Documentation for the U.S. Geological Survey Public-Supply Database (PSDB)—A Database of Permitted Public-Supply Wells, Surface-Water Intakes, and Systems in the United States

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By Curtis V. Price and Molly A. Maupin

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U.S. Geological Survey
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Conversion Factors

SI to inch/pound

Multiply	By	To obtain
Length		
meter	3.281	foot (ft)
kilometer (km)	0.6214	mile (mi)

Inch/Pound to SI (for tables)

Multiply	By	To obtain
Flow rate		
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometer per year (hm^3/yr)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
gallon per minute (gal/min)	0.06309	liter per second (L/s)

Abbreviations

CWS	community water system (see Glossary)
EPA	U.S. Environmental Protection Agency
FIPS	Federal Information Processing Standard (see Glossary)
NAWQA	National Water-Quality Assessment
NWIS	National Water Information System, a database maintained by the U.S. Geological Survey
NWUIP	National Water-Use Information Program
PSDB	Public-Supply Database, the database documented in this report
PWS	public water system (see Glossary)
PwsID	Public Water System Identification number (see Glossary)
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System; the aggregated Federal database is sometimes referred to as SDWIS/FED
USADRS	data table used in the Public-Supply Database for systems
USGS	U.S. Geological Survey, a Bureau of the U.S. Department of the Interior
USIN	data table used in the Public-Supply Database for intakes
USWL	data table used in the Public-Supply Database for wells
WBD	Watershed Boundary Dataset

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Abstract

The U.S. Geological Survey (USGS) has developed a database containing information about wells, surface-water intakes, and distribution systems that are part of public water systems across the United States, its territories, and possessions. Programs of the USGS such as the National Water Census, the National Water Use Information Program, and the National Water-Quality Assessment Program all require a complete and current inventory of public water systems, the sources of water used by those systems, and the size of populations served by the systems across the Nation. Although the U.S. Environmental Protection Agency's Safe Drinking Water Information System (SDWIS) database already exists as the primary national Federal database for information on public water systems, the Public-Supply Database (PSDB) was developed to add value to SDWIS data with enhanced location and ancillary information, and to provide links to other databases, including the USGS's National Water Information System (NWIS) database.

The purpose of this report is to document the PSDB and explain the methods used to populate and update the data from the SDWIS, State datasets, and map and geospatial imagery. This report describes 3 data tables and 11 domain tables, including field contents, data sources, and relations between tables. Although the PSDB database is not available to the general public, this information should be useful for others who are developing other database systems to store and analyze public-supply system and facility data.

Introduction

The Federal government has had the responsibility of protection the quality of the Nation's drinking-water supply for decades. The U.S. Department of Health inventoried large public water suppliers in the years before the U.S. Environmental Protection Agency (EPA) was assigned those responsibilities under the auspices of the Safe Drinking Water Act (SDWA). The SDWA originally was passed in 1974, and was later amended in 1986 and 1996 with requirements to protect drinking-water sources such as lakes, rivers, reservoirs, springs, and groundwater. The SDWA is the main Federal law that ensures the quality of drinking water in the United States, its territories, and possessions (U.S. Environmental Protection Agency, 2014a). The EPA enforces Federal standards and requires State, local, and private water suppliers to implement the standards in their practices of water deliveries to the public. A public water system (PWS) is strictly defined under the SDWA as a system capable of providing water for human consumption through pipes or other constructed conveyances to at least 15 service connections, or to at least 25 individuals, for at least 60 days per year (U.S. Environmental Protection Agency, 2014b).

Two major responsibilities of the EPA Office of Ground Water and Drinking Water under the SDWA are to (1) set national standards for drinking-water quality and (2) to ensure that the States that have assumed primary enforcement responsibility ("primacy") are complying with these standards (U.S. Environmental Protection Agency, 2014a). In support of this program, the EPA has developed the Safe Drinking Water Information System (SDWIS) for States to store information on PWSs (U.S. Environmental Protection Agency, 2014c):

> *The Safe Drinking Water Information System contains information about public water systems and their violations of EPA's drinking water regulations. These statutes and accompanying regulations establish maximum contaminant levels, treatment techniques, and monitoring and reporting requirements to ensure that water provided to customers is safe for human consumption.*

Although the SDWIS database is a comprehensive national database of PWSs and their facilities, the database has limitations for use in assessing water use because it is an aggregation of local information developed by State, Tribal, and local community agencies, and it focuses primarily on

population size and water-quality measures with regards to compliance and violations. Therefore, it lacks water withdrawal data for a specific facilities (surface-water intakes or wells). Local databases are uploaded to the national SDWIS database by the individual agencies, or by the EPA Regions when a State or Tribal entity does not have primacy. Because the SDWIS represents an aggregation of local database information developed from many sources, it is important as a national-scale collection of water facility information. However, the quality, consistency, and existence of facility location, and ancillary data in the SDWIS can be highly variable.

The U.S. Geological Survey (USGS) originally developed the Public-Supply Database (PSDB) to enhance the structure and content of information available from SDWIS, adding value to the data to improve its usefulness for USGS studies. Much of this development was supported by the USGS National Water-Quality Assessment (NAWQA) Program (Gilliom and others, 2001), which required site-specific water-use information for many of its studies and initiatives. The PSDB also was used to link USGS sampling sites to the SDWIS database and other hydrologic datasets.

The PSDB also has become an important resource for national assessments of water use. The Omnibus Public Land Management Act of 2009 (Public Law 111–11), and specifically Subtitle F, also known as the "SECURE Water Act," made recommendations for the establishment of a national water availability and use assessment program within the USGS. The primary need for this recommendation was to complete a national assessment of water use, which had not been done since 1978 (Alley and others, 2013). The USGS began implementing the "SECURE Water Act" recommendations in 2011 by the development of a new program, the National Water Census ("Water Census"). The Water Census aims to develop and improve water accounting tools and assess water availability at the regional and national scales (U.S. Geological Survey, 2014a). Additionally, USGS has provided water-use estimates and trends analysis for the Nation as part of the National Water-Use Information Program (NWUIP; U.S. Geological Survey, 2014b), which has reported water use in the United States every 5 years since 1950 (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Solley and others, 1983, 1988, 1993, 1998; Hutson and others, 2004, Kenny and others, 2009). The NWUIP is an integral part of the Water Census. The Water Census has identified development of site-specific public-supply water-use data as one of its initial areas of focus required to achieve its objectives. Before the inception of the Water Census, NWUIP had not developed national site-specific data for PWSs and facilities, and depended largely on areal estimates of aggregate water use (commonly at the County level).

The USGS National Water Information System (NWIS; Dupré and others, 2013) stores many types of water data (for example, groundwater levels, surface-water flows, water quality, and water use). As part of Water Census activities and using PSDB data, the number of new sites in the NWIS has increased in an effort to build a comprehensive national set of site-specific data for PWSs and their facilities. Data collected as part of the NWUIP, such as withdrawals and deliveries to customers, are being stored in NWIS as the data become available. The PSDB has become a critical resource for the development of site-specific water-use information for the NWIS database that will be used by Water Census and the NWUIP.

Data Security

The location information for PWSs is restricted by the EPA from distribution to the general public, but was made available to USGS through a USGS–EPA memorandum of understanding that adheres to data sharing policies with respect to PWS site information. The content of PSDB would be available to any entity that had a similar data-sharing agreement with the EPA.

Purpose and Scope

The PSDB is a national dataset that includes information about wells, surface-water intakes, and distribution systems that are part of PWSs across the United States. The PSDB contains data from the EPA SDWIS. The purpose of this report is to document the PSDB and explain the methods used to populate and update the data from the SDWIS, State datasets, maps, and geospatial imagery. This report describes 3 data tables and 11 domain tables, including field contents, data sources, and relations between tables. Although the PSDB database is not available to the general public, the contents of this report may be useful for others who are developing other database systems to store and analyze public-supply system and facility data.

Development of the Public-Supply Database

The first version of PSDB was a cooperative effort between EPA and USGS in 1997. Data about PWSs were retrieved from the SDWIS as part of a USGS–EPA project evaluating the effects of changing the maximum allowable levels of arsenic in drinking water (Focazio and others, 1999). The SDWIS system and facility records were reorganized into three main tables for PWSs; the tables were composed of information about systems, wells, and surface-water intakes. Missing system information was updated from State sources.

The PSDB was used for a second USGS–EPA project that required the referencing of PWS intakes to the EPA River Reach File Version 1 stream network dataset (Alexander and others, 1999). Quality-assured locational information was needed for this project to make it possible to assign reference numbers to each intake. Commercial off-the-shelf

digital mapping software (DeLorme Street Atlas USA; DeLorme, 2014) was used to verify the accuracy of latitude and longitudes in the PSDB. The USGS Water Science Centers requested location information (when surface-water intake locations were missing from the SDWIS) from State agencies, NWIS, or through direct contact with PWS owners. The details of how the locations were verified or changed are documented using text fields in the data tables and using codes documented in associated domain tables.

The USGS NAWQA Program supported an effort to validate locations for surface-water sources in the PSDB for PWSs serving less than 10,000 people. The PSDB became an important source of data for planning and prioritizing a variety of NAWQA studies. In late 2000, the EPA and USGS began collaborating on an effort to develop a single set of reliable intake locations that would reside in the SDWIS. Staff of the USGS provided results of their quality-control work to the EPA, who in turn forwarded the information to State staff responsible for updating State or local data into the SDWIS. Subsequent retrievals (the latest in 2010) were used to update the PSDB with new facility and system information.

Structure and Data Sources for the Public-Supply Database

The PSDB consists of 3 data tables supported by 11 domain tables (fig. 1). Relations are defined to link the data tables and domain tables.

The PSDB contains two main types of tables—data tables and domain tables. Data tables contain information from the SDWIS, additional information added from other sources, derived fields, and fields used to track updates. The data tables are supported by domain tables that promote uniformity by providing a list of valid field values and, in many cases, text description fields describing the values. Domain tables also are used to provide additional ancillary information. Two special kinds of fields exist in these tables—a primary key field in a table uniquely identifies each row, and its value can be accessed by another table to act as a foreign key field to link rows across tables. Detailed descriptions of the PSDB data and domain tables are included in this report.

Because the SDWIS historically did not include a permanent unique identifier for each facility, the PSDB includes an identifier that is used to track information about facilities in the PSDB, and enables reconciliation between updates from SDWIS retrievals provided by EPA. Location data from the SDWIS were evaluated and updated using information from other sources, if found to be invalid or failed an accuracy check. Other locational information and ancillary data developed during the course of several USGS–EPA projects also were added to the PSDB. Where a match was identified between the PSDB well facilities and public-supply well sites in the NWIS database, the NWIS unique station identifier was recorded in the PSDB. Additionally, inquiries with State and Federal agencies provided unique identifiers that are used to relate facilities between NWIS, SDWIS, and State databases.

Data Tables

Three main data tables are included in the PSDB. The USADRS data table contains records corresponding to public water-supply systems ("systems"). The USIN data table includes records for surface-water facilities ("intakes"), and the USWL data table contains records for groundwater facilities ("wells"). The USADRS is the "parent" data table for the USIN and USWL data tables, and provides the Public Water System Identification number (PwsID), which is an identifying code that associates intakes and wells to a particular water system.

Systems Data Table (USADRS)

The USADRS data table contains information on public water-supply systems (table 1). Nine data fields were originally imported from the SDWIS; two of the eight SDWIS fields (noted in table 1 with the code "S") are kept up to date with SDWIS, and six of the eight fields (noted in table 1 with the code "M"), although originally imported from the SDWIS, may have been modified using other sources. The remaining data fields have been created to record non-SDWIS water-resource and database maintenance information. These field values are either derived from other fields or have been populated from non-SDWIS sources. Six domain tables serve the USADRS table data: State, StateCounty, DirectSourceType, PurchSourceType, PurchaseStatus, and CustomerBase. All of these tables are described in the "Domain Tables" section.

Intakes Data Table (USIN)

The USIN data table (table 2) contains information about surface-water facilities ("intakes"). Ten data fields were originally imported from the SDWIS; 6 of the 10 SDWIS fields (noted in table 2 with the code "S") are kept up to date with the SDWIS, and 4 of the 10 fields (noted in table 2 with the code "M"), although originally imported from the SDWIS, may have been modified using other sources. The rest of the field values either are derived from other fields or have been populated from non-SDWIS sources. In addition to the PwsID field that links (as a foreign key) to the USADRS data table, seven domain tables serve the USIN data table: State, StateCounty, Availability, SiteType, LatLonSource, LatLonDetMethod, and LatLonVerifyMethod. All of these tables are described in the "Domain Tables" section.
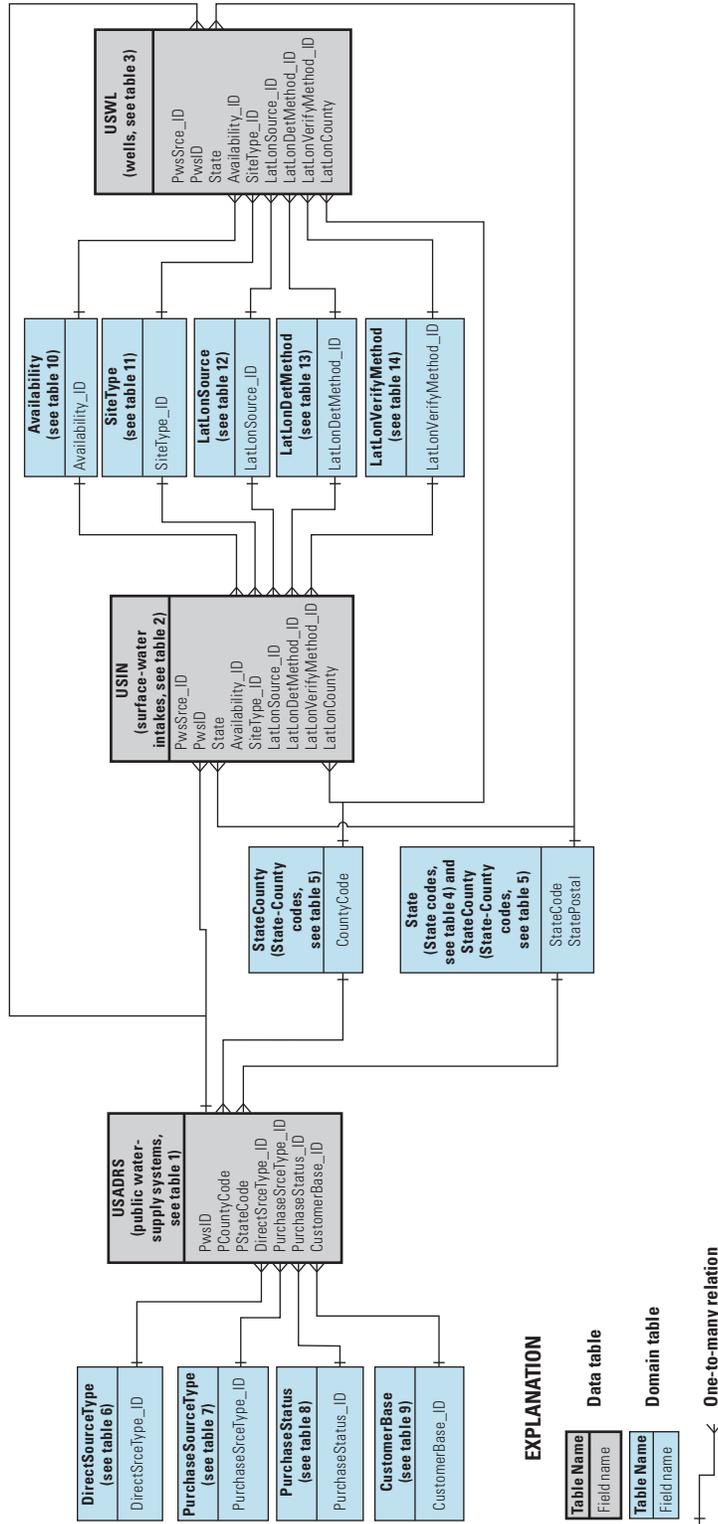
Figure 1.   Relations between data tables and domain tables in the Public-Supply Database (PSDB). Only table fields used as keys to join related tables are shown; other fields are not included.

Table 1.   The USADRS data table containing information about public water-supply systems.

[This data table contained 64,103 records as of August 1, 2014. *, primary key; +, foreign key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); EPA, U.S. Environmental Protection Agency; PWS, public water system; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); CWS, community water system; NWIS, National Water Information System (Dupré and others, 2013); ID, identification number; WBD, Watershed Boundary Dataset (U.S. Geological Survey and U.S. Department of Agriculture, Natural Resources Conservation Service, 2013); --, not applicable]

Field name	SDWIS field[1]	Field fype	Associated domain	Description
PwsID*	S	Text	--	EPA PWS number.
SystemName	M	Text	--	Name of community water system.
Address	M	Text	--	Contact address.
City	M	Text	--	Contact city.
State+	M	Text	State (table 4)	Contact State (postal code).
ZipCode	M	Text	--	Contact zip code.
Phone	M	Text	--	Contact phone number.
PCountyCode+	S	Text	CountyCode (table 5)	FIPS State-County code for system's primary service area. (Derived from the SDWIS PCounty field).
PStateCode+	--	Text	State (table 4)	FIPS State code of system.
PWSType	--	Text	--	Public water-supply type, from the SDWIS: CWS, Community water system; NTNCWS, non-transient, non-community water system, TNCWS: transient community water system; null, unknown.
PopulationServed	S	Float	--	Population served by system from the SDWIS.
AdjPopulationServed	--	Float	--	Value to be used in place of the SDWIS value (PopulationServed).
PopulationNotes	--	Text	--	Notes about PopulationServed and AdjPopulationServed values.
DirectSrceType_ID+	--	Text	DirectSourceType (table 6)	Code identifying types of sources a CWS controls directly.
PurchaseSrceType_ID+	--	Text	PurchSourceType (table 7)	Code identifying the sources of water purchased by community water systems.
Notes	--	Text	--	Notes about sources.
PurchaseStatus_ID+	--	Text	PurchaseStatus (table 8)	Code that records status of system as a purchaser and/or seller of water.
CustomerBase_ID+	--	Text	CustomerBase (table 9)	Code that identifies systems whose customer base includes only domestic users.
InactiveFlag	--	Text	--	Y, the system is considered inactive (not included in the SDWIS retrieval of active sites); N, the system is included in the SDWIS retrieval of active sites.
PSDB_SWUDS_SiteID	--	Text	--	Proposed NWIS site number.
PSDB_SWUDS_SiteName	--	Text	--	Proposed NWIS site name.
NWIS_AgencyCode	--	Text	NWIS	NWIS agency code.
NWIS_SiteID	--	Text	NWIS	NWIS site number.
NWIS_SiteName	--	Text	NWIS	NWIS site name.
PHUC8	--	Text	WBD	8-digit WBD watershed code, determined from overlap of primary service area County with WBD boundary polygons.
DateModified	--	Date	--	Date this record was last modified.

[1]S, field value originally imported from the SDWIS, updated only from subsequent SDWIS retrievals; M, field value originally populated from the SDWIS, but may be modified using other sources; --, field values not from the SDWIS.

Table 2.   The USIN data table containing information about surface-water facilities ("intakes").

[This data table contained 11,400 records as of August 1, 2014. *, primary key, +, foreign key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); PSDB, Public-Supply Database; ID, identification number; EPA, U.S. Environmental Protection Agency; PWS, public water system; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); USGS, U.S. Geological Survey; NWIS, National Water Information System (Dupré and others, 2013); --, not applicable]

Field name	SDWIS field[1]	Field type	Associated domain	Description
PwsSrce_ID*	--	Integer	--	PSDB source ID (unique USIN and USWL data tables).
PwsID+	S	Text	USADRS (table 1)	EPA PWS number.
FacID+	S	Text	--	SDWIS facility ID (unique match to the SDWIS by dual keys PwsID + FacID).
State+	--	Text	State (table 4)	State (postal code) of system owner.
FacilityName	S	Text	--	SDWIS facility name (FacName).
SourceName	--	Text	--	Name of source (for example, the name of a a river, stream, or lake).
SourceType	S	Text	--	SDWIS facility type code (FacTypeCode): CC, Consecutive_connection; CH, Common_headers; CS, Cistern; CW, Clear_well; DS, Distribution_system_zone; IG, Infiltration_gallery; IN, Intake; NP, Non-piped; OT, Other; PC, Pressure_control; PF, Pump_facility; RC, Roof_catchment; RS, Reservoir; SI, Surface_impoundment; SP, Spring; SS, Sampling_station; ST, Storage; TM, Transmission_main; TP, Treatment_plant; WH, Well_head; WL, Well.
SourceWaterType	S	Text	--	SDWIS water type (FacWaterType): GU, groundwater under the influence of surface water; GW, groundwater; SW, surface water.
Availability_ID+	S	Text	Availability (table 10)	Text code denoting SDWIS temporal availability (Availability).
SiteType_ID+	--	Integer	SiteType (table 11)	Integer code denoting type of water source.
Latitude	--	Text	--	Latitude in text format "DDMMSS" (degrees, minutes, seconds).
Longitude	--	Text	--	Longitude in text format "DDDMMSS" (degrees, minutes, seconds).
LatDD	M	Float	--	Latitude in decimal degrees.
LonDD	M	Float	--	Longitude in decimal degrees (west longitude as negative value).
LatLonDatum	M	Text	--	Horizontal datum: NAD27, North American Datum of 1927; NAD83, North American Datum of 1983; WGS84, World Geodetic System 1984; null, unknown.
LatLonValid	--	Yes/No	--	Yes (true) if location is a valid latitude-longitude.
LatLonSource_ID+	--	Text	LatLonSource (table 12)	Text code denoting source of latitude/longitude value.
LatLonDetMethod_ID+	M	Text	LatLonDetMethod (table 13)	Text code denoting method used to determine latitude/longitude value. These codes are based on EPA standard method codes used in the SDWIS (Environmental Data Standards Council, 2006) with additions specific to PSDB (foreign key to USIN [table 2] and USWL [table 3]).
LatLonVerifyMethod_ID+	--	Integer	LatLonVerifyMethod (table 14)	Integer code denoting method used to verify latitude/longitude value.
NotesOnPSDBLocation	--	Text	--	Notes on location in PSDB that is different from SDWIS location.
NotesOnSDWISLocation	--	Text	--	Notes on incorrect SDWIS location.
LatLonCounty+	--	Text	CountyCode (table 5)	State and County (FIPS) code in which surface-water source is located.

Table 2.   The USIN data table containing information about surface-water facilities ("intakes").—Continued

[This data table contained 11,400 records as of August 1, 2014. *, primary key; +, foreign key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); PSDB, Public-Supply Database; ID, identification number; EPA, U.S. Environmental Protection Agency; PWS, public water system; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); USGS, U.S. Geological Survey; NWIS, National Water Information System (Dupré and others, 2013); --, not applicable]

Field name	SDWIS field[1]	Field type	Associated domain	Description
HUC12	--	Text	WBD	12-digit WBD watershed, determined from overlap of site location with WBD boundary polygons (U.S. Geological Survey and U.S. Department of Agriculture, Natural Resources Conservation Service, 2013).
AreaSqmi	--	Float	--	Drainage area, from 2011 NHDPlus analysis (Michael Wieczorek, U.S. Geological Survey, oral commun., 2012).
Notes	--	Text	--	Other notes on site.
PSDB_SWUDS_Site_ID	--	Text	--	Proposed NWIS site number.
PSDB_SWUDS_SiteName	--	Text	--	Proposed NWIS site name.
NWIS_AgencyCode	--	Text	NWIS	NWIS agency code.
NWIS_SiteID	--	Text	NWIS	NWIS site number.
NWIS_SiteName	--	Text	NWIS	NWIS site name.
StateID	--	Text	--	Source identifier used by State agency.
InactiveFlag	--	Text	--	Y, the site is considered inactive (not included in the SDWIS retrieval of active sites); N, the site is included in the SDWIS retrieval of active sites.
NotAnIntake	--	Text	--	Y, the site is tagged as not an intake (for example, conveyance, misclassified well); N, the site has not been tagged as not an intake.
DuplicateSite	--	Text	--	Y, the site is tagged as a duplicate of another SDWIS facility; N, the site is not tagged as a duplicate.
DateModified	--	Date/Time	--	Date this record was last modified (working field).

[1]S, field value originally imported from the SDWIS, updated only from subsequent SDWIS retrievals; M, field value originally populated from the SDWIS, but may be modified using other sources; --, field values not from the SDWIS.

Wells Data Table (USWL)

The USWL data table (table 3) contains information about the groundwater facilities ("wells"). These records include wells, well fields, and other types of facilities, such as springs and cisterns. Ten data fields were originally imported from the SDWIS; 6 of the 10 SDWIS fields (noted in table 2 with the code "S") are kept up to date with the SDWIS, and 4 of the 10 fields (noted in table 2 with the code "M"), although originally imported from the SDWIS, may have been modified using other sources. The rest of the field values either are derived from other fields or have been populated from non-SDWIS sources. In addition to the PwsID field that links (as a foreign key) to the USADRS data table, seven domain tables serve the USIN data table: State, StateCounty, Availability, SiteType, LatLonSource, LatLonDetMethod, and LatLonVerifyMethod, which are described in the "Domain Tables" section.

Location information stored in the USIN and USWL tables were reviewed and updated to enhance the information available from the SDWIS. During 2004, the USGS NAWQA Program and the EPA quality-assured SDWIS well location data. The location for each well was plotted to examine its location with respect to the County recorded in the SDWIS. Wells whose locations were within the County were documented as valid, and wells that were within 1,000 meters of the County line were noted as outside, but valid. All well locations that plotted outside the County line by more than 1,000 meters were investigated to determine if updates to the location were needed. If the location did not overlap with the County that was recorded in the SDWIS, but belonged to a large PWS that presumably would provide water to multiple counties, the well was documented as valid. Otherwise, a new location was developed for the well based on a variety of available methods. Finally, the sites from the PSDB were compared with USGS NWIS groundwater sites. USGS site identification numbers were recorded in the PSDB for wells that could be matched between the two databases. The same procedures were applied to intakes, and the PSDB was updated to record the results of these quality-assurance efforts.

Table 3.   The USWL data table containing information about groundwater facilities ("wells").

[This data table contained 147,775 records as of August 1, 2014. *, primary key, +, foreign key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); PSDB, Public-Supply Database; ID, identification number; EPA, U.S. Environmental Protection Agency; PWS, public water system; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); USGS, U.S. Geological Survey; NWIS, National Water Information System (Dupré and others, 2013); --, not applicable]

Field name	SDWIS field[1]	Field type	Associated domain	Description
PwsSrce_ID*	--	Integer	--	PSDB Source ID (unique between USIN and USWL data tables).
PwsID+	S	Text	USADRS (table 1)	EPA PWS number.
FacID	S	Text	--	SDWIS facility ID (unique match to the SDWIS by dual keys PwsID + FacID).
State+	--	Text	State (table 4)	State (postal code) of system owner.
SDWIS_ID	S	Integer	--	Original SDWIS internal_id for facility (tinwsf_is_number).
FacilityName	S	Text	--	SDWIS source name (FacName).
SourceName	--	Text	--	Name of source.
SourceType	S	Text	--	SDWIS facility type code (FacTypeCode): CC, Consecutive_connection; CH, Common_headers; CS, Cistern; CW, Clear_well; DS, Distribution_system_zone; IG, Infiltration_gallery; IN, Intake; NP, Non-piped; OT, Other; PC, Pressure_control; PF, Pump_facility; RC, Roof_catchment; RS, Reservoir; SI, Surface_impoundment; SP, Spring; SS, Sampling_station; ST, Storage; TM, Transmission_main; TP, Treatment_plant; WH, Well_head; WL, Well.
SourceWaterType	S	Text	--	SDWIS water type (FacWaterType): GU, groundwater under the influence of surface water; GW, groundwater; SW, surface water.
Availability_ID	S	Text	Availability (table 10)	SDWIS temporal availability code (Availability).
StateSource_ID	--	Text		Source ID used by State agency.
SiteType_ID+	--	Integer	SiteType (table 11)	Integer key which uniquely identifies type of water source.
LatDD	M	Float	--	Latitude in decimal degrees.
LonDD	M	Float	--	Longitude in decimal degrees.
LatLonDatum	M	Text	--	Horizontal datum: NAD27, North American Datum of 1927; NAD83, North American Datum of 1983; WGS84, World Geodetic System 1984; null, unknown.
Latitude	--	Text	--	Latitude in text format "DDMMSS" (degrees, minutes, seconds).
Longitude	--	Text	--	Longitude in text format "DDDMMSS" (degrees, minutes, seconds).
LatLonValid	--	Yes/ No	--	True if valid LatDD and LonDD.
LatLonSource_ID+	M	Text	LatLonSource (table 12)	Source of latitude/longitude.
LatLonDetMethod_ID+	M	Text	LatLonDetMethod (table 13)	Text code denoting method used to determine latitude/longitude value. These codes are based on EPA standard method codes used in the SDWIS These codes are based on EPA standard location method codes, with PSDB additions.
LatLonVerifyMethod_ID+	--	Text	LatLonVerifyMethod (table 14)	Integer code denoting method used to verify latitude/longitude value.
NotesOnSDWISLocation	--	Text	--	Notes on incorrect SDWIS location.
NotesOnPSDBLocation	--	Text	--	Notes on location in PSDB that is different from SDWIS location.
LatLonCounty	--	Text	CountyCode (table 5)	State and County (FIPS code) in which groundwater source is located.
HUC12	--	--	WBD	12-digit Watershed Boundary Dataset (WBD) watershed, determined from overlap of site location with WBD boundary polygons (U.S. Geological Survey and U.S. Department of Agriculture, Natural Resources Conservation Service, 2013).

Table 3. The USWL data table containing information about groundwater facilities ("wells").—Continued

[This data table contained 147,775 records as of August 1, 2014. *, primary key, +, foreign key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); PSDB, Public-Supply Database; ID, identification number; EPA, U.S. Environmental Protection Agency; PWS, public water system; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); USGS, U.S. Geological Survey; NWIS, National Water Information System (Dupré and others, 2013); --, not applicable]

Field name	SDWIS field[1]	Field type	Associated domain	Description
Notes	--	--	--	Other notes on site.
PSDB_SWUDS_SiteID	--	--	--	Proposed NWIS site ID.
PSDB_SWUDS_SiteName	--	--	--	Proposed NWIS site name.
NWIS_AgencyCode	--	--	NWIS	NWIS agency code.
NWIS_SiteID	--	--	NWIS	NWIS site number.
NWIS_SiteName	--	--	NWIS	NWIS site name.
StateLocal_ID	--	--	--	State agency name or identifier for well.
StateWellDepth	--	--	--	Well depth provided by State agency.
StateTopOfScreen	--	--	--	Top of screen from State database.
StateBottomOfScreen	--	--	--	Bottom of screen from State database.
StateConstDate	--	--	--	Date of well construction from State database as YYYYMMDD (year, month, day).
InactiveFlag	--	--	--	Y, the site is considered inactive (not included in the SDWIS retrieval of active sites); N, the site is included in the SDWIS retrieval of active sites.
NotAWell	--	--	--	Y, the site is tagged as not a well (for example, conveyance, misclassified intake); N, the site has not been tagged as not a well.
DuplicateSite	--	--	--	Y, the site is tagged as a duplicate of another SDWIS facility; N, the site is not tagged as a duplicate.
DateModified	--	--	--	Date this record was last modified (working field).

[1]S, field value originally imported from the SDWIS, updated only from subsequent SDWIS retrievals; M, field value originally populated from the SDWIS, but may be modified using other sources; --, field values not from the SDWIS.

Domain Tables

The PSDB includes 11 domain tables (fig. 1): State, StateCounty, DirectSourceType, PurchaseSourceType, PurchaseStatus, CustomerBase, Availability, SiteType, LatLonSource, LatLonDetMethod, and LatLonVerifyMethod. These domain tables are used to document codes used in the data tables, and verify that all codes used in the data tables are valid. In addition, these domain tables can be used to build efficient database queries to extract or group records from the database.

State and StateCounty Domain Tables

The domain tables for State (table 4) and StateCounty (table 5) list State and County codes and names. All three data tables (USADRS, USIN, and USWL) use these codes to denote State and County areas. In addition, the State table was used to record ancillary data on permitting policies in effect in these States and primary time zones. These ancillary fields have not been verified for accuracy against current State laws and policies.

Table 4.   The State domain table documenting State codes and ancillary information.

[This data table contained 61 records as of August 1, 2014. This domain table serves the USADRS, USIN, and USWL data tables. *, primary key; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); (null), no data available; gal/d, gallons per day; gal/min, gallons per minute; acre-ft/yr, acre-feet per year]

Field name	Field type	Description
StateCode*	Integer	Two-digit FIPS State code.
StatePostal	Text	State postal code.
StateName	Text	Name of State or Territory.
Registration	Text	Notes on community water system registration rules for a State.
Permitting	Text	Notes on community water system permitting rules for a State.
Reporting	Text	Notes on required reporting period for a State.

Table contents:

State-Code	State-Postal	StateName	Registration	Permitting	Reporting
01	AL	Alabama	(null)	100,000 gal/d	monthly
02	AK	Alaska	(null)	1,500 gal/d	monthly
03	AZ	Arizona	(null)	variable	(null)
04	AR	Arkansas	(null)	50,000 gal/d	monthly
06	CA	California	(null)	variable	(null)
08	CO	Colorado	(null)	variable	(null)
09	CT	Connecticut	(null)	50,000 gal/d	monthly to annual
10	DE	Delaware	(null)	50,000 gal/d	monthly
11	DC	Washington D.C.	(null)	(null)	(null)
12	FL	Florida	(null)	variable	(null)
13	GA	Georgia	(null)	100,000 gal/d	(null)
15	HI	Hawaii	(null)	1,000 gal/d	monthly
16	ID	Idaho	(null)	108 gal/min	(null)
17	IL	Illinois	(null)	(null)	(null)
18	IN	Indiana	100,000 gal/d	(null)	monthly
19	IA	Iowa	(null)	25,000 gal/d	(null)
20	KS	Kansas	(null)	all	monthly
21	KY	Kentucky	(null)	10,000 gal/d	at least 2 times per year
22	LA	Louisiana	(null)	1,000,000 gal/d	at least 4 times per year
23	ME	Maine	(null)	all	monthly
24	MD	Maryland	(null)	10,000 gal/d	2 times per year
25	MA	Massachusetts	(null)	100,000 gal/d	monthly
26	MI	Michigan	(null)	100,000 gal/d	monthly
27	MN	Minnesota	(null)	10,000 gal/d	monthly
28	MS	Mississippi	(null)	all	annual
29	MO	Missouri	100,000 gal/d	(null)	annual
30	MT	Montana	(null)	variable	(null)
31	NE	Nebraska	(null)	variable	(null)
32	NV	Nevada	(null)	variable	variable
33	NH	New Hampshire	20,000 gal/d	(null)	monthly

Table 4. The State domain table documenting State codes and ancillary information.—Continued

[This data table contained 61 records as of August 1, 2014. This domain table serves the USADRS, USIN, and USWL data tables. *, primary key; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014); (null), no data available; gal/d, gallons per day; gal/min, gallons per minute; acre-ft/yr, acre-feet per year]

State-Code	State-Postal	StateName	Registration	Permitting	Reporting
34	NJ	New Jersey	(null)	100,000 gal/d	monthly
35	NM	New Mexico	(null)	all	quarterly or annual
36	NY	New York	(null)	variable	variable
37	NC	North Carolina	(null)	variable	variable
38	ND	North Dakota	(null)	all	annual
39	OH	Ohio	(null)	100,000 gal/d	annual
40	OK	Oklahoma	(null)	all	annual
41	OR	Oregon	(null)	15,000 gal/d	monthly
42	PA	Pennsylvania	(null)	variable	variable
44	RI	Rhode Island	(null)	100,000 gal/d	variable
45	SC	South Carolina	(null)	100,000 gal/d	quarterly
46	SD	South Dakota	(null)	all	variable
47	TN	Tennessee	(null)	(null)	monthly
48	TX	Texas	(null)	variable	variable
49	UT	Utah	(null)	20 acre-ft/yr	annual
50	VT	Vermont	(null)	(null)	(null)
51	VA	Virginia	(null)	10,000 gal/d	monthly
53	WA	Washington	(null)	(null)	no
54	WV	West Virginia	(null)	(null)	no
55	WI	Wisconsin	(null)	all	annual
56	WY	Wyoming	(null)	variable	variable
60	AS	American Samoa	(null)	(null)	(null)
64	FM	Federated States of Micronesia	(null)	(null)	(null)
66	GU	Guam	(null)	(null)	(null)
68	MH	Marshall Islands	(null)	(null)	(null)
69	MP	Northern Mariana Islands	(null)	(null)	(null)
70	PW	Palau	(null)	(null)	(null)
72	PR	Puerto Rico	(null)	(null)	(null)
74	UM	U.S. minor outlying islands	(null)	(null)	(null)
78	VI	U.S. Virgin Islands	(null)	(null)	(null)
NN	NN	Navajo Nation	(null)	(null)	(null)

Table 5. The StateCounty domain table documenting State-County codes.

[This data table[1] contained 3,224 records as of August 1, 2014. This domain table serves the USADRS, USIN, and USWL data tables. *, primary key; FIPS, Federal Information Processing Standard (U.S. Bureau of the Census, 2002, 2014)]

Field name	Field type	Description
CountyCode*	Integer	Five-digit FIPS State-County code.
StateCode	Text	Two-digit FIPS State code.
StatePostal	Text	State postal code.
StateName	Text	State name.
CountyName	Text	County name.
TimeZone	Text	County time zone.

[1]Table contents are too large to include in this report.

DirectSourceType, PurchaseSourceType, PurchaseStatus, and CustomerBase Domain Tables

The three domain tables that document codes used in the PSDB to describe characteristics of PWSs in USADRS are DirectSourceType (table 6), PurchaseSourceType (table 7), and PurchaseStatus (table 8). These domain tables are assigned based on analysis of the relations between systems (USADRS), intakes (USIN), and wells (USWL). When these three data tables are joined together, the number of wells and intakes associated with each system can be counted. These counts have been used to classify USADRS records by the number of associated direct sources (wells and intakes). The SDWIS also includes information recording possible transfers between systems (system-to-system conveyances)

that has been included in this analysis to identify systems that appear (based on the information in the SDWIS) to only purchase water from other systems and classifies them using the PurchaseSource domain (table 8). The CustomerBase domain table (table 9) documents the codes describing systems that only service domestic users for systems that have been evaluated to determine this information.

Availability Domain Table

The Availability domain table (table 10) serves the USIN and the USWL data tables. Public water supplies sometimes use wells or intakes occasionally or seasonally. The SDWIS database includes a data field (Availability) that describes when a water source is available for use. In the PSDB, this information is intermittently updated to match the most recently available version of the SDWIS; in the PSDB, the SDWIS value has been converted to a single-character alphabetic code for ease of use (table 10).

SiteType Domain Table

The SiteType domain table (table 11) serves both the USIN and the USWL data tables, and in the PSDB, refers to the water source classification. In many cases, a site type used for a water source can be assigned based on the source name provided in the SDWIS. Most SDWIS site types correspond directly to site types used in the USGS NWIS database. A set of codes were developed for the PSDB to record these site types. In addition to the PSDB codes, the SiteType domain table lists (if possible) corresponding site types used in the USGS NWIS database. The site type code "0" ("unknown") is used for sites for which the site type could not be determined.

Table 6. The DirectSourceType domain table documenting fields and contents for direct source types.

[This data table contained five records as of August 1, 2014. This domain table serves the USADRS data table. *, primary key; CWS, community water system]

Field name	Field type	Description
DirectSrceType_ID*	Text	Code identifying types of sources a CWS controls directly.
DirectSrceType	Text	Text description of source types.

Table contents:

DirectSrceType_ID	DirectSrceType
C	system includes both groundwater and surface-water sources
G	system includes only groundwater sources
P	system includes no sources (only purchased water)
S	system includes only surface-water sources
U	unknown (no information available about sources of water)

Table 7. The PurchaseSourceType domain table documenting fields and contents for purchase source types.

[This data table contained six records as of August 1, 2014. This domain serves the USADRS data table. *, primary key]

Field name	Field type	Description
PurchaseSrceType_ID*	Text	Code identifying the sources of water purchased by community water systems.
PurchaseSrceType	Text	Text description of purchase water types.

Table contents:

PurchaseSrceType_ID	PurchaseSrceType
C	system purchases combined groundwater and surface water
G	system purchases only groundwater
N	system does not purchase water
S	system purchases only surface water
U	unknown (no purchase information available)
Y	system purchases water (unknown type)

Table 8. The PurchaseStatus domain table documenting fields and contents for purchase information.

[This data table contained five records as of August 1, 2014. This domain serves the USADRS data table. *, primary key]

Field Name	Field Type	Description
PurchaseStatus_ID*	Text	Code denoting types of sources a community water system uses through purchases from other suppliers.
PurchaseStatus	Text	Text description of source-water types.

Table contents:

PurchaseStatus_ID	PurchaseStatus
B	system only purchases water (does not sell)
I	system is isolated (does not purchase or sell water)
S	system only sells water (does not purchase)
T	system both purchases and sells water
U	purchase status is unknown

Table 9. The CustomerBase domain table documenting fields and contents for systems that supply water for domestic use.

[This data table contained three records as of August 1, 2014. This domain serves the USADRS data table. *, primary key]

Field Name	Field Type	Description
CustomerBase_ID*	Text	Code that identifies systems whose customer base includes only domestic users.
CustomerBase	Text	Text description of customer base.

Table contents:

CustomerBase_ID	CustomerBase
A	all
D	domestic
U	unknown

Table 10.   The Availability domain table fields and contents documenting source availability.

[This data table contained seven records as of August 1, 2014. This domain serves the USIN and USWL data tables. *, primary key; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c)]

Field name	Field type	Description
Availability_ID*	Text	Text code denoting SDWIS temporal availability (Availability).
Availability	Text	Text description of water availability.

Table contents:

Availability_ID	Availability
E	emergency
I	interim (peak)
O	other
P	permanent
S	seasonal
N	no SDWIS value available
U	unknown (no current match to SDWIS)

LatLonSource, LatLonDetMethod, and LatLonVerifyMethod Domain Tables

The three domain tables for locational information are LatLonSource (table 12), LatLonDetMethod (table 13), and LatLonVerifyMethod (table 14). These three domain tables document the sources and verification codes used for locational data in the USIN and USWL data tables. The PSDB includes locational information from the SDWIS, from other databases, and from other sources, including geocoded system mailing addresses, County and ZIP-code centroids, DeLorme Street Atlas USA (DeLorme, Inc., 2014), State agencies, and Web maps.

Summary

Protecting the quality of the Nation's drinking-water supply has been a reponsibilty of the Federal government for decades. The U.S. Environmental Protection Agency (EPA) enforces Federal standards and requires State, local, and private water suppliers to implement the standards in their practices of water deliveries to the public. The EPA has developed the Safe Drinking Water Information System (SDWIS) for States to store information on public water systems. Although the SDWIS database is a comprehensive national database of public water systems and their facilities, the database has limitations. The U.S. Geological Survey (USGS) developed the Public-Supply Database (PSDB) to enhance the structure and content of information available from the SDWIS, adding value to the data to improve their usefulness for USGS studies.

The PSDB is a national dataset that includes information about wells, surface-water intakes, and distribution systems that are part of public water systems across the United States, its territories, and possessions. The purpose of this report is to document the PSDB and explain the methods used to populate and update the data from the SDWIS, State datasets, maps, and geospatial imagery. This report describes 3 data tables and 11 domain tables, including field contents, data sources, and relations between tables. Although the PSDB database is not available to the general public, this report should be useful for others who are developing other database systems to store and analyze public water-supply system and facility data.

Table 11.   The SiteType domain table documenting fields and contents for site types.

[This data table contained 24 records as of August 1, 2014. This domain serves the USIN and USWL data tables. *, primary key; NWIS, National Water Information System (Dupré and others, 2013); (null), not applicable]

Field name	Field type	Description
SiteType_ID*	Integer	Integer code denoting type of water source.
SiteType	Text	Text description of source-water (site) type.
NWISType	Text	Corresponding site type used in NWIS after version 4.8.
NWISTypeOld	Text	Corresponding site type code used in older versions of NWIS (before version 4.8).

Table contents:

SiteType_ID	SiteType	NWISType	NWISTypeOld
0	unknown	(null)	(null)
1	stream	ST	ST
2	lake	LK	LK
3	reservoir	LK	RS
4	infiltration gallery	GW-CR	RC
5	canal	ST-CA	CN
6	lock and dam	ST	ST
7	spring	SP	SP
8	great lakes	LK	LK
9	upstream end of reservoir	ST	ST
10	low-head dam (pool)	LK	RS
11	aqueduct	ST-CA	CN
12	off-stream reservoir	LK	SG
13	terminal reservoir canal	ST-CA	SG
14	mine or quarry	SB-TSM	MQ
15	water bank (conjunctive)	(null)	(null)
16	seawater	OC-CO	(null)
17	cistern	FA-CI	(null)
18	mine drain	SB-TSM	MQ
19	well under influence sw	WL	(null)
20	california aqueduct	ST-CA	CN
21	well	GW	W
22	wellfield	GW-MW	M

Table 12.   The LatLonSource domain table documenting location sources.

[This data table contained 54 records as of August 1, 2014. This domain serves the USIN and USWL data tables. *, primary key]

Field name	Field type	Description
LatLonSource_ID*	Text	Text code denoting source of latitude/longitude value.
LatLonSourceDesc	Text	Description of location source.

Table contents:

LatLonSource_ID	LatLonSourceDesc
AZ STATE	State of Arizona
CDEC	California Data Exchange Center (CDEC)
CT STATE DEP/USGS-NH	Connecticut State DEP (modified by USGS-NH)
DE State	State of Delaware
FL051	Hendry County, FL
IN STATE DEM/USGS-NH	Indiana State Dept. of Environmental management
KS003	Anderson County, KS
MA STATE DEP	Massachusetts Dept of Environmental Protection
MO STATE	State of Missouri
NC STATE DWR	North Carolina Dept of Water Resources
NC STATE DWR-NH	North Carolina Dept of Water Resources (modified by USGS-NH)
NH STATE DES	New Hampshire State Dept of Environmental Services
NH STATE DES-NH	New Hampshire State Dept of Environmental Services (modified by USGS-NH)
OH STATE-NH	State of Ohio (modified by USGS-NH)
SDWIS	SDWIS/FED (date unknown)
SDWIS*	SDWIS/FED (assumed - was blank)
SDWIS03	SDWIS/FED (2003 retrieval)
SDWIS05	SDWIS/FED (2005 retrieval)
SDWIS05-NH	SDWIS/FED (2005 retrieval) (modified by USGS-NH)
SDWIS-CA	SDWIS California
SDWIS-ID	SDWIS Idaho
SDWIS-NH	SDWIS New Hampshire
SDWIS-OLD	SDWIS - older (original) retrieval
TX STATE	State of Texas
TX STATE-NH	State of Texas (modified by USGS-NH)
TX WDB	Texas Water Development Board
USGS-CA	USGS USGS-CA Water Science Center staff
USGS-CA-NH	USGS USGS-CA Water Science Center staff (modified by USGS-NH)
USGS-CO	USGS USGS-CO Water Science Center staff
USGS-CT	USGS USGS-CT Water Science Center staff
USGS-GA	USGS USGS-GA Water Science Center staff
USGS-IA-NH	USGS USGS-IA-NH Water Science Center staff (modified by USGS-NH)
USGS-IN	USGS USGS-IN Water Science Center staff
USGS-LA	USGS USGS-LA Water Science Center staff
USGS-MA	USGS USGS-MA Water Science Center staff
USGS-MA/RI	USGS USGS-MA/RI Water Science Center staff
USGS-MI	USGS USGS-MI Water Science Center staff
USGS-NH	USGS USGS-NH Water Science Center staff
USGS-NJ	USGS USGS-NJ Water Science Center staff
USGS-NJ-NH	USGS USGS-NJ Water Science Center staff (modified by USGS-NH)
USGS-NV	USGS USGS-NV Water Science Center staff
USGS-OK	USGS USGS-OK Water Science Center staff
USGS-OR	USGS USGS-OR Water Science Center staff
USGS-PA	USGS USGS-PA Water Science Center staff
USGS-SD	USGS USGS-SD Water Science Center staff
USGS-TN	USGS USGS-TN Water Science Center staff
USGS-TX	USGS USGS-TX Water Science Center staff
USGS-UT	USGS USGS-UT Water Science Center staff
USGS-VA	USGS USGS-VA Water Science Center staff
USGS-VOC	USGS USGS-VOC Water Science Center staff
USGS-VT	USGS USGS-VT Water Science Center staff
USGS-WA	USGS USGS-WA Water Science Center staff
USGS-WV-NH	USGS USGS-WV-NH Water Science Center staff (modified by USGS-NH)
VT STATE ANR-NH	Vermont Agency of Natural Resources (modified by USGS-NH)

Table 13. The LatLonDetMethod domain table documenting location methods.

[This data table contained 48 records as of August 1, 2014. This domain serves the USIN and USWL data tables. *, primary key; EPA, U.S. Environmental Protection Agency; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); PSDB, Public-Supply Database; NWIS, National Water Information System (Dupré and others, 2013); NAD83, North American Datum of 1983; NAD27; North American Datum of 1927; CWS, community water sytem; DeLorme Street Atlas USA, software product (DeLorme, Inc., 2014); GNIS, Geographic Names Information System (Yost and Carswell, 2009)]

Field name	Field type	Description
LatLonDetMethod_ID*	Text	Text code denoting method used to determine latitude/longitude value. These codes are based on EPA standard method codes used in the SDWIS (Environmental Data Standards Council, 2006) with additions specific to the PSDB.
LatLonDetMethod	Text	Text description of location method.
NWISMethod	Text	Corresponding NWIS coordinate method code.
EstDatum	Text	Horizontal datum to use for locations (as "best estimate") if no other horizontal datum information is available.

Table contents:

LatLonDetMethod_ID	LatLonDetMethod	NWISMethod	EstDatum
001	Address matching--house number	U	NAD83
006	Address matching--digitized	U	NAD83
007	Address matching--other: derived through the use of nonspecific matching techniques	U	NAD83
012	Global positioning system--carrier phase static relative positioning technique	G	NAD83
013	Global positioning system--carrier phase kinematic relative positioning technique	G	NAD83
014	Global positioning system-- (pseudo range) differentially corrected	D	NAD83
015	Global positioning system--(pseudo range) precise positioning service	G	NAD83
016	Global positioning system--(pseudo range) standard positioning service (selective availability off)	G	NAD83
017	Global positioning system--(pseudo range) standard positioning service (selective availability on)	G	NAD83
018	Interpolation--map	M	NAD27
019	Interpolation--photo	M	NAD27
020	Interpolation--to be defined	M	NAD27
021	Interpolation--other	U	NAD27
021OS	Interpolated from other source owned by CWS	U	NAD27
022	Loran C positioning device	L	NAD83
023	Public land survey--quarter section	M	NAD27
024	Public land survey--section	M	NAD27
025	Classical surveying techniques	S	NAD83
026	Zip5 code--approximate centroid	U	NAD83
027	Unknown (no information available)	U	NAD83
027G	Guess to County	U	NAD83
027NWIS	Unknown method, data from NWIS	U	NAD83
027PS	Unknown method, data from CWS	U	NAD27
028	Global positioning system--unspecified	G	NAD83
029	Global positioning system--(pseudo range) standard positioning service corrected using Canadian Active Control System	G	NAD83
030	Interpolation--digital map source	N	NAD83
030D	Interpolation--DeLorme Street Atlas USA digital map source	N	NAD83
030DPS	Interpolation--DeLorme Street Atlas USA digital map source and information from CWS	N	NAD83
030GE	Interpolation--Google Earth digital map source	N	NAD83
030GNIS	Interpolation--GNIS digital map source	N	NAD83
030TS	Interpolation--TerraServer digital aerial photo source	N	NAD83
030TZ	Interpolation--Topozone digital map source	N	NAD83
034	Public land survey--eighth section	N	NAD83
035	Public land survey--sixteenth section	N	NAD83
038	ZIP+2 Code--centroid	N	NAD83

Table 14.   The LatLonVerifyMethod domain table documenting location verification methods.

[This data table contained 22 records as of August 1, 2014. This domain serves the USIN and USWL data tables. *, primary key; DeLorme, DeLorme Street Atlas USA, (DeLorme, Inc., 2014); EPA, U.S. Environmental Protection Agency; GNIS, Geographic Names Information System; SDWIS, Safe Drinking Water Information System (U.S. Environmental Protection Agency, 2014c); USGS, U.S. Geological Survey; NWIS, National Water Information System (Dupré and others, 2013); GIS, geographic information system; <, less than; >, greater than]

Field Name	Field Type	Description
LatLonVerifyMethod_ID*	Integer	Integer code denoting method used to verify latitude/longitude value.
LatLonVerifyMethod	Text	Description of method used to evaluate locations.

Table contents:

LatLonVerifyMethod_ID	LatLonVerifyMethod
0	none (not verified)
1	DeLorme and State/EPA data to 6 seconds
2	latitude/longitude based on source name and DeLorme
3	DeLorme
4	Web address and DeLorme
5	DeLorme and State/EPA data, not obviously wrong
6	State/EPA data, DeLorme and Web pages
7	DeLorme and State/EPA data, minor adjustment
8	DeLorme and owner location, not to specific source
9	DeLorme and owner location, to specific source
10	DeLorme and town location
11	GNIS and DeLorme
12	Web document and DeLorme
13	DeLorme and SDWIS location for other sources
14	DeLorme and State/EPA data OK, but no source name
15	DeLorme and State/EPA data, close
16	latitude/longitude within 5 seconds of NWIS
17	latitude/longitude plotted within County using GIS
18	latitude/longitude plotted outside County, checked as OK
19	latitude/longitude outside County by < 1 kilometer
20	latitude/longitude plotted outside County by > 1 kilometer
21	latitude/longitude from NWIS

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Glossary

active A public water system that is recorded in the Safe Drinking Water Information System (SDWIS) database as operating; only active systems and facility records have been included in SDWIS data retrievals used to populate the Public-Supply Database (PSDB). This terminology is used in this report specifically for the classification within the SDWIS, as it is clear that some of these "active" facilities are no longer in use (for example, the facility is named "WELL 01– DESTROYED"). *See* inactive.

commercial water use Water that is used for motels, hotels, restaurants, office buildings, other commercial facilities, and military and nonmilitary institutions (U.S. Geological Survey, 2014c).

community water system A public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (U.S. Environmental Protection Agency, 2014b).

data table A database table whose rows contain data. Some field values in the table may be limited to a list of values. *See* domain table.

domain table A database table whose field values are used to define unique values ("keys") that are the only values allowed in particular data table field. Other information associated with each key may be included in the domain table; for example, if the key value represents a State code, fields containing State name and information about each State also may be included in the domain table. Domain tables can be used for database quality control and in the building of queries that join selected rows with other tables in the database.

domestic water use Water used for indoor household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and outdoor purposes such as watering lawns and gardens (U.S. Geological Survey, 2014c).

distribution system A network of storage tanks, valves, pumps, pipes or other constructed conveyances that transport finished water from a treatment plant, or wherever the water is diverted or pumped from, to consumers (U.S. Government Printing Office, 2012).

facility A groundwater source or surface-water source used to collect water to be distributed by a public water system. *See* groundwater source, surface-water source, and public water system.

Federal Information Processing Standard (FIPS) FIPS codes uniquely identify geographical areas in the United States and its territories and possessions. FIPS codes are maintained by the National Institute of Standards and Technology, and used extensively by Federal agencies. The U.S. Census Bureau uses FIPS codes to identify legal and statistical entities for geographical tabulations of population, demographic, and economic data (U.S. Bureau of the Census, 2002, 2014).

foreign key A database table field that is used to join rows between two tables. The values of this field need not be unique in the source table but must be unique in the destination table (forming a "one-to-many join").

groundwater Water that public water systems pump and treat from groundwater sources.

groundwater source A groundwater source is a source of water that is taken from beneath the earth's surface. Most public water systems with groundwater sources pump and treat groundwater from wells drilled into the ground to capture water flowing below surface level. Although other types of sources may be used (such as well fields, springs, and cisterns), in the context of this report, groundwater sources are referred to in this report as wells.

inactive A facility or public water system in the Safe Drinking Water Information System (SDWIS) database that is recorded as not in operation. *See* active.

industrial water use   Water used for fabrication, processing, washing, and cooling (U.S. Geological Survey, 2014c).

intake   *See* surface-water source.

non-transient non-community water system   A public water system that supplies water to 25 or more of the same persons at least 6 months per year in places other than their residences. Some examples are schools, factories, office buildings, and hospitals that have their own water systems (U.S. Environmental Protection Agency, 2014b).

primary key   A database table field with a unique value. This field can be used to uniquely identify each table row.

population served   The estimated number of individuals that are served by the public water system or the aggregated estimated number of individuals that are served by a group of public water systems.

public water system (PWS)   A system of pipes or other constructed conveyances capable of providing water for human consumption to at least 15 service connections, or regularly serves at least 25 individuals, for at least 60 days per year. Public water systems are subject to the National Primary Drinking Water Regulations under the Safe Drinking Water Act. A public water system is either a **community water system** or a **non-community water system** (U.S. Government Printing Office, 2012).

Public Water System Identification (PwsID)   A number that identifies a specific public water system. PwsID numbers are composed of alphanumeric characters and are created by the U.S. Environmental Protection Agency Information Collection Rule Water Utility Database System. The PwsID is used in the Safe Drinking Water Information System (SDWIS) and Public-Supply Database (PSDB) to link facilities with public water systems.

Safe Drinking Water Information System (SDWIS)   The SDWIS is used by the U.S. Environmental Protection Agency to collect and manage drinking-water system inventory and compliance data submitted by the States and Tribes. Data are collected by the States and other agencies using SDWIS; these data are then compiled into a nation-wide aggregated database known as "SDWIS/Federal" or "SDWIS/FED." In the context of this report, the term "SDWIS" is used to refer to this aggregated National database.

source-water type   Type of water collected at a facility or used in a public water system. Examples of source-water types include stream, lake, reservoir, spring, or well.

surface water   Water that public water systems pump and treat from sources open to the atmosphere, such as rivers, lakes, and reservoirs (U.S. Government Printing Office, 2012).

surface-water source   A source of water that is open to the atmosphere and subject to surface runoff. Examples of surface-water sources include lakes, rivers, reservoirs, and infiltration galleries. For simplicity, in the context of this report, a surface-water source is referred to as an intake.

transient non-community water system   A non-community water system that does not regularly serve at least 25 of the same persons over six months per year (U.S. Government Printing Office, 2012). These systems do not have to test or treat their water for contaminants that pose long-term health risks, because fewer than 25 people drink the water over a long period of time. They still must test the water for microbes and several chemicals.

water use   In a restrictive sense, the term refers to water that is withdrawn for a specific purpose, such as for public supply, domestic use, commercial, industrial, or other types of uses. A broader definition of water use includes the interaction of humans with and influence on the hydrologic cycle, and includes elements such as water withdrawal delivery, consumptive use, and wastewater returns to the hydrologic system (U.S. Geological Survey, 2014c).

well   *See* groundwater source.

withdrawal   Water removed from the ground or diverted from a surface-water source for use (U.S. Geological Survey, 2014c).