records
1/17/1979	119	In service	Well capacity test
1/1980	—	In service	Operation records
2/1981	—	In service	Operation records
9/30/1982	214	In service	Well capacity test
3/1983	—	“No power”	Operation records
3/1983	—	Out of service	Operation records
8/1983	—	In service	Operation records
10/1983	—	“Down”	Operation records
10/1983	—	Out of service	Operation records
1/1984	—	“Pulled”	Operation records
1/1984	—	Service terminated	Operation records
6/1985	—	Abandonment	AH Environmental Consultants[4]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellam, Layne Atlantic Company, written communication, July 2, 1942

[3]New pump installed

[4]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-616

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	275	—	Well production records table[1]
8/3/1942	200	Construction completed	Driller[2]
1/1/1943	—	In service	Estimated date
11/1/1944	280	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	236	In service	Well production records table[1]
7/1/1949	235	In service	Well production records table[1]
10/1/1951	155	In service	Well production records table[1]
5/12/1954	215	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/3/1956	—	In service	WTP service list
1/20/1957	—	In service	WTP service list
3/6/1958	—	In service	Well capacity test[3]
3/15/1959	—	In service	Capacity drawdown curve
2/3/1960	—	In service	Water-quality sampling record
2/7/1966	200	In service	Raw-water supply list
10/25/1966	115	In service	Well capacity test
8/1/1969	190	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/16/1979	—	In service	Well capacity test
3/1980	—	In service	Operation records
1/1981	—	In service	Operation records
9/24/1982	151	In service	Well capacity test
6/1983	—	“Down”	Operation records
6/1983	—	Out of service	Operation records
8/1983	—	In service	Operation records
8/4/1983	200	In service	Well capacity test
10/22/1984	210	In service	Well capacity test
9/9/1985	210	In service	Well capacity test
4/14/1986	—	In service	CLW-4935 and CLW-4943
4/9/1987	—	In service	USGS well reconnaissance
9/16/1988	164	In service	Well capacity test
2/1989	210	In service	Operational records

Well HP-616—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/20/1990	178	In service	Well capacity test
11/21/1991	178	In service	Wellhead Management Program Study[4]
10/12/1993	190	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
6/10/1997	167	In service	Well capacity test
8/4/1998	—	In service	CLW-2973
2001	—	In service	AH Environmental Consultants[5]
1/2002	—	"Down"	Daily log for well pumps
1/2002	—	Out of service	Daily log for well pumps
2002	—	Out of service	2002 well run[6,7]
6/2003	—	Service terminated	AH Environmental Consultants[8]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellam, Layne Atlantic Company, written communication, August 3, 1942

[3]N.H. Kellam, new pump installed

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]AH Environmental Consultants, Inc., Wellhead Protection Plan – 2002 Update

[6]Well run, Scott Williams, electronic communication, June 6, 2008

[7]Estimated "Out of service" date from 2002 well run because HP-616 not listed among wells pumping

[8]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily Log for Well Pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-617 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	300	—	Well production records table[1]
1942	—	Construction completed	Estimated date[2]
Unknown	250	—	Estimated[3]
1/1/1943	—	In service	Estimated date
11/1/1944	180	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	170	In service	Well production records table[1]
10/1/1951	64	In service	Well production records table[1]
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
4/17/1963	128	In service	Well capacity test
2/7/1966	150	In service	Raw-water supply list
8/25/1969	115	In service	Raw-water supply list
8/3/1971	—	Out of service	Building dimension list[4]
8/3/1971	—	Service terminated	Building dimension list[4]
8/3/1971	—	Abandoned	Building dimension list[4]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]Estimated "Construction completed" date based on when HP-616 put in operation, raw water supply data

[3]Estimated initial capacity from well data list

[4]"Out of service," "Service terminated," and "Abandoned" prior to August 3, 1971

NOTE: HP-617 (old) replaced by HP-654

Well HP-618 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	260	—	Well production records table[1]
1942	—	Construction completed	Estimated date[2]
Unknown	200	—	Estimated[3]
1/1/1943	—	In service	Estimated date
11/1/1944	115	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	120	In service	Well production records table[1]
7/1/1949	26	In service	Well production records table[1]
10/1/1951	35	In service	Well production records table[1]
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	195	In service	Well capacity test
2/7/1966	190	In service	Raw-water supply list
8/25/1969	—	Out of service	Raw-water supply list[4]
8/25/1969	—	Service terminated	Raw-water supply list[4]
8/3/1971	—	Abandoned	Building dimension list[5]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]Estimated “Construction completed” date based on when HP-616 put in operation, raw water supply data

[3]Estimated initial capacity from well data list

[4]“Out of service” and “Service terminated” prior to August 25, 1969

[5]“Abandoned” prior to August 3, 1971

NOTE: HP-618 (old) replaced by HP-641

Well HP-619 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	250	—	Well production records table[1]
1942	—	Construction completed	Estimated date[2]
Unknown	200	—	Estimated[3]
1/1/1943	—	In service	Estimated date
11/1/1944	165	In service	Well production records table[1]
11/16/1944	—	In service	Well data list
4/1/1948	145	In service	Well production records table[1]
7/1/1949	60	In service	Well production records table[1]
10/1/1951	85	In service	Well production records table[1]
9/22/1955	—	In service	WTP service list
1/3/1956	—	In service	WTP service list
11/20/1956	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
1966	160	In service	Raw-water supply list
8/25/1969	160	In service	Raw-water supply list
8/3/1971	—	In service	Building dimension list
1/1976	—	Out of service	CLW-4039[4]
1/1976	—	Service terminated	CLW-4039[4]
3/1999	—	Abandonment	AH Environmental Consultants[5]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]Estimated “Construction completed” date based on when HP-616 put in operation, raw water supply data

[3]Estimated initial capacity from well data list

[4]“Out of service” and “Service terminated” prior to January 1976

[5]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-619 (old) replaced by HP-653

Well HP-620

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	265	—	Well production records table[1]
6/1942	—	Construction completed	AH Environmental Consultants[2]
Unknown	185	—	Estimated[3]
7/1/1943	—	In service	Estimated date
9/28/1944	200	In service	Well capacity test
11/1/1944	185	In service	Well production records table[1]
4/1/1948	176	In service	Well production records table[1]
7/1/1949	155	In service	Well production records table[1]
10/1/1951	80	In service	Well production records table[1]
9/16/1953	110	In service	Well capacity test
10/19/1953	245	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
10/4/1965	250	In service	Well capacity test
11/29/1966	267	In service	Well capacity test
11/29/1967	—	In service	Well capacity test
8/11/1969	207	In service	Well capacity test
6/4/1971	—	In service	Well capacity test
6/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	CLW-4039
1/1979	—	In service	CLW-4039
8/1979	—	“Out”	Operation records
8/1979	—	Out of service	Operation records
9/1979	—	In service	Operation records
1/1980	—	In service	CLW-4039
4/1981	—	In service	Operation records
8/5/1982	—	“Pulled pump”	Well index[4]
8/5/1982	—	Out of service	Well index[4]
8/31/1982	162	In service	Well index[4,5]
1/1983	—	In service	Operation records
9/29/1983	128	In service	Well capacity test
1/1984	—	In service	Operation records
5/30/1985	232	In service	Well capacity test

Well HP-620—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/1986	—	"Down"	Operation records
2/1986	—	Out of service	Operation records
4/1986	—	In service	Operation records
4/16/1986	201	In service	Well capacity test
4/8/1987	—	In service	USGS well reconnaissance
9/29/1988	125	In service	Well capacity test
11/29/1988	192	In service	Well capacity test
3/1989	192	In service	Operational records
4/4/1990	224	In service	Well capacity test
11/21/1991	224	In service	Wellhead Management Program Study[6]
9/4/1992	125	In service	Well capacity test
10/7/1993	105	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
6/9/1997	105	In service	Well capacity test
4/2001	—	"Well is down"	Daily log for well pumps
4/2001	—	Out of service	Daily log for well pumps
2/2002	—	In service	Daily log for well pumps
2003	—	In service	2003 well run[7]
2004	—	In service	2004 well run[7]
2005	—	In service	2005 well run[7]
2006	—	In service	2006 well run[7]
2007	—	In service	2007 well run[7]
2008	—	In service	Daily log for well pumps

[1] BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[3] Estimated initial capacity from BAH Report 1437

[4] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[5] New pump installed

[6] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[7] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-621 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
4/26/1995	—	Construction completed	Driller[1]
5/17/1995	176	—	Well capacity test
1/1/1996	—	In service	Estimated date
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] Scott H. Barner, S.H. Barner, Inc. written communication, May 1, 1995

[2] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-621 (old)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
7/1/1941	275	—	Well production records table[1]
10/21/1942	200	Construction completed	Driller[2]
7/1/1943	—	In service	Estimated date
11/1/1944	155	In service	Well production records table[1]
9/28/1944	—	In service	Well capacity test
4/1/1948	104	In service	Well production records table[1]
7/1/1949	48	In service	Well production records table[1]
10/1/1951	75	In service	Well production records table[1]
9/29/1953	190	In service	Well capacity test[3,4]
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
11/8/1961	180	In service	Well capacity test
2/7/1966	150	In service	Raw-water supply list
11/1/1966	203	In service	Well capacity test
8/25/1969	172	In service	Raw-water supply list
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
7/1978	—	“Pump pulled 7-78”	Operation records
7/7/1978	—	Out of service	Operation records
3/1980	—	“Caved”	Operation records
3/1980	—	Service terminated	Operation records
6/1982	—	Abandonment	AH Environmental Consultants[5]

[1]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[2]N.H. Kellam, Layne Atlantic Company, written communication, October 21, 1942

[3]New pump installed

[4]BAH Report: 2396_00FC441-004-014, electronic communication, May 2009

[5]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-621 (old) replaced by HP-629 (new)

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, and 3644–3646

Well HP-622

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/19/1983	323	Construction completed	Driller[1]
6/1/1984	—	In service	AH Environmental Consultants[2]
8/1984	—	In service	Operation records
9/5/1985	320	In service	Well capacity test
5/26/1986	320	In service	CLW-4935 and CLW-4943
5/2/1988	290	In service	Well capacity test
10/18/1988	330	In service	Well capacity test
2/1989	330	In service	Operational records
5/14/1990	333	In service	Well capacity test
11/21/1991	330	In service	Wellhead Management Program Study[3]
10/18/1993	310	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
6/15/1997	280	In service	Well capacity test
3/20/2001	293	In service	Well capacity test
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]R. Howard, Carolina Well & Pump Company, written communication, May 19, 1983

[2]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[3]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-622 replaced HP-614 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

USGS, operation records, written communication, March 2004

Well HP-623

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/25/1983	360	Construction completed	Driller[1]
8/1984	—	In service	Operation records[2]
9/5/1985	242	In service	Well capacity test
4/1986	—	In service	Operation records
10/18/1988	212	In service	Well capacity test
2/1989	212	In service	Operational records
4/4/1990	210	In service	Well capacity test
11/21/1991	210	In service	Wellhead Management Program Study[3]
9/1/1992	197	In service	Well capacity test
10/18/1993	190	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/9/1997	175	In service	Well capacity test
2001	175	In service	AH Environmental Consultants[4]
2002	—	In service	Daily log for well pumps
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
7/14/2005	—	“shut down and locked...”	Well correspondence[6]
7/14/2005	—	Out of service	Well correspondence[6]
2006	—	Out of service	2006 well run[5]
2007	—	Out of service	2007 well run[5]
2008	—	Out of service	Daily log for well pumps

[1]Carolina Well & Pump Company, written communication, March 12, 1984

[2]Estimated “In service” date from operation records because is first date HP-623 (611) water level recorded

[3]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6]Well run, Scott Williams, electronic communication, June 6, 2008

[5]BAH Report: 2397_00FC441-004-015, electronic communication, May 2009

NOTE: HP-623 replaced HP-611 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

USGS, operation records, written communication, March 2004

Well HP-624

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
Unknown	250	—	Well construction drawing
10/1/1951	—	In service	Estimated date
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
10/31/1961	151	In service	Well capacity test
4/4/1963	140	In service	Well capacity test
2/7/1966	150	In service	Raw-water supply list
1968	—	Out of service	AH Environmental Consultants[1]
1968	—	Service terminated	AH Environmental Consultants[1]
1968	—	Abandonment	AH Environmental Consultants[2]

[1]Estimated “Out of service” and “Service terminated” dates

[2]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Well HP-625

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
Unknown	150	—	Well construction drawings
10/1/1951	—	In service	Estimated date
9/4/1953	160	In service	Well capacity test[1]
2/11/1954	175	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/2/1956	—	In service	WTP service list
2/4/1957	167	In service	Well capacity test
3/15/1959	—	In service	Capacity drawdown curve
4/9/1961	118	In service	Well capacity test
4/4/1963	117	In service	Well capacity test
2/7/1966	110	In service	Raw-water supply list
9/4/1969	128	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	Out of service	Estimated date[2]
1/1976	—	Service terminated	Estimated date[2]

[1]In service prior to this date, well capacity test

[2]Estimated “Out of service” and “Service terminated” dates from CLW-4039 because HP-625 not listed among active wells

NOTE: HP-625 replaced by HP-655

Well HP-626

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
Unknown	180	—	Well capacity test
10/1/1951	—	In service	Estimated date
6/13/1954	—	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/1/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
2/7/1966	200	In service	Raw-water supply list
11/16/1966	178	In service	Well capacity test
8/7/1969	190	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/28/1977	180	In service	Well capacity test
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
2/13/1980	122	In service	Well capacity test
1/1981	—	“Down”	Operation records
1/1981	—	Out of service	Operation records
1/1981	—	“CI”[1]	CLW-4039
1/1981	—	Service terminated	CLW-4039

[1]Caved In

NOTE: HP-626 replaced by HP-628 (new)

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, and 3772–3774

Well HP-627 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
5/12/1995	381	Construction completed	Driller[1]
1/1/1996	—	In service	Estimated date
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1]S.H. Barner, Inc., written communication, May 12, 1995

[2]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-627 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
10/1/1951	—	In service	Estimated date
4/5/1953	190	In service	Well capacity test
4/24/1953	175	In service	Well capacity test
9/22/1955	—	In service	WTP service list
10/24/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
4/4/1963	157	In service	Well capacity test
1/16/1966	143	In service	Well capacity test
1/5/1969	149	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
3/28/1977	150	In service	Well capacity test
1/1978	—	In service	Operation records
1/11/1979	—	In service	Well capacity test
9/1979	—	“Down”	Operation records
9/1979	—	Out of service	Operation records
3/1980	—	“Caved”	Operation records
3/1980	—	Service terminated	Operation records
6/1/1982	—	Abandonment	AH Environmental Consultants[1]

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-627 (old) replaced by HP-661

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, and 3644–3646

Well HP-628 (new)

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
6/1/1984	—	Construction completed	AH Environmental Consultants[1]
10/2/1984	160	—	Driller[2]
4/1986	—	—	Operation records[3]
5/8/1986	150	In service	USGS well reconnaissance
10/18/1988	190	In service	Well capacity test
2/1989	190	In service	Operational records
4/4/1990	172	In service	Well capacity test
11/21/1991	172	In service	Wellhead Management Program Study[4]
10/5/1994	143	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
8/4/1998	—	In service	CLW-2973
3/27/2001	172	In service	Well capacity test
2002	—	In service	2002 well run[5]
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[2]Carolina Well & Pump Company, written communication, October 2, 1984

[3]HP-628 (new) not listed as “In Service” during April 1984 because not listed among active wells in operation records

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-628 (new) replaced HP-626

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

USGS, operation records, written communication, March 2004

Well HP-628 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
Unknown	160	—	Well construction drawing
10/1/1951	—	In service	Estimated date
9/22/1955	—	In service	WTP service list
10/24/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
3/15/1959	250	In service	Capacity drawdown curve
10/31/1961	242	In service	Well capacity test
4/4/1963	235	In service	Well capacity test
2/7/1966	200	In service	Raw-water supply list
1968	—	Out of service	Estimated date
1968	—	Service terminated	Estimated date
1968	—	Abandonment	AH Environmental Consultants[1]

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-628 (old) replaced by HP-639 (old)

Well HP-629 (old)

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1951	—	Construction completed	Well pump information list
Unknown	250	—	Well construction drawing
10/1/1951	—	In service	Estimated date
9/22/1955	—	In service	WTP service list
1/3/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
10/31/1961	260	In service	Well capacity test
3/15/1959	260	In service	Capacity drawdown curve
2/7/1966	200	In service	Raw-water supply list
1968	—	Out of service	Estimated date
1968	—	Service terminated	Estimated date
1968	—	Abandonment	AH Environmental Consultants[1]

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-629 (old) replaced by HP-640

Well HP-630

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1955	—	Construction completed	Estimated date[1]
Unknown	200	—	Estimated[2]
9/22/1955	—	In service	WTP service list
10/5/1956	—	In service	Well capacity test
4/8/1957	—	In service	WTP service list
3/15/1959	—	In service	Capacity drawdown curve
10/31/1961	128	In service	Well capacity test
2/7/1966	—	Out of service	Raw-water supply list[3]
2/7/1966	—	Service terminated	Raw-water supply list[3]
2/7/1966	—	Abandoned	Raw-water supply list[3]

[1]Estimated "Construction completed" date based on when HP-630 put "In service"

[2]Estimated initial capacity from HP-607 (old)

[3]"Out of service," "Service terminated," and "Abandoned" prior to February 7, 1966

NOTE: HP-630 replaced HP-607 (old)

Well HP-631

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
1954	—	Construction completed	Estimated date
3/10/1954	178	—	Well capacity test
7/1/1954	—	In service	Estimated date
9/22/1955	—	In service	WTP service list
1/3/1956	—	In service	WTP service list
4/8/1957	—	In service	WTP service list
2/7/1966	180	In service	Raw-water supply list
9/27/1966	—	Out of service	Well pump information list[1]
9/27/1966	—	Service terminated	Well pump information list[1]
8/3/1971	—	Abandonment	Building dimension list

[1]Estimated "Out of service" and "Service terminated" dates from well pump information list because HP-631 not listed among active wells

NOTE: HP-631 replaced by HP-652

Well HP-632

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1957	—	Construction completed	Well pump information list
1957	250	—	Raw water supply data
5/27/1957	—	"Put in operation"	Water utility log notes
5/27/1957	—	In service	Water utility log notes
3/15/1959	300	In service	Capacity drawdown curve
11/2/1961	349	In service	Well capacity test
11/16/1966	235	In service	Well capacity test
8/5/1969	207	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/28/1977	205	In service	Well capacity test
1/1978	—	In service	Operation records
1/12/1979	201	In service	Well capacity test
2/13/1980	205	In service	Well capacity test
3/1980	—	"Motor out"	Operation records
3/1980	—	Out of service	Operation records
12/1980	—	In service	Operation records
9/10/1981	154	In service	Well index[1]
7/30/1982	157	In service	Well index[1]
11/21/1983	185	In service	Well capacity test
3/1984	—	"Down"	Operation records
3/1984	—	Out of service	Operation records
6/1984	—	In service	Operation records
10/25/1984	201	In service	Well capacity test
8/26/1985	205	In service	Well capacity test
4/14/1986	205	In service	CLW-4935 and CLW-4943
2/13/1989	219	In service	Well capacity test
3/1989	219	In service	Operational records
4/3/1990	224	In service	Well capacity test
11/21/1991	224	In service	Wellhead Management Program Study[2]
10/7/1993	240	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[3]
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008		In service	Daily log for well pumps

[1]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-633

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1959	—	Construction completed	Well pump information list
Unknown	200	—	Well construction drawing
1/1/1960	—	In service	Estimated date
10/31/1961	201	In service	Well capacity test
10/25/1966	119	In service	Well capacity test
4/5/1968	222	In service	Well capacity test
8/11/1969	221	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
4/1/1977	159	In service	Well capacity test
1/1978	—	In service	Operation records
1/16/1979	219	In service	Well capacity test
1/1980	—	In service	Operation records
1/1981	—	In service	Operation records
9/24/1982	183	In service	Well capacity test
9/30/1983	175	In service	Well capacity test
10/22/1984	197	In service	Well capacity test
9/9/1985	210	In service	Well capacity test
5/29/1986	—	In service	CLW-4935
9/16/1988	222	In service	Well capacity test
2/1989	222	In service	Operational records
3/28/1990	205	In service	Well capacity test
11/21/1991	205	In service	CLW-1939
10/12/1993	230	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
9/26/1997	183	In service	Well capacity test
6/17/1998	—	In service	CLW-2963
8/4/1998	—	In service	CLW-2973
1/1999	—	In service	Daily log for well pumps
1/2000	—	In service	Daily log for well pumps
10/22/2000	—	“Down”	Daily log for well pumps
10/22/2000	—	Out of service	Daily log for well pumps
2001	—	Out of service	AH Environmental Consultants[1]
2002	—	Out of service	2002 well run[2]
2003	—	Out of service	2003 well run[2]
6/2004	—	Service terminated	AH Environmental Consultants[3]

[1] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[2] Well run, Scott Williams, electronic communication, June 6, 2008

[3] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2000 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-634

[gpm, gallon per minute; —, no data; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1959	—	Construction completed	Well pump information list
10/13/1959	175	—	Well capacity test
1/1/1960	—	In service	Estimated date
4/26/1963	167	In service	Well capacity test
5/11/1965	162	In service	Well capacity test
10/20/1966	—	In service	Well capacity test
1/29/1968	151	In service	Well capacity test
8/11/1969	30	In service	Well capacity test
10/10/1969	—	"Pump pulled + cleaned"	Well capacity test
11/5/1969	130	In service	Well capacity test
10/1/1970	—	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/1979	—	"Down"	Operation records
1/1979	—	Out of service	Operation records
7/13/1979	—	In service	Well capacity test[1,2]
1/1981	—	In service	Operation records
10/1/1982	119	In service	Well capacity test
1/1983	—	In service	Operation records
11/1983	—	"Down"	Operation records
11/1983	—	Out of service	Operation records
2/1984	—	In service	Operation records
2/3/1984	212	In service	Well capacity test[1]
10/29/1984	219	In service	Well capacity test
12/14/1984	—	Out of service	CLW-4913[3]
12/14/1984	—	Service terminated	CLW-4913[3]
6/1994	—	Abandonment	AH Environmental Consultants[4]

[1]New pump installed

[2]BAH Report: 2399_00FC441-004-017, electronic communication, May 2009

[3]Well secured due to VOC contamination

[4]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-635

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1959	—	Construction completed	Well pump information list
1/1959	200	—	USGS site schedule form[1]
1/1/1960	—	In service	Estimated date
4/17/1963	150	In service	Well capacity test
10/20/1966	140	In service	Well capacity test
8/11/1969	40	"Well will be cleaned"	Well capacity test
11/5/1969	—	"Shaft bearings replaced"	Well capacity test
11/5/1969	[2]140	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/17/1979	104	In service	Well capacity test
2/1980	—	In service	Operation records
2/12/1981	143	In service	Well capacity test
3/1982	—	"No power"	Operation records
3/1982	—	Out of service	Operation records
6/1982	—	In service	Operation records
9/30/1982	159	In service	Well index[3]
9/12/1983	159	In service	Well capacity test
6/20/1984	100	In service	Well survey sheet
10/29/1984	151	In service	Well capacity test
8/29/1985	146	In service	Well capacity test
5/29/1986	—	In service	CLW-4935 and CLW-4943
10/20/1988	178	In service	Well capacity test
2/1989	178	In service	Operational records
4/5/1990	151	In service	Well capacity test
11/21/1991	151	In service	Wellhead Management Program Study[4]
9/3/1992	128	In service	Well capacity test
11/16/1993	133	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
9/27/1995	—	"well caved in 9/27/1995"	AH Environmental Consultants[5]
9/27/1995	—	Out of service	AH Environmental Consultants[5]
9/27/1995	—	Service terminated	AH Environmental Consultants[5]
4/1998	—	Abandonment	AH Environmental Consultants[6]

[1]USGS Site Schedule, written communication, June 9, 1982

[2]Capacity assumed to be same as before well was cleaned

[3]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-636

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1959	—	Construction completed	Well pump information list
10/22/1959	200	—	Well capacity test
1/1/1960	—	In service	Estimated date
6/4/1962	135	In service	Well capacity test
7/20/1962	159	In service	Well capacity test
6/25/1963	—	"Well cleaned..."	Well capacity test
6/25/1963	187	In service	Well capacity test
10/20/1966	159	In service	Well capacity test
8/11/1969	133	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
10/18/1971	—	"Cleaned"	Well capacity test
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	Operation records
1/11/1979	157	In service	Well capacity test
2/13/1980	115	In service	Well capacity test
1/1981	—	In service	Operation records
1/1982	—	In service	Operation records
9/2/1982	—	"Pulled pump"	Well index[1]
9/2/1982	—	Out of service	Well index[1]
12/8/1982	205	In service	Well index[1,2]
9/12/1983	183	In service	Well capacity test
10/29/1984	143	In service	USGS well reconnaissance
9/6/1985	119	In service	Well capacity test
4/14/1986	119	In service	CLW-4935 and CLW-4943
6/19/1987	207	In service	Well capacity test[2]
10/20/1988	157	In service	Well capacity test
2/1989	157	In service	Operational records
4/16/1990	149	In service	Well capacity test
11/21/1991	149	In service	Wellhead Management Program Study[3]
5/12/1992	140	In service	Well capacity test
10/16/1993	154	In service	Well capacity test
6/1994	—	Out of service[4]	AH Environmental Consultants
6/1994	—	Service terminated[4]	AH Environmental Consultants
6/1994	—	Abandonment	AH Environmental Consultants[5]

[1]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[2]New pump installed

[3]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4]"Out of service" and "Service terminated" assumed to be same as "Abandonment" date

[5]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-637

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey; VOC, volatile organic compound]

Date	Capacity, in gpm	Operational status	Data source
1/1969	150	Construction completed	USGS site schedule form[1]
7/1/1969	—	In service	Estimated date
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	Operation records
1/17/1979	133	In service	Well capacity test
1/1980	—	In service	Operation records
4/5/1981	—	"Pump pulled"	Well index[2]
4/5/1981	—	Out of service	Well index[2]
7/16/1981	150	In service	Well index[2,3]
8/3/1981	140	In service	Well capacity test
9/27/1982	146	In service	Well index[2]
1/1983	—	In service	Operation records
9/28/1983	133	In service	Well capacity test
10/22/1984	130	In service	Well capacity test
12/14/1984	—	Out of service	CLW-4913[4]
12/14/1984	—	Service terminated	CLW-4913[4]
4/1998	—	Abandonment	AH Environmental Consultants[5]

[1]USGS Site Schedule, written communication, June 9, 1982

[2]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[3]New pump installed

[4]Well secured due to VOC contamination

[5]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-637 replaced HP-604

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-638

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey; WTP, water treatment plant; VOC, volatile organic compound]

Date	Capacity, in gpm	Operational status	Data source
1/1969	180	Construction completed	USGS site schedule form[1]
7/1/1969	—	In service	Estimated date
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/28/1977	137	In service	Well capacity test
7/1978	—	In service	Operation records
1/1979	—	"Down"	Operation records
1/1979	—	Out of service	Operation records
3/1980	—	"Out"	Operation records
3/1980	—	Out of service	Operation records
8/1980	—	In service	Operation records
6/18/1981	146	In service	Well capacity test
9/10/1981	115	In service	Well capacity test
11/30/1981	—	"shaft broken"	Well index[2]
11/30/1981	—	Out of service	Well index[2]
1/27/1982	—	"Pulled pump"	Well index[2]
1/27/1982	—	Out of service	Well index[2]
2/1/1982	185	In service	Well index[2,3]
7/5/1982	170	In service	Well capacity test
9/23/1983	170	In service	Well capacity test
10/17/1984	195	In service	Well capacity test
9/9/1985	192	In service	Well capacity test
5/29/1986	—	In service	CLW-4943
4/7/1987	—	In service	USGS well reconnaissance
9/22/1988	199	In service	Well capacity test
2/1989	199	In service	Operational records
4/17/1990	201	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[4]
11/10/1992	—	"Benzene"	WTP Operator Docs 6-9-09[5]
11/10/1992	—	Out of service	Estimated date
1/31/1995	—	Out of service	CLW-2540[6]
1/31/1995	—	Service terminated	CLW-2540[6]
4/1998	—	Abandonment	AH Environmental Consultants[7]

[1]USGS Site Schedule, written communication, June 9, 1982

[2]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[3]New pump installed

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]WTP Operator Docs 6-9-09, electronic communication, Thomas Burton, June 9, 2009

[6]Well closed due to VOC contamination

[7]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-639 (new)

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/15/1982	—	Construction completed	NAVFAC drawing 4064852
10/1984	—	In service	Estimated date[1]
10/19/1984	115	In service	Well capacity test
8/26/1985	105	In service	Well capacity test
1/1986	—	In service	Operation records
4/1986	—	In service	Operation records
10/4/1986	—	Out of service	USGS well reconnaissance
10/21/1986	—	In service	USGS well reconnaissance
2/1989	—	Out of service	Estimated date[2]
2/1989	—	Service terminated	Estimated date[2]

[1]Estimated "In Service" date from operation records

[2]Estimated "Out of service" and "Service terminated" dates from operational records because HP-639 (new) not listed among active wells

NOTE: HP-639 (new) replaced HP-639 (old)

Data sources:

USGS, operation records, written communication, March 2004

Well HP-639 (old)

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1968	—	Construction completed	AH Environmental Consultants[1]
1/1/1969	180	—	USGS site schedule form[2]
7/1/1969	—	In service	Estimated date
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/3/1977	—	In service	Well survey sheet
1/1978	—	In service	Operation records
1/16/1979	100	In service	Well capacity test
2/13/1980	80	In service	Well capacity test
1/1981	—	In service	Operation records
9/10/1981	104	In service	Well capacity test
7/30/1982	104	In service	Well capacity test
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
8/1984	—	"Pulled"	Operation records
8/1984	—	Out of service	Operation records
9/1984	—	"Pulled"	Operation records
9/1984	—	Out of service	Operation records
9/1984	—	Out of service	Estimated date[3]
9/1984	—	Service terminated	Estimated date[3]

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[2]USGS Site Schedule, written communication, June 9, 1982

[3]Estimated "Out of service" and "Service terminated" dates from operation records

NOTE: HP-639 (old) replaced HP-628 (old); HP-639 (old) replaced by HP-639 (new)

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-640

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
4/28/1969	—	Construction completed	Driller[1]
1/1/1970	290	—	AH Environmental Consultants[2]
1/1/1970	—	In service	Estimated date
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
3/15/1978	128	In service	Well capacity test
1/11/1979	[3]140	In service	Well capacity test
3/1980	—	In service	Operation records
8/1980	—	“Down”	Operation records
8/1980	—	Out of service	Operation records
10/1980	—	“Down”	Operation records
10/1980	—	Out of service	Operation records
2/12/1981	151	In service	Well index[4]
9/10/1981	104	In service	Well capacity test
7/30/1982	111	In service	Well capacity test
9/16/1983	125	In service	Well capacity test
10/25/1984	183	In service	Well capacity test
8/25/1985	154	In service	Well capacity test
4/1986	—	In service	Well capacity test
1/31/1989	277	In service	Well capacity test
4/10/1990	210	In service	Well capacity test
11/21/1991	210	In service	Wellhead Management Program Study[5]
2/13/1995	214	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
9/16/1997	157	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[2]
2002	—	In service	2002 well run[6]
2003	—	In service	2003 well run[6]
2004	—	In service	2004 well run[6]
2005	—	In service	2005 well run[6]
2006	—	In service	2006 well run[6]
2007	—	In service	2007 well run[6]
2008	—	In service	Daily log for well pumps

[1]Geophysical log, W.R. Tilghman, Hartsfield Water Co., written communication, April 28, 1969

[2]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[3]Capacity is average value at two discharge pressures for the well capacity test

[4]BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[5]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[6]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-640 replaced HP-629 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-641

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
8/19/1971	—	Construction completed	Driller[1]
7/1/1972	—	In service	Estimated date
1/1976	—	In service	CLW-4039
3/30/1977	—	In service	Well capacity test
1/11/1978	290	In service	Well capacity test
1/12/1979	290	In service	Well capacity test
2/13/1980	289	In service	Well capacity test
3/1980	—	“Motor out”	Operation records
3/1980	—	Out of service	Operation records
4/1980	—	In service	Operation records
1/1981	—	In service	Operation records
7/26/1982	222	In service	Well capacity test
9/15/1983	266	In service	Well capacity test
10/1984	—	“Down”	Operation records
10/1984	—	Out of service	Operation records
11/1984	—	In service	Operation records
12/18/1984	335	In service	Well capacity test
8/29/1985	335	In service	Well capacity test
4/1986	—	“Don’t run until further notice”	Operation records
4/1986	—	Out of service	Operation records
10/20/1986	—	“Dismantled (Pulled)…”	USGS well reconnaissance
10/20/1986	—	Out of service	USGS well reconnaissance
12/10/1986	319	In service	USGS well reconnaissance
10/20/1988	349	In service	Well capacity test
2/1989	349	In service	Operational records
4/5/1990	351	In service	Well capacity test
11/21/1991	351	In service	Wellhead Management Program Study[2]
9/3/1992	317	In service	Well capacity test
10/12/1993	281	In service	Well capacity test
1/29/1996	—	In service	Well capacity test[3]
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
6/17/1998	—	In service	CLW-2963

Well HP-641—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2001	—	In service	AH Environmental Consultants[4]
2002	—	In service	2002 well run[5]
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1]C.C. Norris, Sydnor Hydrodynamics Inc., written communication, August 18, 1971

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]New pump installed

[4]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[5]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-641 replaced HP-618 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-642

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
9/15/1971	—	Construction completed	Driller[1]
7/1/1972	—	In service	Estimated date
1/1976	—	In service	CLW-4039
3/29/1977	—	In service	Well capacity test
1/1978	—	In service	Operation records
1/17/1979	100	In service	Well capacity test
8/1979	—	"Out"	Operation records
8/1979	—	Out of service	Operation records
2/1980	—	In service	Operation records
9/14/1981	108	In service	Well capacity test
9/28/1982	128	In service	Well capacity test
9/22/1983	128	In service	Well capacity test
11/18/1984	125	In service	Well capacity test
8/29/1985	128	In service	Well capacity test
4/14/1986	—	In service	CLW-4935
4/8/1987	—	In service	USGS well reconnaissance
2/1989	119	In service	Operational records
11/21/1991	—	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
8/4/1998	—	In service	CLW-2973
2001	—	In service	AH Environmental Consultants[3]
2002	—	Out of service	Daily log for well pumps
2003	—	Out of service	Daily log for well pumps
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]Sydnor Hydrodynamics, Inc., written communication, September 15, 1971

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-642 replaced HP-605

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-651

[gpm, gallon per minute; —, no data; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
12/30/1971	200	Construction completed	Driller[1]
7/1/1972	—	In service	Estimated date
1/1976	—	In service	CLW-4039
3/31/1977	190	In service	Well capacity test
1/1978	—	In service	Operation records
1/10/1979	167	In service	Well capacity test
2/13/1980	178	In service	Well capacity test
7/26/1981	232	In service	Well capacity test
1/1982	—	In service	Operation records
9/14/1983	239	In service	Well capacity test
10/29/1984	242	In service	Well capacity test
1/1985	—	In service	Operation records
2/1985	—	“Contaminated”	Operation records
2/4/1985	—	Out of service	CLW-4913[2]
2/4/1985	—	Service terminated	CLW-4913[2]
6/1994	—	Abandonment	AH Environmental Consultants[3]

[1]Corbin Construction Company, written communication, December 30, 1971

[2]Well secured due to VOC contamination

[3]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-652

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
11/17/1971	—	Construction completed	Driller[1]
1/18/1972	200	—	Well capacity test
7/1/1972	—	In service	Estimated date
1/1976	—	In service	CLW-4039
4/3/1977	178	In service	Well capacity test
1/1978	—	In service	Operation records
1/17/1979	197	In service	Well capacity test
2/13/1980	201	In service	Well capacity test
9/18/1981	192	In service	Well capacity test
1/1982	—	In service	Operation records
9/30/1983	205	In service	Well capacity test
10/26/1984	216	In service	Well capacity test
1/1985	—	In service	Operation records
2/1985	—	"Contaminated"	Operation records
2/8/1985	—	Out of service	CLW-4913[2]
2/8/1985	—	Service terminated	CLW-4913[2]
7/24/1986	—	Out of service	CLW-1519
2/1989	—	Out of service	Operational records[3]
11/21/1991	—	Out of service	Wellhead Management Program Study[4]
2/15/1994	146	In service	Well capacity test
6/22/1994	—	Out of service	CLW-2357
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/11/1997	—	In service	CLW-2793
3/1997	—	"Down"	Daily log for well pumps
3/1997	—	Out of service	Daily log for well pumps
4/4/1997	119	In service	Well capacity test[5]
1/1998	—	In service	Daily log for well pumps
8/4/1998	—	In service	CLW-2973
3/28/2001	350	In service	Well capacity test
2002	—	In service	2002 well run[6]
2003	—	In service	2003 well run[6]
2004	—	In service	2004 well run[6]
2005	—	In service	2005 well run[6]
2006	—	In service	2006 well run[6]
2007	—	In service	2007 well run[6]
2008	—	In service	Daily log for well pumps

[1]Corbin Construction Company, written communication, November 17, 1971

[2]Well secured due to VOC contamination

[3]Operational records do not list HP-652 among active wells

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]Estimated "In service" date

[6]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-652 replaced HP-631

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-653

[gpm, gallon per minute; —, no data; VOC, volatile organic compound; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
4/4/1978	—	Construction completed	Driller[1]
7/17/1978	200	—	Well capacity test
4/1979	—	In service	Operation records[2]
1/1980	—	In service	Operation records[3]
1/1981	—	In service	Operation records
1/1982	—	In service	Operation records
9/13/1983	192	In service	Well capacity test
10/30/1984	197	In service	Well capacity test
1/1985	—	In service	Operation records
2/1985	—	"Contaminated"	Operation records
2/8/1985	—	Out of service	CLW-4913[4]
2/8/1985	—	Service terminated	CLW-4913[4]
6/1994	—	Abandonment	AH Environmental Consultants[5]

[1]East Coast Construction Company, Inc., written communication, April 4, 1978

[2]Listed as "619" in operation records

[3]Listed as "653" in operation records

[4]Well secured due to VOC contamination

[5]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: HP-653 replaced HP-619 (old)

Data sources:

CLW, Camp Lejeune Water Documents 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-654

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/9/1978	—	Construction completed	Driller[1]
5/16/1978	200	—	Well capacity test
10/1979	—	In service	Operation records[2]
1/1980	—	In service	Operation records
2/1980	—	In service	Operation records
8/3/1982	128	In service	Well capacity test
9/13/1983	122	In service	Well capacity test
1/1984	—	In service	Operation records
12/1984	—	"Do not use"	Operation records
12/1984	—	Out of service	Operation records
7/1985	—	"Pulled"	Operation records
7/1985	—	Out of service	Operation records
10/1985	—	In service	Operation records
10/18/1985	230	In service	Well capacity test
1/1986	—	In service	Operation records
2/9/1989	203	In service	Well capacity test
4/5/1990	175	In service	Well capacity test
11/21/1991	175	In service	Wellhead Management Program Study[3]
9/4/1992	115	In service	Well capacity test
3/16/1995	119	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/21/1997	100	In service	Well capacity test
8/4/1998	—	In service	CLW-2973
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]C.W. Brinkley, East Coast Construction Company, Inc., written communication, February 9, 1978

[2]Estimated "In service" date from operation records because is first date HP-617 water level recorded

[3]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: HP-654 replaced HP-617 (old)

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-655

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
11/15/1980	—	Construction completed	Driller[1]
5/7/1981	117	—	Well capacity test
7/1982	—	In service	Operation records[2]
1/1983	—	In service	Operation records
10/20/1983	130	In service	Well capacity test
10/19/1984	130	In service	Well capacity test
12/11/1985	110	In service	USGS well reconnaissance
4/1986	—	In service	Operation records
10/8/1986	—	In service	USGS well reconnaissance
12/1/1986	—	Out of service	WTP Operator Docs 6-9-09[3]
2/1989	—	Out of service	Estimated date[4]
2/1989	—	Service terminated	Estimated date[4]
1992	—	Abandonment	AH Environmental Consultants[5]

[1] Frank Quidley, Groundwater Development Company, Inc., written communication, November 15, 1980

[2] Estimated "In service" date from operation records because is first date HP-655 water level recorded

[3] Thomas Burton, WTP Operator Docs 6-9-09, electronic communication, June 9, 2009

[4] Estimated "Out of service" and Service terminated" dates from operational records because HP-655 not listed among active wells

[5] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well HP-656

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
12/1980	—	Construction completed	Card date: 1280; card number: 2-07899
		Never listed as active well or put "In service"	
6/1994	—	Abandonment	AH Environmental Consultants[1]

[1] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Well HP-660

[gpm, gallon per minute; —, no data; VOC, volatile organic compound]

Date	Capacity, in gpm	Operational status	Data source
7/5/1983	—	Construction completed	Driller[1]
11/21/1983	151	—	Driller[2]
7/1/1984	—	In service	Estimated date
12/6/1984	—	Out of service	CLW-4913[3]
12/6/1984	—	Service terminated	CLW-4913[3]
6/1994	—	Abandonment	AH Environmental Consultants[4]

[1]Carolina Well & Pump Company, written communication, July 5, 1983
[2]Carolina Well & Pump Company, written communication, November 21, 1983
[3]Well secured due to VOC contamination
[4]AH Environmental Consultants, Inc., electronic communication, September 3, 2004
NOTE: HP-660 replaced HP-601
NOTE: IT IS POSSIBLE HP-660 WAS NEVER PUT IN SERVICE

Well HP-661

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/29/1983	192	Construction completed	Driller[1]
8/1984	—	In service	Estimated date[2,3]
10/26/1984	280	In service	Well capacity test
12/4/1985	234	In service	USGS well reconnaissance
4/1986	—	In service	Operation records
3/9/1987	275	In service	Well capacity test
10/24/1988	100	In service	Well capacity test
2/1989	275	In service	Operational records
2/9/1989	275	In service	Well capacity test
11/21/1991	275	In service	Wellhead Management Program Study[4]
3/11/1993	122	In service	Well capacity test
4/12/1995	269	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/14/1997	151	In service	Well capacity test
4/23/2001	266	In service	Well capacity test
3/28/2002	242	In service	Well capacity test
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1]C.W Brinkley, C.W. Brinkley & Son, Inc., written communication, April 7, 1983
[2]Estimated "In service" date from operation records because is first date HP-661 water level recorded
[3]Listed as "627" in operation records
[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993
[5]Well run, Scott Williams, electronic communication, June 6, 2008
NOTE: HP-661 replaced HP-627 (old)
NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information
Data sources:
USGS, operation records, written communication, March 2004

Well HP-662

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
8/18/1983	—	Construction completed	Driller[1]
10/24/1983	146	—	Well capacity test
11/1984	—	In service	Estimated date[2,3]
8/26/1985	168	In service	Well capacity test
10/6/1986	—	In service	USGS well reconnaissance
10/24/1988	146	In service	Well capacity test
2/1989	146	In service	Operational records
11/21/1991	148	In service	Wellhead Management Program Study[4]
2/16/1994	146	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
6/9/1997	149	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[5]
2002	—	In service	2002 well run[6]
2003	—	In service	2003 well run[6]
2004	—	In service	2004 well run[6]
2005	—	In service	2005 well run[6]
2006	—	In service	2006 well run[6]
2007	—	In service	2007 well run[6]
2008	—	In service	Daily log for well pumps

[1]C.W. Brinkley & Son, Inc., written communication, August 30, 1983

[2]Estimated “In service” date from operation records because is first date HP-662 water level recorded

[3]Listed as “New 639” in operation records

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

USGS, operation records, written communication, March 2004

Well HP-663

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/15/1986	—	Construction completed	Driller[1]
5/15/1986	350	—	Well capacity test
1/1/1987	—	In service	Estimated date
4/8/1987	—	In service	USGS well reconnaissance
10/26/1988	100	In service	Well capacity test
2/1989	100	In service	Operational records
3/19/1990	100	In service	Well capacity test
11/21/1991	100	In service	Wellhead Management Program Study[2]
12/2/1992	210	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
2/21/1997	130	In service	Well capacity test
5/8/2001	143	In service	Well capacity test
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1]Phil Reese, Harry Pepper & Associates, Inc., written communication, May 15, 1986

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-709

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1985	—	Construction completed	AH Environmental Consultants[1]
3/20/1986	200	—	Well capacity test
4/1/1986	235	In service	USGS well reconnaissance
10/26/1988	239	In service	Well capacity test
3/1989	239	In service	Operational records
11/1991	—	In service	Wellhead Management Program Study[2]
9/2/1992	232	In service	Well capacity test
10/6/1994	172	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/10/1997	190	In service	Well capacity test
6/17/1998	—	In service	CLW-2963
2001	—	In service	AH Environmental Consultants[3]
4/4/2002	170	In service	Well capacity test
2003	—	Out of service	Daily log for well pumps
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-710

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
4/8/1986	—	Construction completed	Driller[1]
4/8/1986	200	—	Well capacity test
1/1/1987	—	In service	Estimated date
4/8/1987	160	In service	USGS well reconnaissance
10/26/1988	242	In service	Well capacity test
3/1989	242	In service	Operational records
3/19/1990	111	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[2]
9/2/1992	201	In service	Well capacity test
10/6/1994	115	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/11/1997	100	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[3]
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]R.L. Magette Company, written communication, April 8, 1986

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-711

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
5/5/1986	—	Unknown	Driller[1]
5/19/1986	200	—	Well capacity test
1/1/1987	—	In service	Estimated date
10/26/1988	111	In service	Well capacity test
3/1989	111	In service	Operational records
3/19/1990	235	In service	Well capacity test
11/21/1991	235	In service	Wellhead Management Program Study[2]
9/2/1992	122	In service	Well capacity test
10/11/1994	100	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/11/1997	108	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[3]
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1]B.O. Kellogg, Magette Well & Pump Company, written communication, May 5, 1986

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-5186

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
1/6/1986	250	Construction completed	Driller[1]
1/1/1987	—	In service	Estimated date
10/17/1988	350	In service	Well capacity test
2/1989	350	In service	Operational records
11/21/1991	336	In service	Wellhead Management Program Study[2]
10/18/1993	350	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
4/4/1997	362	In service	Well capacity test
10/23/2001	349	In service	Well capacity test
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1]R.R. Ellen, Onslow Utilities, Inc., written communication, January 6, 1986

[2]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well LCH-4006

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1956	—	Construction completed	USGS well reconnaissance[1]
1/1/1957	[2]300	In service	WTP service list[3]
8/1/1957	—	In service	Water-quality sampling record
10/20/1966	272	In service	Well capacity test
8/5/1969	259	In service	Well capacity test
9/4/1969	246	In service	Well capacity test
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
1/1977	—	In service	CLW-4039
1/1978	—	In service	Operation records
1/16/1979	300	In service	Well capacity test
12/1979	—	“Down”	Operation records
12/1979	—	Out of service	Operation records
3/1980	—	“Out”	Operation records
3/1980	—	Out of service	Operation records
7/1980	—	In service	Operation records
6/1981	—	In service	Operation records
9/1982	—	“Not run unless needed”	Operation records
9/1982	—	Out of service	Operation records
1/1983	—	In service	Operation records
4/1984	—	Out of service	Operation records
4/1984	—	Service terminated	Operation records

[1]Heater Well Company

[2]Estimated well capacity from replaced well M-1 initial well capacity

[3]Estimated “In service” date based on when replaced well M-1 taken “Out of service”

NOTE: LCH-4006 replaced M-1; LCH-4006 replaced by LCH-4009

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well LCH-4007

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
12/21/1956	300	Construction completed	Driller[1]
1/1/1957	—	In service	Estimated date
3/15/1959	—	In service	Capacity drawdown curve
2/7/1966	280	In service	Raw-water supply list[2]
8/25/1969	281	In service	Raw-water supply list[3]
8/3/1971	—	In service	Building dimension list
1/1976	—	In service	CLW-4039
3/3/1977	287	In service	Well survey sheet
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
2/13/1980	128	In service	Well capacity test
9/23/1981	133	In service	Well capacity test
1/1982	—	In service	Operation records
10/7/1983	104	In service	Well capacity test
6/20/1984	160	In service	Well survey sheet
10/28/1984	104	In service	Well capacity test
4/1/1985	—	“Pump pulled 4-1-1985”	Well capacity test
4/1/1985	—	Out of service	Well capacity test
4/1/1985	—	“Install pump from TT-53”	Well capacity test
4/5/1985	200	In service	Well capacity test
8/1985	—	“Off all month”	Operation records
8/1985	—	Out of service	Operation records
9/1985	—	In service	Operation records
11/26/1985	172	In service	USGS well reconnaissance
4/1986	—	In service	Operation records
10/25/1988	257	In service	Well capacity test
2/1989	257	In service	Operational records
10/4/1990	150	In service	Well capacity test
11/21/1991	150	In service	Wellhead Management Program Study[4]
10/31/1994	100	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
4/8/1997	146	In service	Well capacity test
2/1999	—	Out of service	Daily log for well pumps
2001	—	Out of service	AH Environmental Consultants[5]
2001	—	Service terminated	AH Environmental Consultants[5]
6/2004	—	Abandonment	AH Environmental Consultants[6]

[1]Heater Well Company, written communication, December 21, 1956

[2]Listed as LCH-2

[3]Listed as M-2

[4]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[5]AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: LCH-4007 replaced M-2

NOTE: Daily log for well pumps available from 1998 to 2003 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3559–3561, 3573–3575, 3585–3587, 3588–3590, 3641–3643, 3644–3646, 3772–3774, 3775–3777, 3996–3997, 3998–4000, 4044–4046, and 4047–4049

USGS, operation records, written communication, March 2004

Well LCH-4009

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/16/1983	500	Construction completed	Driller[1]
6/1984	—	In service	Operation records[2]
6/1/1984	—	In service	AH Environmental Consultants[3]
1/1985	—	In service	Operation records[4]
4/14/1986	450	In service	CLW-4935 and CLW-4943
10/18/1986	—	In service	USGS well reconnaissance
2/1989	450	In service	Operational records
10/2/1990	349	In service	Well capacity test
11/21/1991	349	In service	Wellhead Management Program Study[5]
10/31/1994	350	In service	Well capacity test
2/1/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
4/8/1997	420	In service	Well capacity test
5/8/2001	349	In service	Well capacity test
7/16/2002	319	In service	Well capacity test
2003	—	In service	2003 well run[6]
2004	—	In service	2004 well run[6]
2005	—	In service	2005 well run[6]
2006	—	In service	2006 well run[6]
2007	—	In service	2007 well run[6]
2008	—	In service	Daily log for well pumps

[1]Carolina Well & Pump Co., written communication, May 16, 1983

[2]Listed as “New M-1” in operation records

[3]AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[4]Listed as “4006 M-I” in operation records

[5]Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[6]Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: LCH-4009 replaced LCH-4006

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

USGS, operation records, written communication, March 2004

Well M-1

[gpm, gallon per minute; —, no data; WTP, water treatment plant]

Date	Capacity, in gpm	Operational status	Data source
9/1941	300	Construction completed	Driller[1]
7/1/1942	—	In service[2]	Estimated date
9/3/1942	—	In service	Water analysis[3]
11/16/1944	300	In service	Well data list
1947	—	In service[4]	Technical report
7/1/1951	190	In service	Well production records table[5]
1953	—	In service	Raw water supply data
2/11/1954	—	In service	Well capacity test
9/22/1955	—	In service	WTP service list
1/3/1956	—	In service	WTP service list
12/3/1956	—	In service	WTP service list
1/1/1957	—	Out of service	Estimated date[6]
1/1/1957	—	Service terminated	Estimated date[6]

[1]J.P. Knochel, Layne Atlantic Company, written communication, September 16, 1941

[2]"In service" but not connected to Hadnot Point water treatment plant

[3]N.H. Kellam, State Laboratory of Hygiene, written communication, September 3, 1942

[4]M-1 connected to Hadnot Point system; BAH Report: 2285_00FC441-003-017.pdf

[5]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[6]Estimated "Out of service" and "Service terminated" dates based on when replacement well LCH-4006 put "In service"

NOTE: M-1 replaced by LCH-4006

Well M-2

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
2/1942	300	Construction completed	Driller[1]
7/1/1942	—	In service[2]	Estimated date
11/16/1944	300	In service	Well data list
1947	—	In service[3]	Technical report
7/1/1951	224	In service	Well production records table[4]
1953	—	In service	Raw water supply data
1/1/1957	—	Out of service	Estimated date[5]
1/1/1957	—	Service terminated	Estimated date[5]

[1]J.P. Knochel, Layne Atlantic Company, written communication, September 16, 1941

[2]"In service" but not believed to be connected to Hadnot Point water treatment plant

[3]M-2 connected to Hadnot Point system; BAH Report: 2285_00FC441-003-017.pdf

[4]BAH Report: 1437_00FC441-002-028, electronic communication, May 2009

[5]Estimated "Out of service" and "Service terminated" dates based on when replacement well LCH-4007 put "In service"

NOTE: M-2 replaced by LCH-4007

Appendix S1.2. Capacity and operational histories for water-supply wells, Holcomb Boulevard water treatment plant service area, Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina

Well HP-557

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
12/9/1998	381	Construction completed	Driller[1]
1/1/2000	—	In service	Estimated date
1/2000	—	In service	Daily log for well pumps
7/26/2000	349	In service	Well capacity test
3/20/2002	385	In service	Well capacity test
2003	—	In service	2003 Well run[2]
2004	—	In service	2004 Well run[2]
2005	—	In service	2005 Well run[2]
2006	—	In service	2006 Well run[2]
2007	—	In service	2007 Well run[2]
2008	—	In service	Daily log for well pumps

[1] S.H. Barner Inc., written communication, January 26, 1999

[2] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 2000 to 2008 that contain more detailed information

Well HP-558

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
1/20/1999	203.3	Construction completed	Driller[1]
1/1/2000	—	In service	Estimated date
1/2000	—	In service	Daily log for well pumps
7/26/2000	216	In service	Well capacity test
3/25/2002	159	In service	Well capacity test
2003	—	In service	2003 well run[2]
2004	—	In service	2004 well run[2]
2005	—	In service	2005 well run[2]
2006	—	In service	2006 well run[2]
2007	—	In service	Daily log for well pumps
2008	—	In service	Daily log for well pumps

[1] S.H. Barner Inc., written communication, January 26, 1999

[2] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 2000 to 2008 that contain more detailed information

Well HP-584

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
10/17/2000	—	Construction completed	Driller[1]
5/2001	—	In service	Daily log for well pumps
6/11/2001	250	In service	USGS well reconnaissance
3/21/2002	349	In service	Well capacity test
2003	—	In service	2003 well run[2]
2004	—	In service	2004 well run[2]
2005	—	In service	Daily log for well pumps
2006	—	In service	Daily log for well pumps
2007	—	In service	2007 well run[2]
2008	—	In service	Daily log for well pumps

[1] A.C. Shultes of Maryland, Inc., written communication, Ocotober 17, 2000

[2] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 2001 to 2008 that contain more detailed information

Well HP-617 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
9/14/1994	—	Construction completed	Driller[1]
Unknown	349	—	Well description sheet
7/1/1995	—	In service	Estimated date
6/1996	—	In service	AH Environmental Consultants[2]
7/2/1996	—	In service	CLW-2687 and CLW-2688
5/19/1997	349	In service	Well capacity test
3/12/2001	292	In service	Well capacity test
3/21/2002	349	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
7/2006	—	“Down”	Daily log for well pumps
7/2006	—	Out of service	Daily log for well pumps
2007	—	Out of service	2007 well run[3]
3/2008	—	In service	Daily log for well pumps

[1] Scott H. Barner, S.H. Barner, Inc., written communication, August 8, 1994

[2] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-618 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
8/29/1994	—	Construction completed	Driller[1]
Unknown	349	—	Camp Lejeune supply-well inventory sheet
2/3/1995	—	—	CLW-2541 and CLW-2544[2]
7/1/1995	—	In service	Estimated date
7/14/1995	—	In service	Letter of transmittal[3]
5/10/1996	400	In service	Contractor letter[4]
3/31/1997	360	In service	Well capacity test
3/19/2001	349	In service	Well capacity test
3/14/2002	349	In service	Well capacity test
3/20/2002	235	In service	Well capacity test
8/23/2002	349	In service	Well capacity test
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1] S.H. Barner Inc., written communication, August 29, 1994

[2] Operational status not known because CLW-2541 and CLW-2544 do not list HP-618 (new) among active wells

[3] Hobbs Upchurch & Associates Consulting Engineers, written communication, July 14, 1995

[4] S.H. Barner, Inc., written communication, May 13, 1996

[5] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-619 (new)

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
11/1/1994	—	Construction completed	Driller[1]
Unknown	180	—	Camp Lejeune supply-well inventory sheet
7/1/1995	—	In service	Estimated date
7/2/1996	—	In service	CLW-2687 and CLW-2688
2/27/1997	180	In service	Well capacity test
8/4/1998	—	In service	CLW-2973
3/19/2001	185	In service	Well capacity test
2002	—	In service	2002 Well run[2]
2003	—	In service	2003 Well run[2]
2004	—	In service	2004 Well run[2]
2005	—	In service	2005 Well run[2]
2006	—	In service	2006 Well run[2]
2007	—	In service	2007 Well run[2]
2008	—	In service	Daily log for well pumps

[1] S.H. Barner, Inc. written communication, Scott H. Barner, November 8, 1994

[2] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-643

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/20/1971	—	Construction completed	Driller[1]
3/16/1971	250	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6632
1/1974	—	In service	CLW-6632
1/1975	—	In service	CLW-6632
1/1976	—	In service	CLW-6633
1/1977	—	In service	CLW-6633
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
12/12/1980	197	In service	Well capacity test
1/1981	—	In service	CLW-6713
1/1982	—	In service	Operation records
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
12/4/1984	192	In service	Well capacity test
9/19/1985	190	In service	Well capacity test
4/14/1986	190	In service	CLW-4935 and CLW-4944
4/2/1987	—	In service	USGS well reconnaissance
10/1988	180	In service	Operational records
3/1989	180	In service	Operational records
9/18/1989	245	In service	Well capacity test
11/18/1991	220	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
1/27/1999	187	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[3]
3/1/2001	190	In service	Well capacity test
2002	—	In service	2002 well run[4]
3/8/2002	201	In service	Well capacity test
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Company, written communication, January 20, 1971

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-644

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/2/1971	—	Construction completed	Driller[1]
7/10/1971	200	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6630
1/1973	—	In service	CLW-6630
1/1974	—	In service	CLW-6630
1/1975	—	In service	CLW-6630
1/1976	—	In service	CLW-6631
1/1977	—	In service	CLW-6631
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
1/1980	—	In service	CLW-6709
12/12/1980	180	In service	Well capacity test
1/1982	—	In service	CLW-6709
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
12/4/1984	210	In service	Well capacity test
9/19/1985	210	In service	Well capacity test
4/14/1986	210	In service	CLW-4935 and CLW-4944
10/1988	210	In service	Operational records
3/1989	210	In service	Operational records
11/21/1991	—	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[3]
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Co., written communication, February 2, 1971

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-645

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/19/1971	—	Construction completed	Driller[1]
8/11/1971	200	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6628
1/1973	—	In service	CLW-6628
1/1974	—	In service	CLW-6628
1/1975	—	In service	CLW-6628
1/1976	—	In service	CLW-6629
1/1977	—	In service	CLW-6629
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
1/1980	—	In service	CLW-6705
12/12/1980	185	In service	Well capacity test
1/1982	—	In service	Operation records
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
12/7/1984	201	In service	Well capacity test
1/1985	—	In service	Operation records
2/1985	—	“Contaminated,” “Down”	Operation records
2/1985	—	Out of service	Operation records
3/1985	—	In service	Operation records
9/19/1985	192	In service	Well capacity test
1/1986	—	In service	Operation records
5/14/1986	—	In service	USGS well reconnaissance
10/20/1986	—	In service	USGS well reconnaissance
11/6/1986	—	“Pump running”	Water utility notes
11/6/1986	—	In service	Water utility notes
11/1986	—	Out of service	Wellhead Management Program Study[2]
11/1986	—	Service terminated	Wellhead Management Program Study[2]
<2001	—	Abandonment	AH Environmental Consultants[3]

[1] Corbin Construction Company, written communication, March 19, 1971

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-646

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
6/8/1971	—	Construction completed	Driller[1]
6/23/1971	160	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6634
1/1973	—	In service	CLW-6634
1/1974	—	In service	CLW-6634
1/1975	—	In service	CLW-6634
1/1976	—	In service	CLW-6635
1/1977	—	In service	CLW-6635
1/1978	—	In service	Operation records
8/1978	—	“Pulled”	Operation records
8/1978	—	Out of service	Operation records
9/1978	—	In service	Operation records
2/1979	—	“Out”	CLW-6716
2/1979	—	Out of service	CLW-6716
6/1979	—	In service	CLW-6716
4/1980	—	“Out”	Operation records
4/1980	—	Out of service	Operation records
5/1980	—	In service	Operation records
8/1981	—	“Well Pulled”	CLW-6717
8/1981	—	Out of service	CLW-6717
1/1982	—	“Well Back In Jan 28”	CLW-6717
1/28/1982	[2]151	In service	CLW-6717
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
12/6/1984	133	In service	Well capacity test
3/1985	—	“Running 24 hrs”	Operational records
4/14/1986	133	In service	CLW-4935 and CLW-4944
10/1988	125	In service	Operational records
3/1989	125	In service	Operational records
9/18/1989	154	In service	Well capacity test
3/21/1990	154	In service	Well capacity test
11/21/1991	154	In service	Wellhead Management Program Study[3]
8/23/1993	425	In service	Well capacity test[4]
2/3/1995	—	In service	CLW-2544
7/2/1996	—	In service	CLW-2688

Well HP-646—Continued

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/6/1997	—	In service	CLW-2703
5/8/1997	294	In service	Well capacity test
8/4/1998	—	In service	CLW-2973
2001	—	In service	AH Environmental Consultants[5]
2/5/2001	272	In service	Well capacity test
2002	—	In service	2002 well run[6]
3/13/2002	277	In service	Well capacity test
2003	—	In service	2003 well run[6]
2004	—	In service	2004 well run[6]
2005	—	In service	2005 well run[6]
2006	—	In service	2006 well run[6]
2007	—	In service	2007 well run[6]
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Company, written communication, June 8, 1971

[2] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[3] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4] New pump installed

[5] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[6] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-647

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
12/15/1970	—	Construction completed	Driller[1]
1/5/1972	250	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6620
1/1973	—	In service	CLW-6620
1/1974	—	In service	CLW-6620
1/1975	—	In service	CLW-6620
1/1976	—	In service	CLW-6621
1/1977	—	In service	CLW-6621
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
1/1980	—	In service	CLW-6689
1/1981	—	In service	CLW-6689
10/1981	—	"Pulled 10-26-81"	CLW-6689
10/26/1981	—	Out of service	CLW-6689
2/1982	—	"Out"	Operation records
2/1982	—	Out of service	Operation records
3/1982	—	"Well in but not wired or connected"	CLW-6689
3/30/1982	175	In service	Well index[2]
1/1983	—	In service	Operation records
1/1984	—	In service	Operation records
12/7/1984	200	In service	Well capacity test
1/1985	—	In service	Operation records
4/14/1986	200	In service	CLW-4935 and CLW-4944
2/13/1987	180	In service	USGS well reconnaissance
10/1988	180	In service	Operational records
3/1989	180	In service	Operational records
11/21/1991	—	In service	Wellhead Management Program Study[3]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
8/4/1998	—	In service	CLW-2973
2001	—	In service	AH Environmental Consultants[4]
2002	—	In service	2002 well run[5]
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Company, written communication, December 15, 1970

[2] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[3] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[5] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-648

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
8/11/1971	—	Construction completed	Driller[1]
8/11/1971	260	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6622
1/1973	—	In service	CLW-6622
1/1974	—	In service	CLW-6622
1/1975	—	In service	CLW-6622
1/1976	—	In service	CLW-6623
1/1977	—	In service	CLW-6623
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
1/1980	—	In service	CLW-6693
10/1981	—	In service	Operation records
1/1982	—	In service	CLW-6693
3/10/1983	254	In service	Well capacity test
9/1983	—	"Well down"	Operation records
9/1983	—	Out of service	Operation records
10/1983	—	"Well down"	Operation records
10/1983	—	Out of service	Operation records
11/1983	—	In service	Operation records
12/7/1984	267	In service	Well capacity test
11/26/1985	270	In service	USGS well reconnaissance
4/1986	—	In service	Operation records
10/1988	270	In service	Operational records
3/1989	270	In service	Operational records
11/21/1991	263	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	"Pulled"	AH Environmental Consultants[3]
2001	—	Out of service	AH Environmental Consultants[3]
2002	—	Out of service	Daily log for well pumps
2003	—	Out of service	Daily log for well pumps
2004	—	Out of service	Daily log for well pumps
2005	—	Out of service	Daily log for well pumps
2006	—	In service	Daily log for well pumps
2007	—	In service	Daily log for well pumps
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Company, written communication, August 11, 1971

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-649

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
10/8/1971	—	Construction completed	Driller[1]
10/13/1971	250	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6624
1/1973	—	In service	CLW-6624
1/1974	—	In service	CLW-6624
1/1975	—	In service	CLW-6624
1/1976	—	In service	CLW-6625
1/1977	—	In service	CLW-6625
5/1978	—	In service	Operation record
1/1979	—	In service	Operation record
1/1980	—	In service	CLW-6697
1/1981	—	In service	CLW-6697
1/1982	—	In service	Operation record
7/1982	—	"Out"	Operation record
7/1982	—	Out of service	Operation record
8/1982	—	In service	Operation record
3/10/1983	228	In service	Well capacity test
1/1984	—	In service	Operation records
12/6/1984	257	In service	Well capacity test
2/1985	—	"Contaminated Down"	Operation records
2/1985	—	Out of service	Operation records
3/1985	—	In service	Operation records
11/25/1985	236	In service	Well capacity test
4/1986	—	In service	Operation records
10/1988	240	In service	Operational records
3/1989	240	In service	Operational records
3/20/1990	100	In service	Well capacity test
11/21/1991	100	In service	Wellhead Management Program Study[2]
4/29/1993	—	"caved in on 4-29-93"	CLW-2357
4/29/1993	—	Out of service	CLW-2357
4/29/1993	—	Service terminated	CLW-2357
8/1997	—	Abandonment	AH Environmental Consultants[3]

[1] Corbin Construction Company, written communication, October 8, 1971

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2000 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-650

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
10/8/1971	—	Construction completed	Driller[1]
11/10/1971	351	—	Well capacity test
7/1/1972	—	In service	Estimated date
10/1972	—	In service	CLW-6626
1/1973	—	In service	CLW-6626
1/1974	—	In service	CLW-6626
1/1975	—	In service	CLW-6626
1/1976	—	In service	CLW-6627
1/1977	—	In service	CLW-6627
1/1978	—	In service	Operation records
1/1979	—	In service	Operation records
1/1980	—	In service	CLW-6701
1/1981	—	In service	CLW-6701
1/1982	—	In service	Operation records
7/1982	—	“Pulled”	Operation records
7/1982	—	Out of service	Operation records
8/13/1982	—	In service	Well index[2]
1/1983	—	In service	Operation records
1/1984	—	“Pulled”	Operation records
1/1984	—	Out of service	Operation records
2/1984	—	In service	Operation records
12/6/1984	349	In service	Well capacity test
1/1985	—	In service	Operation records
4/14/1986	349	In service	CLW-4935 and CLW-4944
10/1988	470	In service	Operational records
3/1989	470	In service	Operational records
11/21/1991	480	In service	Wellhead Management Program Study[3]
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
2001	—	In service	AH Environmental Consultants[4]
2002	—	In service	2002 well run[5]
2003	—	In service	2003 well run[5]
2004	—	In service	2004 well run[5]
2005	—	In service	2005 well run[5]
2006	—	In service	2006 well run[5]
2007	—	In service	2007 well run[5]
2008	—	In service	Daily log for well pumps

[1] Corbin Construction Company, written communication, October 8, 1971

[2] BAH Report: 1645_0000670-005-001, electronic communication, May 2009

[3] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[4] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[5] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Data sources:

CLW, Camp Lejeune Water Documents 3569, 3570, 3591, 3592, 3647, 3648, 3778, 3779, 4001, 4002, 4050, 4051

USGS, operation records, written communication, March 2004

Well HP-698

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/30/1986	—	Construction completed	Driller[1]
3/13/1986	250	—	Well capacity test
7/1/1986	—	In service	Estimated date
4/9/1987	—	In service	USGS well reconnaissance
10/1988	250	In service	Operational records
3/1989	250	In service	Operational records
3/1/1990	216	In service	Well capacity test
11/21/1991	216	In service	Wellhead Management Program Study[2]
4/12/1995	244	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/22/1997	170	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[3]
3/25/2002	104	In service	Well capacity test
2002	—	In service	Daily log for well pumps
2003	—	Out of service	Daily log for well pumps
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1] Phil Reese, Harry Pepper & Associates, Inc., written communication, March 24, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-699

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
1/22/1986	—	Construction completed	Driller[1]
2/3/1986	250	—	Well capacity test
7/1/1986	—	In service	Estimated date
4/9/1987	270	In service	USGS well reconnaissance
10/1988	220	In service	Operational records
3/1989	220	In service	Operational records
3/1/1990	140	In service	Well capacity test
11/21/1991	140	In service	Wellhead Management Program Study[2]
12/8/1993	267	In service	Well capacity test
5/15/1996	108	In service	Well capacity test
1/6/1997	—	In service	CLW-2703
7/14/1999	277	In service	Well capacity test
2001	—	In service	AH Environmental Consultants[3]
3/18/2002	192	In service	Well capacity test
2002	—	In service	2002 well run[4]
2003	—	In service	2003 well run[4]
2004	—	In service	2004 well run[4]
2005	—	In service	2005 well run[4]
2006	—	In service	2006 well run[4]
2007	—	In service	2007 well run[4]
2008	—	In service	Daily log for well pumps

[1] Harry Pepper & Associates, Inc., written communication, March 13, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-700

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/4/1986	—	Construction completed	Driller[1]
2/20/1986	250	—	Well capacity test
7/1/1986	—	In service	Estimated date
4/7/1987	270	In service	USGS well reconnaissance
10/1988	220	In service	Operational records
3/1989	220	In service	Operational records
3/1/1990	192	In service	Well capacity test
11/21/1991	192	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
3/1/1996	196	In service	Well capacity test
7/15/1996	100	In service	Well capacity test
10/11/1996	115	In service	Well capacity test
1/6/1997	—	In service	CLW-2703
12/11/1998	128	In service	Well capacity test
2/6/2001	172	In service	Well capacity test
3/14/2002	187	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] Harry Pepper & Associates, written communication, February 10, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-701

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
2/26/1986	—	Construction completed	Driller[1]
3/3/1986	250	—	Well capacity test
4/1/1986	—	In service	USGS well reconnaissance
10/1988	150	In service	Operational records
3/1989	150	In service	Operational records
11/21/1991	—	In service	Wellhead Management Program Study[2]
3/1/1990	224	In service	Well capacity test
10/11/1994	172	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/22/1997	167	In service	Well capacity test
2/27/2001	203	In service	Well capacity test
3/13/2002	199	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] Harry Pepper & Associates, written communication, February 26, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-703

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/6/1985	—	Construction completed	Driller[1]
3/6/1985	300	—	Well capacity test
4/1/1986	—	In service	USGS well reconnaissance
10/1988	225	In service	Operational records
3/1989	225	In service	Operational records
3/14/1990	293	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[2]
3/9/1994	192	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
10/16/1996	207	In service	Well capacity test
12/11/1998	216	In service	Well capacity test
2/7/2001	190	In service	Well capacity test
3/18/2002	201	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] R.L. Magette Company, written communication, March 6, 1985

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-704

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
3/8/1986	—	Construction completed	Driller[1]
3/8/1986	200	—	Well capacity test
7/1/1986	—	In service	Estimated date
4/1/1987	210	In service	USGS well reconnaissance
10/1988	150	In service	Operational records
3/1989	150	In service	Operational records
3/14/1990	159	In service	Well capacity test
11/21/1991	159	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
10/16/1996	100	In service	Well capacity test
1/6/1997	—	In service	CLW-2703
3/18/2002	192	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] R.L. Magette Company, written communication, March 8, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-705

[gpm, gallon per minute; —, no data]

Date	Capacity, in gpm	Operational status	Data source
5/15/1986	—	Construction completed	Driller[1]
5/15/1986	200	—	Well capacity test
1/1/1987	—	In service	Estimated date
10/1988	250	In service	Operational records
3/1989	250	In service	Operational records
3/15/1990	214	In service	Well capacity test
11/21/1991	214	In service	Wellhead Management Program Study[2]
2/20/1995	183	In service	Well capacity test
4/28/1995	185	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
7/21/1997	216	In service	Well capacity test
3/12/2001	235	In service	Well capacity test
3/18/2002	230	In service	Well capacity test
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] R.L. Magette Company, written communication, May 15, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-706

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
4/21/1986	—	Construction completed	Driller[1]
4/21/1986	250	—	Well capacity test
1/1/1987	—	In service	Estimated date
4/7/1987	210	In service	USGS well reconnaissance
10/1988	230	In service	Operational records
3/1989	230	In service	Operational records
3/15/1990	214	In service	Well capacity test
11/21/1991	214	In service	Wellhead Management Program Study[2]
10/11/1994	199	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
7/9/1997	230	In service	Well capacity test
2/1998	—	In service	Daily log for well pumps
3/1998	—	“Do not run”	Daily log for well pumps
3/1998	—	Out of service	Daily log for well pumps
2001	—	“Contaminated”	AH Environmental Consultants[3]
2001	—	Service terminated	AH Environmental Consultants[3]
<2001	—	Abandonment	AH Environmental Consultants[4]

[1] R.L. Magette Company, written communication, April 21 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] AH Environmental Consultants, Inc., Wellhead Protection Plan—2002 Update

[4] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2000 that contain more detailed information

Well HP-707

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
5/15/1986	—	Construction completed	Driller[1]
5/15/1986	150	—	Well capacity test
1/1/1987	—	In service	Estimated date
4/9/1987	120	In service	USGS well reconnaissance
10/1988	125	In service	Operational records
3/1989	125	In service	Operational records
11/18/1991	132	In service	Well capacity test
7/6/1992	130	In service	Well capacity test
2/3/1995	—	In service	CLW-2541 and CLW-2544
3/25/1996	133	In service	Well capacity test
1/6/1997	—	In service	CLW-2703
1/1998	—	"Do not run"	Daily log for well pumps
1998	—	Out of service	Daily log for well pumps
2002	—	Service terminated[2]	2002 well run[3]
6/2003	—	Abandonment	AH Environmental Consultants[4]

[1] Harry Pepper & Associates, written communication, May 15, 1986

[2] Estimated "Service terminated" date from 2002 well run because HP-707 not listed among wells pumping

[3] Well run, Scott Williams, electronic communication, June 6, 2008

[4] AH Environmental Consultants, Inc., electronic communication, September 3, 2004

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

Well HP-708

[gpm, gallon per minute; —, no data; USGS, U.S. Geological Survey]

Date	Capacity, in gpm	Operational status	Data source
4/7/1986	—	Construction completed	Driller[1]
4/7/1986	300	—	Well capacity test
1/1/1987	—	In service	Estimated date
4/7/1987	250	In service	USGS well reconnaissance
10/25/1988	230	In service	Well capacity test
11/1988	—	Out of service	Operational records
12/1988	230	In service	Operational records
3/1989	230	In service	Operational records
3/20/1990	219	In service	Well capacity test
11/21/1991	—	In service	Wellhead Management Program Study[2]
2/3/1995	—	In service	CLW-2541 and CLW-2544
11/3/1995	221	In service	Well capacity test
7/2/1996	—	In service	CLW-2687 and CLW-2688
1/6/1997	—	In service	CLW-2703
1/26/1998	157	In service	Well capacity test
2/7/2001	133	In service	Well capacity test
2002	—	In service	2002 well run[3]
2003	—	In service	2003 well run[3]
2004	—	In service	2004 well run[3]
2005	—	In service	2005 well run[3]
2006	—	In service	2006 well run[3]
2007	—	In service	2007 well run[3]
2008	—	In service	Daily log for well pumps

[1] Harry Pepper, R..L. Magette Company, written communication, April 8, 1986

[2] Wellhead Management Program Engineering Study, Geophex, Ltd., March 1993

[3] Well run, Scott Williams, electronic communication, June 6, 2008

NOTE: Daily log for well pumps available from 1998 to 2008 that contain more detailed information

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Analyses and Historical Reconstruction of Groundwater Flow, Contaminant Fate and Transport, and Distribution of Drinking Water Within the Service Areas of the Hadnot Point and Holcomb Boulevard Water Treatment Plants and Vicinities, U.S. Marine Corps Base Camp Lejeune, North Carolina—Chapter A–Supplement 1: Descriptions and Characterizations of Data Pertinent to Water-Supply Well Capacities, Histories, and Operations