



DBHydro Insights

User's Guide

January 2025

DRAFT

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1.0 INTRODUCTION

DBHydro Overview

DBHydro is the South Florida Water Management District's (SFWMD's) hydrologic, water quality, and hydrogeologic data storage and retrieval system. This system is the source of historical and up-to-date data for the region covered by SFWMD. SFWMD participates in a cooperative data exchange program with other agencies, such as the United States Geological Survey (USGS), Everglades National Park, United States Army Corps of Engineers, Lake Worth Drainage District, other water management districts, and county governments. DBHydro allows users to access over 190,000 station-years of data, collected at over 17,000 stations, in and around the SFWMD's area of responsibility. DBHydro contains hydrologic, water quality, and hydrogeologic data, and stores additional information about the location and context of where and how data are collected. Descriptions are available for most locations, giving the user information on hydrologic basin, latitude, longitude, state plane coordinates, county, section, township, range, and station notes.

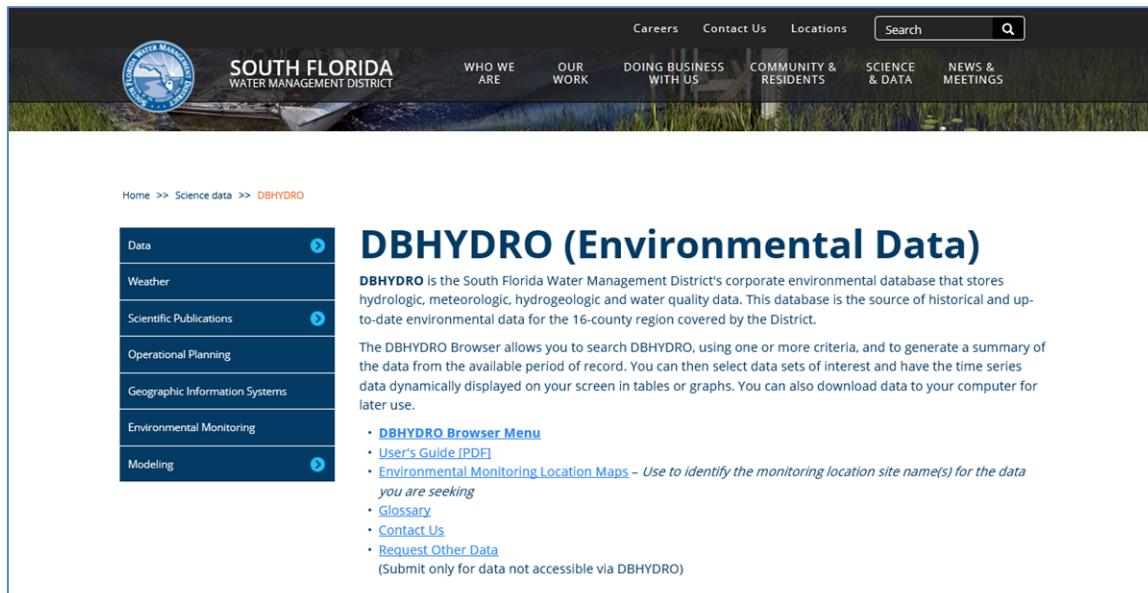
One of the more powerful aspects of DBHydro is data can be retrieved in various ways. For example, it is not necessary to know a specific identification number (ID) of a particular station; the database can be scanned to locate all stations that meet certain criteria, such as a given basin, county, or coordinate window. The DBHydro database is an important reference for hydrologic, hydrogeologic, and water quality reports and investigations in Central and South Florida. The application that allows users to specify search criteria and retrieve data from DBHydro is called "DBHydro Insights".

DBHydro Insights

DBHydro Insights replaces and surpasses the DBHYDRO Browser web-based application known to SFWMD data users for decades. It allows users to browse the SFWMD's corporate environmental database, collectively known as DBHydro, based on different "lenses" or points of entry into the data. The Data Lens is similar to the legacy DBHydro Browser by allowing users to provide criteria to generate a summary listing of time series data. The user can then select one or more time series of interest and have the time series data dynamically displayed in tables or graphs. In addition to using text-based filters, users may also access station data via a web map. Other lenses include Sites, Structures, Stormwater Treatment Areas, Watersheds, Data, and System. These lenses are at different levels of spatial granularity and are defined in further detail in *Section 2.0*.

Getting Started

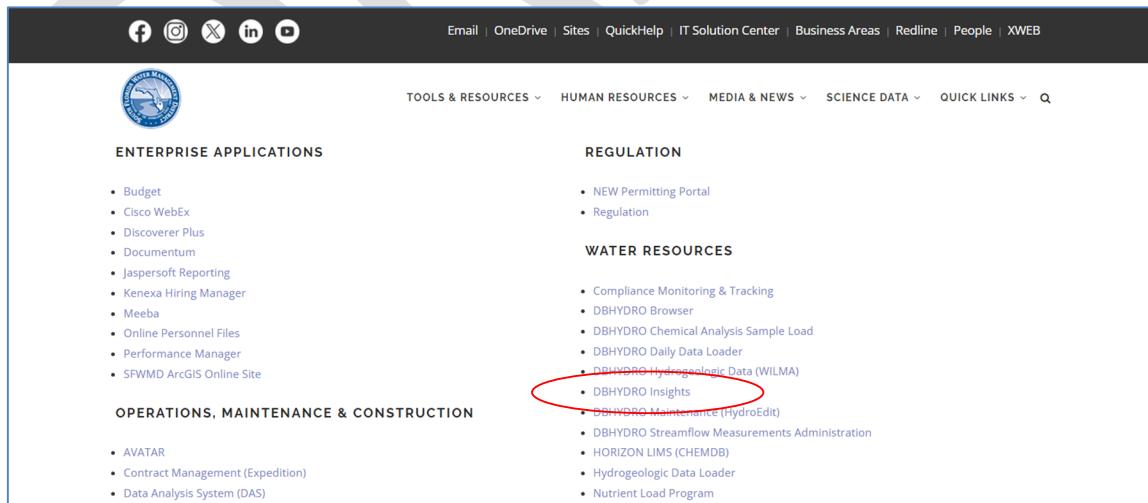
Internet access for DBHydro is provided at <http://www.sfwmd.gov/dbhydro>. **Figure 1** shows the launch page for DBHydro.



The screenshot shows the South Florida Water Management District website. At the top, there is a navigation bar with links to 'Careers', 'Contact Us', 'Locations', a search bar, and a magnifying glass icon. Below the navigation bar, there is a banner featuring the South Florida Water Management District logo and the text 'SOUTH FLORIDA WATER MANAGEMENT DISTRICT'. The main content area has a blue sidebar on the left with a tree icon and the title 'Data'. Under 'Data', there are several categories: 'Weather', 'Scientific Publications', 'Operational Planning', 'Geographic Information Systems', 'Environmental Monitoring', and 'Modeling'. To the right of the sidebar, the main content area has a large heading 'DBHYDRO (Environmental Data)'. Below the heading, there is a brief description of what DBHYDRO is, followed by a list of links: 'DBHYDRO Browser Menu', 'User's Guide [PDF]', 'Environmental Monitoring Location Maps - Use to identify the monitoring location site name(s) for the data you are seeking', 'Glossary', 'Contact Us', and 'Request Other Data'. A note at the bottom states '(Submit only for data not accessible via DBHYDRO)'.

Figure 1. Launch page for DBHydro.

SFWMD employees or any user authenticated on the SFWMD computer network may also start the DBHydro Insights by first selecting “Tools and Resources” on SFWMD’s internal portal, then select “Applications”, find “Water Resources”, and click on “DBHydro Insights” as shown in **Figure 2**.



The screenshot shows the SFWMD internal portal. At the top, there is a header with social media icons (Facebook, Instagram, X, LinkedIn, YouTube), a search bar, and links to 'Email', 'OneDrive', 'Sites', 'QuickHelp', 'IT Solution Center', 'Business Areas', 'Redline', 'People', and 'XWEB'. Below the header, there is a navigation bar with links to 'TOOLS & RESOURCES', 'HUMAN RESOURCES', 'MEDIA & NEWS', 'SCIENCE DATA', 'QUICK LINKS', and a magnifying glass icon. The main content area is divided into several sections: 'ENTERPRISE APPLICATIONS' (with links to Budget, Cisco WebEx, Discoverer Plus, Documentum, Jaspersoft Reporting, Kenexa Hiring Manager, Meeba, Online Personnel Files, Performance Manager, and SFWMD ArcGIS Online Site); 'OPERATIONS, MAINTENANCE & CONSTRUCTION' (with links to AVATAR, Contract Management (Expedition), and Data Analysis System (DAS)); 'REGULATION' (with links to NEW Permitting Portal and Regulation); 'WATER RESOURCES' (with links to Compliance Monitoring & Tracking, DBHYDRO Browser, DBHYDRO Chemical Analysis Sample Load, DBHYDRO Daily Data Loader, DBHYDRO Hydrogeologic Data (WILMA), DBHYDRO Insights, DBHYDRO Maintenance (HydroEdit), DBHYDRO Streamflow Measurements Administration, HORIZON LIMS (CHEMDB), Hydrogeologic Data Loader, and Nutrient Load Program). A red circle highlights the 'DBHYDRO Insights' link under the 'WATER RESOURCES' section.

Figure 2. Navigating to DBHydro Insights from the SFWMD internal portal.

The DBHydro Insights main page is shown in **Figure 3**. Some options may be unavailable to users not authenticated on the SFWMD computer network (i.e., “internal use only”).

The screenshot shows the DBHydro Insights main page with several callout bubbles highlighting different features:

- Jump to any lens**: Points to the top navigation bar where users can search for lenses.
- Links to other related resources**: Points to the "Available Lens Options" section below the search bar.
- Invoke the map for the given lenses**: Points to the "Show Lens Descriptions" link in the "Available Lens Options" section.
- Current levels of popular lakes**: Points to the lake level information at the top of the page.
- Quickly search any lens**: Points to the search bar at the top of the page.
- What others are searching for**: Points to the "Popular Resources" section, which lists various hydrological sites and their current conditions.

Resource Type	Identifier	Condition	Value
sta	STA-1E	Flowways Online	3/4
site	S6	Flow	0 cfs
site	SSA	Flow	0 cfs
structure	S6	Flow	0 cfs
watershed	LAKE OKEECHOBEE	Discharge In	685 cfs
site	G331E	Flow	0 cfs
site	G333E	Flow	137 cfs
site	G331D	Flow	0 cfs
		Upstream Stage	12.35 ft NAVD88
		Discharge Out	1118 cfs
		Downstream Stage	10.24 ft NAVD88
		Rainfall	0.006 in
		Downstream Stage	10.29 ft NAVD88

At the bottom of the page, there are links to "DBHYDRO Insights", "DBHYDRO Insights Data", "SFWMD Home", and "Login".

Figure 3. DBHydro Insights main page.

2.0 TILE-BASED DATA ACCESS (LENSES)

Sites Lens

The Sites Lens tile (**Figure 4**) is a map-based search that provides a slightly broader view than the Structure Lens by including information for each structure and other monitoring activities nearby.

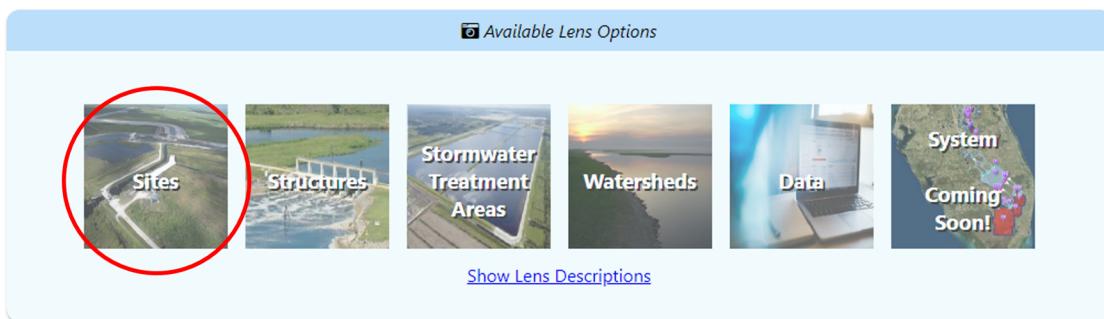


Figure 4. Available lens options with the Site Lens indicated by the red circle.

There are five major components of the Site Lens: Current Conditions, Map, Key Parameters, Access to All Parameters, and Documents (Multimedia) as shown in **Figure 5**.

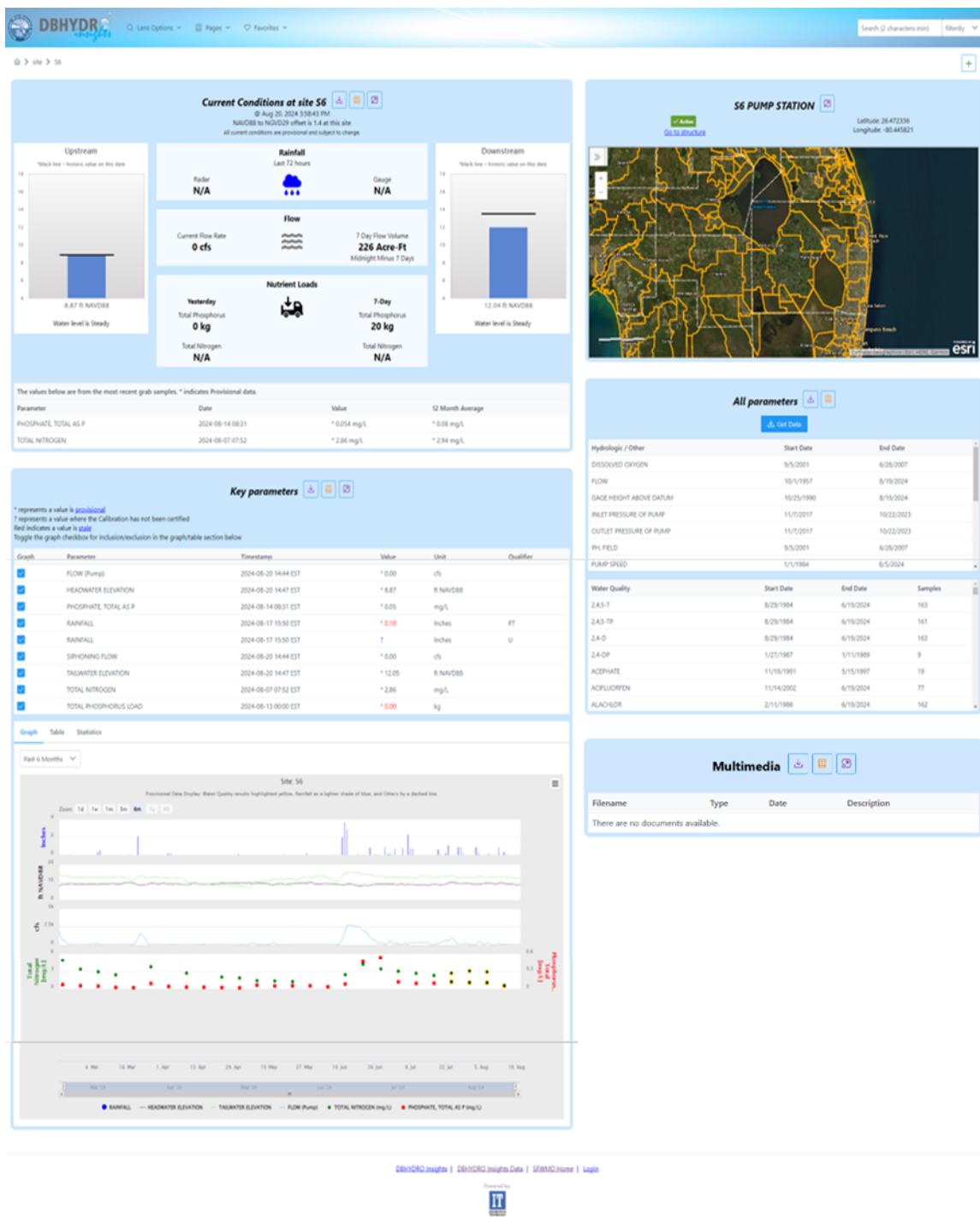


Figure 5. Five major components of the Site Lens: Current Conditions, Map, Key Parameters, Access to All Parameters, and Documents (Multimedia, if applicable).

Structures Lens

The Structures Lens tile (**Figure 6**) is a map-based search that provides a real-time view of the status of each water control structure.

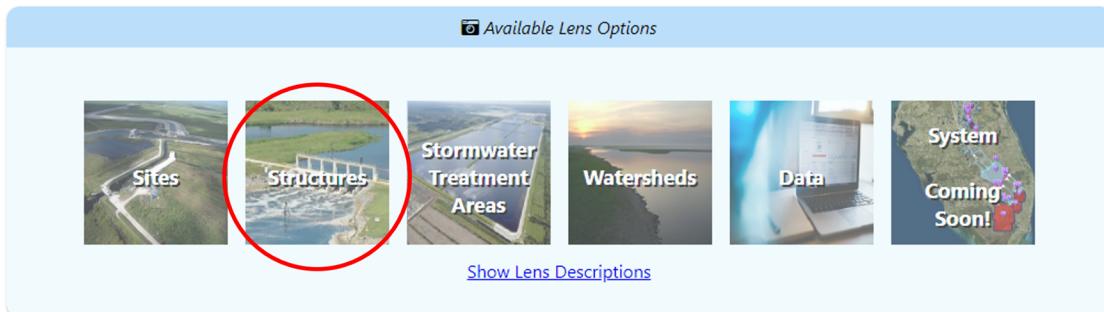


Figure 6. Available lens options with the Structure Lens indicated by the red circle.

Stormwater Treatment Areas Lens

The Stormwater Treatment Areas Lens tile (**Figure 7**) provides some insight into the current status of the stormwater treatment areas (STAs). As of January 2025, this section is still under development.

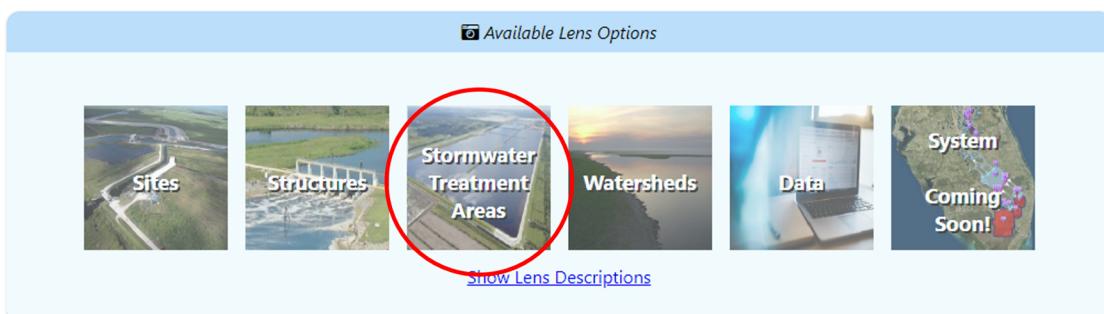


Figure 7. Available lens options with the Stormwater Treatment Area Lens indicated by the red circle.

Watersheds Lens

The Watersheds Lens tile (**Figure 8**) provides a view of each of SFWMD's watersheds as defined in the SFWMD's ArcHydro Extended Database (AHED), “Arc Hydro ... standardizes water data structures so that data can be used consistently and efficiently to solve a wider range of water resource problems at any scale—regional, national, or international.” (esri 2024). This view provides insights into the water budget for each watershed with access to monitoring data for each site within the watershed. As of January 2025, the watershed lens is under development.



Figure 8. Available lens options with the Watersheds Lens indicated by the red circle.

Data Lens

The Data Lens tile (**Figure 9**) has panels for Hydrologic & Continuous Data, Water Quality Analytical Results, and Hydrogeology. Each panel has a series of spatial attribute search criteria and other attribute-based criteria. Users can choose one spatial criterion and as many other attribute criteria as they wish. Criteria are chosen by opening the filter accordions and choosing the criteria of interest. The criteria are cumulative and, as they are applied, restrict the list of available attributes to only those relevant to the criteria entered so far. For instance, if a given watershed is chosen, only those parameters available in that watershed will be shown.

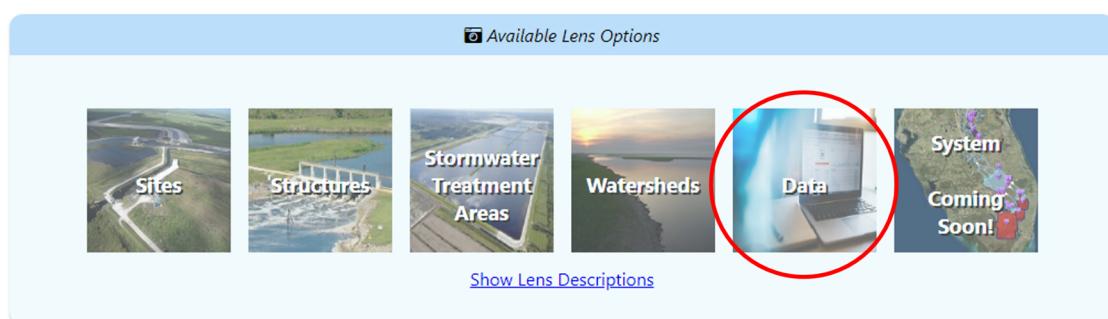


Figure 9. Available lens options with the Data Lens indicated by the red circle.

The screens are highly interactive. As criteria change, the list of data sets found is updated. The user may suppress the automatic update by toggling the Auto/Manual switch. Using the icons on the screen criteria can be cleared individually or all at once. Filters may be hidden to afford a wider display.

A summary of criteria applied thus far is provided on the right-hand side in the Filter Criteria accordion. Individual filter criteria may be removed here, but not added.

Hydrologic and Continuous Data

This section includes hydrologic data such as water levels, flows, operational data such as gate openings and pump operations, physical parameters from deployed sondes such as pH and water temperature, and nutrient loads (automatically?) calculated as the product of flow and concentration.

Each data set here is identified in DBHydro with a unique time series identifier, known as a Timeseries ID (formerly known as a dbkey). No two data sets will ever share the same Timeseries ID. For example, a set of instantaneous readings and the mean daily values derived from such readings have two different Timeseries IDs. DBHydro uses the term breakpoint data synonymously with instantaneous data. Our cooperative program partner, the USGS, uses the terms unit values and instantaneous values for such data.

The list of data sets found can be downloaded, sorted, and rearranged according to user preferences (**Figure 10**). Hovering above a “?” icon provides a definition of the filter.

Open this accordion to see a summary of your filter criteria in one place

Hydrologic Data

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Station	Parameter	Units	Frequency	Statistic Type	Agency	Strata	Gate No.	Recorder	Sensor	Startdate	Enddate	Status	County	Source Timeseries	Repmnum	Timeseries ID
1-1	STG	ft NAVD88	BK	INST	WMD	0	?????					P	PAL	GW252	0	05395
1-1	STG	ft NAVD88	DA	MEAN	WMD	0	?????			03/01/1988	04/18/1998	I	PAL	GA17@H	0	07932
1-1	STG	ft NGVD29	BK	INST	USGS	0	GOES			11/22/2022	07/16/2024	A	PAL	GA17##	0	A181
1-1	STG	ft NGVD29	DA	MEAN	CDE	0	?????			01/01/1954	12/31/1999	I	PAL		5	06713
1-1	STG	ft NGVD29	DA	MEAN	USGS	0	?????			07/01/1991	07/15/2024	A	PAL	263180080205001	0	15808
1-1	STG	ft NGVD29	DA	MEAN	WMD	0	PREF			01/01/1994	04/30/2024	A	PAL		1	FET75
1-1	STG	ft NAVD88	DA	MEAN	USGS	0	?????			01/18/2012	07/15/2024	A	PAL	263180080205001	0	A0105
1-1-5	RAIN	Inches	BK	INST	WMD	0	?????			10/01/1951	12/31/1984	I	PAL	MR252	0	19723
1-1-5	RAIN	Inches	DA	SUM	WMD	0	?????			10/31/1951	12/12/1984	I	PAL	MR252	0	05924
1-1-5	RAIN	Inches	BK	INST	WMD	0	CAN			01/10/1958	12/31/1959	I	PAL	MR89C	0	19725
1-1-5	RAIN	Inches	DA	SUM	WMD	0	CAN			01/11/1958	12/31/1959	I	PAL	MR89C	0	06304
1-1C	STG	ft NAVD88	DA	MEAN	WMD	0	?????			04/15/2000	01/08/2003	I	PAL	CA1-BC	0	05420
1-1C	STG	ft NAVD88	RI	DWR	WMD	0	?????			03/01/1988	04/18/1998	I	PAL	GA18C@H	0	07938
1-1C	STG	ft NGVD29	BK	INST	USGS	0	GOES			09/05/2013	07/16/2024	A	PAL	GA18C##	0	A182

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DBHYDRO Insights | SFWMD Home
Powered by ITT

Figure 10. Hydrologic Data screen.

In the example provided in **Figure 11**, the “Agency”, “Data Type”, “Status”, and “County” filters have been invoked by selecting values from their respective accordions.

Hydrologic Data

Filter Criteria (4)

This section shows a summary of your selected filters

Counties: Palm Beach

Parameters: FLOW

Status: A

Agencies: WMD

List of Datasets Found

Global Filter

Station	Parameter	Units	Frequency	Statistic Type	Agency	Strata	Gate No.	Recorder	Sensor	Startdate	Enddate	Status	County	Source Timeseries	Repnum	Timeseries ID
C-10	FLOW	cfs	DA	MEAN	WMD	0	PREF	03/01/1972	04/30/2024	A	PAL	0	15645			
C1BW_W	FLOW	cfs	BK	INST	WMD	0	DRV	07/31/1992	07/15/2024	A	PAL	1	64200			
C1BW_W	FLOW	cfs	DA	MEAN	WMD	0	DRV	07/31/1992	07/15/2024	A	PAL	1	64213			
CWPB2S_L	FLOW	cfs	BK	INST	WMD	0	DRV	07/20/2014	07/15/2024	A	PAL	1	93883			
CWPB2S_L	FLOW	cfs	DA	MEAN	WMD	0	DRV	07/20/2014	07/15/2024	A	PAL	1	15274			
E BEACH	FLOW	cfs	DA	MEAN	WMD	0	PREF	07/01/2001	04/30/2024	A	PAL	0	64220			
ESP52_P	FLOW	cfs	BK	INST	WMD	0	DRV	12/20/2001	07/16/2024	A	PAL	1	15273			
ESP52_P	FLOW	cfs	DA	MEAN	WMD	0	PREF	12/20/2001	04/30/2024	A	PAL	0	93884			
ESP52_P	FLOW	cfs	DA	MEAN	WMD	0	DRV	12/20/2001	07/15/2024	A	PAL	1	64240			
G92_C	FLOW	cfs	BK	INST	WMD	0	DRV	09/02/1977	07/16/2024	A	PAL	4	64744			
G92_C	FLOW	cfs	DA	MEAN	WMD	0	DRV	09/02/1977	07/15/2024	A	PAL	4	91279			
G94AA_C	FLOW	cfs	BK	INST	WMD	0	DRV	04/15/2000	07/16/2024	A	PAL	4	64748			
G94AA_C	FLOW	cfs	DA	MEAN	WMD	0	PREF	04/30/2000	04/30/2024	A	PAL	2	7A422			
G94AA_C	FLOW	cfs	DA	MEAN	WMD	0	DRV	04/15/2000	07/15/2024	A	PAL	4	91281			
G160_S	FLOW	cfs	BK	INST	WMD	0	DRV	08/09/2005	07/16/2024	A	PAL	1	64240			

Showing 1 to 15 of 698 << < > >> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 >

DBHYDRO Insights Data Map | DBHYDRO Insights | SFWMD Home

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Sorted by station.
Click on any column heading(s) to sort.

A unique data set ID

Figure 11. An example of selected values in the Hydrologic Data section.

Selecting one or more data sets by checking the check boxes allows the user to fetch associated data (**Figure 12**). Choose from multiple report types and formats. Apply a date range of interest by selecting a preset range or use a calendar widget to define a custom range.

The screenshot shows a web-based application interface for managing datasets. At the top, there is a header with buttons for 'Hide', 'Download Dataset List', and 'Reference Tables'. A search bar labeled 'Global Filter' is also present. Below the header is a table titled 'List of Datasets Found' with 15 rows selected. The columns include: Station, Parameter, Units, Frequency, Statistic Type, Agency, Strata, Gate No., Recorder, Sensor, Startdate, Enddate, Status, County, Source Timeseries, Repnum, and Timeseries ID. A callout bubble points to the 'Method of acquisition or derivation' column. Another callout bubble points to the 'C18-W-Q' entry in the 'Timeseries ID' column, with the text: 'SFWMD data quality assurance works on data in batches. Most hydrologic data sets are quality assured within two weeks of data collection.' A third callout bubble points to the 'Get Data' button in a modal window, with the text: 'Hover over most codes for their meaning'. A fourth callout bubble points to the 'G160-S' entry in the 'Timeseries ID' column, with the text: 'An alias to the original data source'. The modal window is titled 'Choose Output Options' and contains fields for Report Type (set to 'Timeseries'), Report Format (set to 'Screen'), and Date Range (set to 'Past 30 Days'). A 'Get Data' button is at the bottom of the modal.

Station	Parameter	Units	Frequency	Statistic Type	Agency	Strata	Gate No.	Recorder	Sensor	Startdate	Enddate	Status	County	Source Timeseries	Repnum	Timeseries ID
C-10	FLOW	cfs	DA	MEAN	WMD	0	PREF	03/01/1972	04/30/2024	A	PAL	0	15645			
C18W_W	FLOW	cfs	BK	INST	WMD	0	DRV	07/31/1992	07/16/2024	A	PAL	C18-W-Q				
C18W_W	FLOW	cfs	DA	MEAN	WMD	0	DRV	07/31/1992	07/16/2024	A	PAL					
CWPB2S_2	FLOW	cfs	BK	INST	WMD	0	DRV	07/20/2014	07/16/2024	A	PAL					
CWPB2S_2	FLOW	cfs	DA	MEAN	WMD	0	DRV	07/20/2014	07/15/2024	A	PAL					
EBEACH	FLOW	cfs	DA	MEAN	WMD	0	PREF	07/01/2001	04/30/2024	A	PAL					
ESPS1_P	FLOW	cfs	BK	INST	WMD	0	DRV	12/20/2001	07/16/2024	A	PAL					
ESPS2_P	FLOW	cfs	DA	MEAN	WMD	0	PREF	12/20/2001	04/30/2024	A	PAL					
ESPS3_P	FLOW	cfs	DA	MEAN	WMD	0	DRV	12/20/2001	07/15/2024	A	PAL					
G92_C	FLOW	cfs	BK	INST	WMD	0	DRV	09/02/1977	07/16/2024	A	PAL	G92-C				
G92_C	FLOW	cfs	DA	MEAN	WMD	0	DRV	09/02/1977	07/15/2024	A	PAL	G92-C-Q	4	91749		
G94A_C	FLOW	cfs	BK	INST	WMD	0	DRV	04/15/2000	07/16/2024	A	PAL	G94A-C-Q	4	64746		
G94A_C	FLOW	cfs	DA	MEAN	WMD	0	PREF	04/30/2000	04/30/2024	A	PAL					
G94A_C	FLOW	cfs	DA	MEAN	WMD	0	DRV	04/15/2000	07/15/2024	A	PAL	G94A-C-Q	4	91281		
G160_S	FLOW	cfs	BK	INST	WMD	0	DRV	08/09/2005	07/16/2024	A	PAL	G160-S-Q	1	64240		

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Get Data

Choose Output Options
 *Maximum of 250,000 data points at this time

Report Type: Timeseries

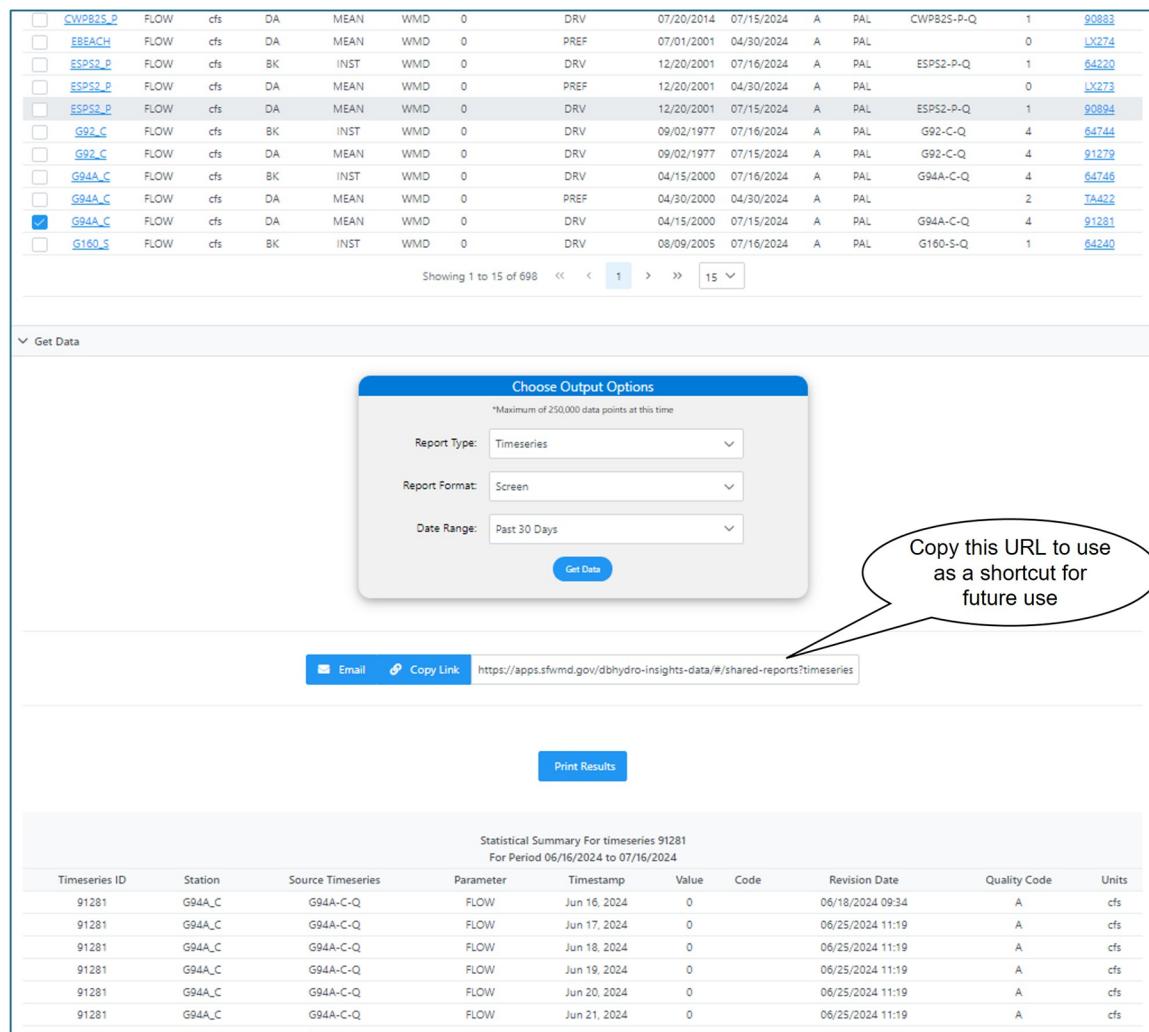
Report Format: Screen

Date Range: Past 30 Days

Get Data

Figure 12. Fetched data from the query.

Select the Get Data button to generate output (**Figure 13**). Copy the uniform resource locator (URL) to use as a shortcut in the future.



The screenshot shows a data grid at the top with 15 rows of data. Below it is a 'Get Data' button, which opens a modal window titled 'Choose Output Options'. The modal contains three dropdown menus: 'Report Type' set to 'Timeseries', 'Report Format' set to 'Screen', and 'Date Range' set to 'Past 30 Days'. A blue 'Get Data' button is at the bottom of the modal. Below the modal is a row with 'Email' and 'Copy Link' buttons, followed by a URL: <https://apps.sfwmd.gov/dbhydro-insights-data/#shared-reports?timeseries>. A black callout bubble points from the text 'Copy this URL to use as a shortcut for future use' to the 'Copy Link' button. At the bottom of the page is a table titled 'Statistical Summary For timeseries 91281' with a header row and several data rows.

Timeseries ID	Station	Source Timeseries	Parameter	Timestamp	Value	Code	Revision Date	Quality Code	Units
91281	G94A_C	G94A-C-Q	FLOW	Jun 16, 2024	0		06/18/2024 09:34	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 17, 2024	0		06/25/2024 11:19	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 18, 2024	0		06/25/2024 11:19	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 19, 2024	0		06/25/2024 11:19	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 20, 2024	0		06/25/2024 11:19	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 21, 2024	0		06/25/2024 11:19	A	cfs
91281	G94A_C	G94A-C-Q	FLOW	Jun 22, 2024	0		06/25/2024 11:19	A	cfs

Figure 13. Select the Get Data button to generate output.

Changing the “Report Format” to “Graph” generates a graph suitable for printing (**Figure 14**). Additional graphing options provide for interactive graphs and graphing multiple time series on a single graph. A graph of a SFWMD single time series, denoted by agency = WMD, can be displayed with both the North American Vertical Datum of 1988 (NAVD88) and National Geodetic Vertical Datum of 1929 (NGVD29) vertical datum value axes. When graphing multiple time series, each time series may be turned on and off by selecting them in the graph legend. The interactive graphing allows users to zoom in to desired periods and then also to pan forward and backward in time to examine the data in more detail. When hovering over a point the value and qualifier(s) will be displayed.

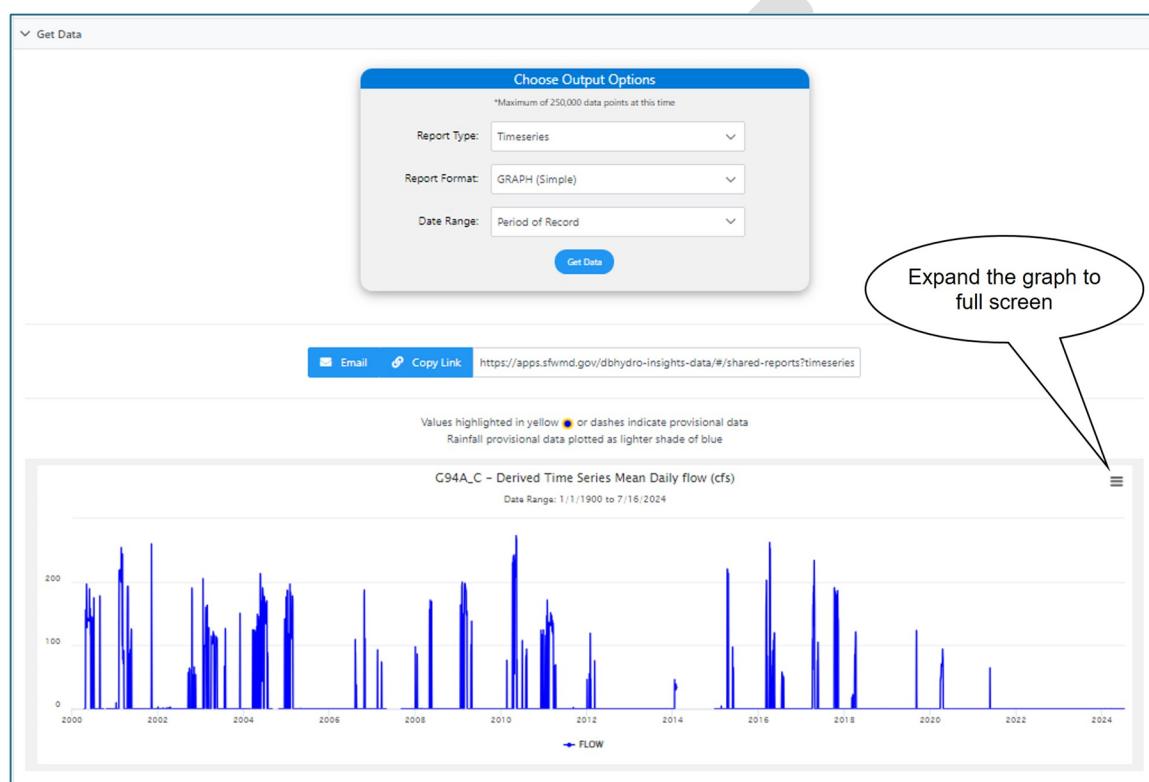


Figure 14. Interactive graphing screen.

The graph in **Figure 14** is generated directly from the database, ensuring that the user’s results are updated with the most recent data. The graph may be printed to any available printer.

The resulting chart URL can be edited to regenerate a graph for a different date range. If a dynamic date range, such as "Last 7 Days" or "Last 30 Days," is selected, the URL remains dynamic and will always retrieve the most recent data within that timeframe whenever accessed. Conversely, if a custom date range is selected, the data remains static, reflecting the specific time period defined at the time of URL generation. Chart URLs can be bookmarked and reused directly from the user’s web browser without needing to navigate back to the DBHydro Insights application.

The “Station” field hyperlink in the previous time series list leads to a screen displaying the station information. For example, clicking on station "C18W_W" leads to this screen shown in **Figure 15**.

See this location on a map

See a list of stations in the area

Distance (miles)	Station	Site	Type	Latitude (ddmm:ss.sss)	Longitude (ddmm:ss.sss)	X Coord (ft) NAD83	Y Coord (ft) NAD83	County	Basin	Section	Township	Range	Map	Description
0	C18W_W	C18W	FACILITY	265218.209	801442.158	923376.907	923431.276	Palm Beach	C-18/CORETT	28	41	41	C18W_W	Var 200 ft downstream of SR10 on canal C-18
0.032	C18	C18	CANAL	265218.758	801443.945	923341.843	923431.276	Palm Beach	C-18/CORETT	28	41	41	C18	CANAL C18 WEST AT SR10 NR JUPITER, FL
0.033	C18W_HPT	C18W	CANAL	265218.757	801443.945	923341.843	923431.276	Palm Beach	C-18/CORETT	28	41	41	C18W_HPT	#7 The Ditch - Canal C18 West at SR10
0.208	C18W_LH	C18W	CANAL	265220.520	801441.556	923374.579	923374.574	Palm Beach	C-18/CORETT	28	41	41	C18W_LH	CANAL C18 WEST BELOW BEELINE HIGHWAY HEADWATER
0.071	C18W_T	C18W	CANAL	265220.798	801441.529	923374.864	923374.743	Palm Beach	C-18/CORETT	28	41	41	C18W_T	CANAL C18 WEST BELOW BEELINE HIGHWAY HEADWATER

Figure 15. Station information screen.

Station locations are determined by various methods, each with its own inherent accuracy capabilities. Therefore, some coordinates and distances displayed may only be approximate.

Using the C18W_W station example, selecting the "Launch Map" feature provides a map similar to the one in **Figure 16**.

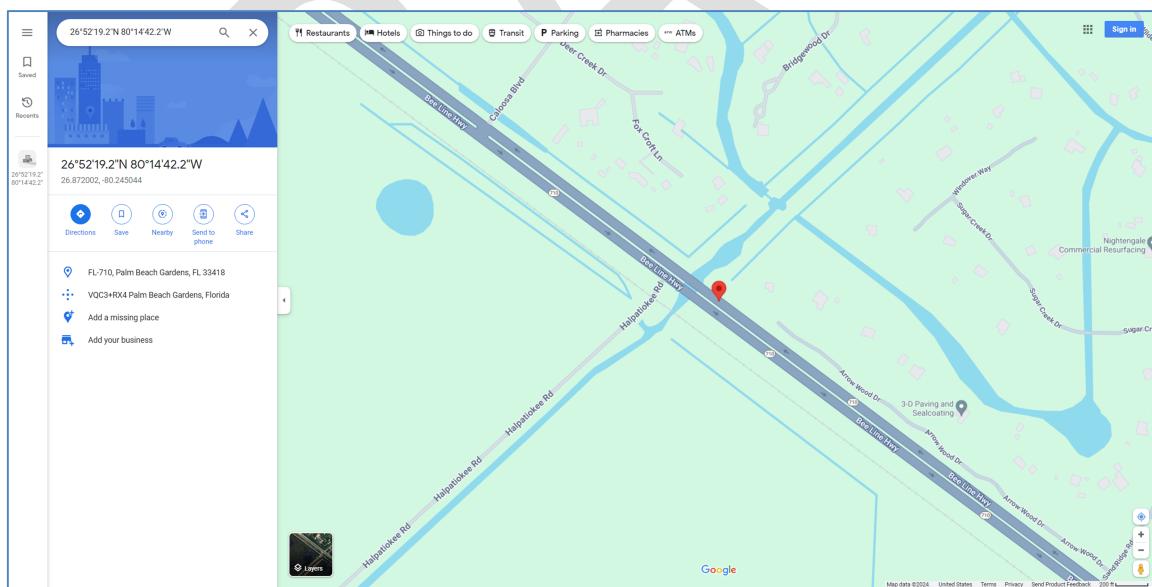


Figure 16. Map created by selecting the “Launch Map” feature.

This feature takes advantage of publicly available map server technology to learn more about the area near the station of interest. The map can be drawn at different scales (zoom in/out) and printed. General directions to the station can also be generated. SFWMD does not endorse the use of any particular commercial map server engine or its advertisers.

Water Quality Sample Data

These data are from field and/or laboratory analyses of water samples, biological tissue, sediments, or other environmental samples. Field parameters, taken at the time of sample collection, such as pH and water temperature, may be collected and stored with the sample. Quality assurance/quality control data are also available. Data available are both provisional and approved/quality-assured. Provisional water quality data should only be used with caution.

Choosing the Water Quality option for the Data Lens from the main menu leads to the screen shown in **Figure 17**. Most water quality queries have similar characteristics, so the interface for water quality has been designed to facilitate the most frequently encountered queries. Data from deployed sondes for *continuous* physical parameters such as pH, and water temperature (sondes) are available in the Hydrologic and Continuous Data tab of the Data Lens.

All data is not created equally. Different organizations have different quality assurance methods and even different methods for adhering to Chapter 62-160 of the Florida Statutes, also known as the Quality Assurance (QA) Rule. Collection Agency, Analyzed By, and Data Validation level should be considered in the evaluation for suitability of use.

Tl_1	Tl_2	Tl_3	Tl_4	Tl_5	Tl_6	Tl_7	Tl_8	Tl_9	Tl_10
ATEEB	0722	DISSOLVED OXYGEN	SW	G	mg/L	PAL	09/16/2015	07/29/2024	310
ATEEB	0722	NO BOTTLE SAMPLE	SW	ACF	Units	PAL	03/17/2016	07/29/2024	163
ATEEB	0722	pH FIELD	SW	G	Units	PAL	03/17/2016	05/29/2024	133
ATEEB	0722	PHOSPHATE, TOTAL AS P	SW	ACF	mg/L	PAL	09/16/2015	07/29/2024	310
ATEEB	0722	SP CONDUCTIVITY, FIELD	SW	G	mg/L	PAL	09/16/2015	08/05/2024	311
ATEEB	0722	SULFATE	SW	G	µS/cm	PAL	09/16/2015	07/29/2024	310
ATEEB	0722	TOTAL NITROGEN	SW	G	mg/L	PAL	11/25/2015	05/13/2024	35
ATEEB	0722	Temperature	SW	G	Deg C	PAL	08/05/2015	07/29/2024	160
ATEEB	07240	DISSOLVED OXYGEN	SW	G	mg/L	PAL	09/16/2015	01/25/2024	310
ATEEB	07240	NO BOTTLE SAMPLE	SW	G	Units	PAL	01/21/2016	08/01/2024	433
ATEEB	07240	pH FIELD	SW	G	Units	PAL	09/16/2015	01/05/2024	38
ATEEB	07240	PHOSPHATE, TOTAL AS P	SW	G	mg/L	PAL	09/16/2015	01/25/2024	28
ATEEB	07240	SP CONDUCTIVITY, FIELD	SW	G	µS/cm	PAL	09/16/2015	01/25/2024	28

Figure 17. Water Quality Data section screen.

A typical project-based query is described below. Clicking on “Project” (A project defined as a water quality monitoring project) from the water “accordion” and selecting a project code leads to this screen in which the the list of relevant data sets is instantly updated. Multiple projects may be selected. Users who wish to search by project code instead of project name can select the code radio button at the top of the project list.

Data can be filtered by test name (and associated test number), collection method, and matrix. The user will need to provide a date range for the query or accept the default.

For the selected criteria, a list of data sets available in the database is displayed. If a test name, collection method, or matrix does not appear in the list it means there is no data meeting that criteria. This feature minimizes the likelihood of users querying the database and ending up with an empty output file.

Selecting a file for output, rather than displaying results on the screen, is useful for large data sets. The fixed-format file and comma-delimited file (.csv) options are useful for importing into a spreadsheet application, while the .pdf file output can be used for distributing read-only versions. The Water Quality data downloads file format is still under development.

Each station visit, identified by the date of collection, constitutes a "sampling event." A single sampling event may involve the collection of one or more samples, each assigned a unique sample ID. These samples can then be analyzed for one or more analytes, identified by their test names or test numbers.

Cross-tab reports exclude qualifiers. **Users do so at their own peril.**

The Station Summary Report, typically reserved for internal staff, provides period of record statistics based on a number of assumptions and criteria. These assumptions and criteria are as follows:

1) Flagged data and field quality control (QC) data are filtered out always. Flag must be null. Sample_type_new must be 'SAMP'.

2) The report only considers results for samples collected on or after January 1, 1991; the implementation of Data Validation in Florida Administrative Code 62-160.

3) The report applies a conservative approach to statistical summaries, emphasizing caution when handling values below method detection limits (MDLs). Key points include the following:

- **Conservative Philosophy:**

- Values below detection are reported conservatively to potentially bias statistical quantities toward higher values.
- For example, if one result is < 0.5 (below detection) and another is 0.1 (above detection), the minimum value is reported as < 0.5, since < 0.5 could theoretically be smaller than 0.1.

- **Handling Below Detection Values:**

- Instead of using half the MDL for values below detection (a common practice among analysts), this report uses the full MDL.
- SFWMD stores values below detection as $-1 \times \text{MDL}$. The remark code "U" also indicates results below detection.

- **Exceptions:**

- Rare cases may lack a "U" remark code, even when the value is below the MDL.

- Certain tests (e.g., Test Numbers 65, 256, 258, 319, and 978) allow legitimate values below zero and are treated as exceptions.

The following logic outlines the rules and procedures applied to calculate summary statistics (e.g., minimum [MIN], maximum [MAX], and average [AVG]) for sample populations in DBHydro Insights. These rules ensure consistency and clarity, particularly when dealing with values below detection limits (BDL) or specific test numbers. Each subsection provides detailed guidance for interpreting and processing the data under various scenarios

Logic for MIN of a sample population: Excluding the test numbers 65, 256, 258, 319, and 978, if the sign of the value of minimum magnitude is negative, it means the minimum value is below detection, therefore prefix it with the less than (<) sign. Use the absolute value of the least negative (closest to zero) result. For test numbers 65, 256, 258, 319, and 978, simply use the minimum.

Logic for MAX of the sample population: Excluding the test numbers 65, 256, 258, 319, and 978, if the sign of the value with maximum absolute value is negative it means the maximum value is below detection, therefore prefix it with less than (<) sign. Use the absolute value of the least negative (closest to zero) result. For test numbers 65 and 319, simply use the minimum.

Logic for AVG (MEAN): Excluding the test numbers 65, 256, 258, 319, and 978, if the sign of the minimum value in the sample population is negative or the remark code has a “U”, it means the resulting summary is affected, therefore prefix it with less than (<) sign. Use the AVG of the absolute values. For test numbers 65, 256, 258, 319, and 978, simply use the AVG.

Logic for STDDEV: Do not give extra consideration to below detection limit (BDL) data. Without further knowledge of the distribution, one cannot imply the standard deviation. Standard deviation uses only the value.

Logic for MEDIAN: Excluding the test numbers 65, 256, 258, 319, and 978, use median of absolute values. The floor and ceiling records are defined as the record(s) in the middle of the ordered sample population. The floor record and ceiling record may have to be interpolated between and this is taken care of by the MEDIAN function. If either the floor or ceiling record, or both, is BDL, the median value should have a less than sign (<) prefixed. For test numbers 65, 256, 258, 319, and 978, simply use the median.

NBDL: Keep track of the number of values below detection by counting values < 0 or containing “U” in the remark code except for test numbers 65, 256, 258, 319, and 978.

MDL STATEMENT: Identify a change in MDLs by comparing the minimum MDL to the maximum MDL. If not equal, it means MDLs varied through time or one or more reported MDLs was null. If minimum and maximum MDL are equal, then MDLs were the same for all results. If MDLs changed through time, it implies our methods changed and typically methods get more precise through time. Users are directed to retrieve the actual results to see the details of how MDLs changed through time.

MDLs_USED: Lists the various MDLs used in the sample population (including null when the MDL cannot be determined).

Hydrogeologic Data

Content to be provided.

Well ID	Well Alias	Description	Latitude	Longitude	County	Total Depth	Screen Depth	Map	Multimedia
#1		1802 CRAFTON ROAD: JUNO ISLES SUB-DIVISION: BOWES RESIDENCE	26.657477	-80.059977	Palm Beach				
#13		1679 ISLES CIRCLE, JUNO ISLES SUBDIVISION: ELDRIDGE RESIDENCE	26.653488	-80.057277	Palm Beach				
#14		1951 CRAFTON RD: JUNO ISLES SUBDIVISION: YORK RESIDENCE	26.666083	-80.062055	Palm Beach				
#15		1588 BOWOOD RD: JUNO ISLES SUBDIVISION: FLETCHER RESIDENCE	26.662077	-80.0574611	Palm Beach				
#2		1821 ASCOTT RD: JUNO ISLES SUBDIVISION: STRUP RESIDENCE	26.650433	-80.0602083	Palm Beach				
#21		SEMINOLE GOLF CLUB: MONITORING WELL #1	26.653447	-80.0541419	Palm Beach				
#22		SEMINOLE GOLF CLUB: MONITORING WELL #2	26.653447	-80.0541419	Palm Beach				
#23		SEMINOLE GOLF CLUB: MONITORING WELL #3	26.653447	-80.0541419	Palm Beach				
#24		SEMINOLE GOLF CLUB: MONITORING WELL #4	26.653447	-80.0541419	Palm Beach				
#25		SEMINOLE GOLF CLUB: PRODUCTION WELL #5	26.653447	-80.0541419	Palm Beach				
#26		SEMINOLE GOLF CLUB: PRODUCTION WELL #6	26.653447	-80.0541419	Palm Beach				
#27		SEMINOLE GOLF CLUB: PRODUCTION WELL #7	26.653447	-80.0541419	Palm Beach				
#3		1921 ASCOTT RD: JUNO ISLES SUBDIVISION: IVY RESIDENCE	26.655277	-80.0616138	Palm Beach				
#7		1822 CRAFTON RD: JUNO ISLES SUBDIVISION: BONEY RESIDENCE	26.666302	-80.0603333	Palm Beach				
021-37		SOUTHERN STATES UTILITIES	26.650788	-81.6948044	Collier	178			

Figure 18. Hydrogeoloic Data section screen

Web Map Access

The web map access option is available to all users from the main menu “Lens Options → Data → Map” link at the top of the main page. This will allow users to search for data visually using a map-based system (**Figure 19**).

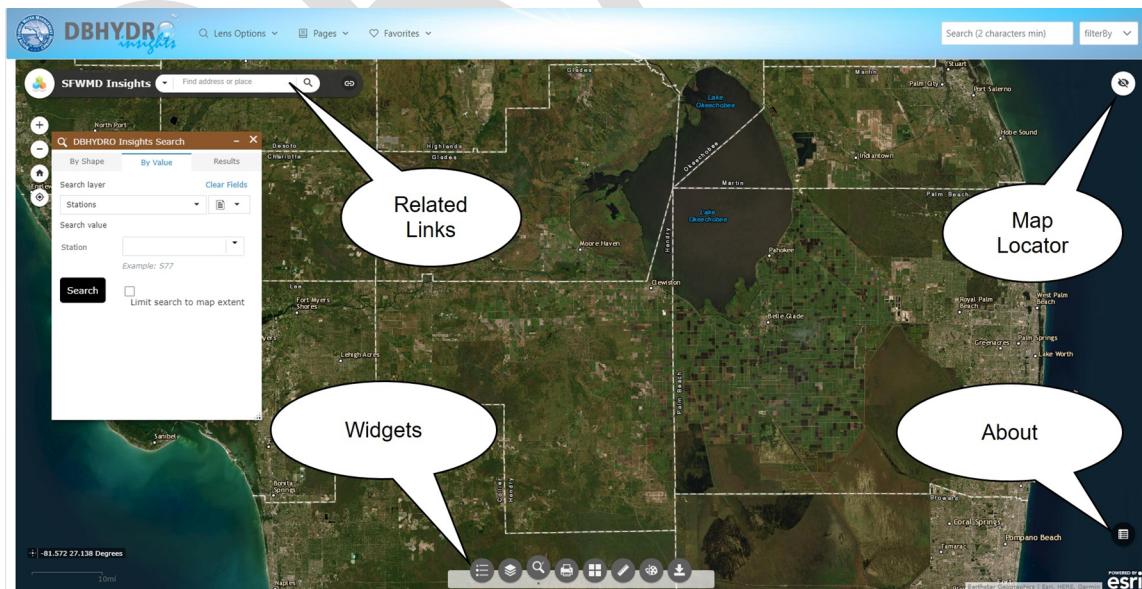


Figure 19. The web map access option.

At the bottom of the map are the “widgets” to perform specific functions (**Figure 20**).



Figure 20. Widgets at the bottom of the web map access screen along with descriptions.

Legend Widget

The Legend widget displays the legend for layers that are both visible and in scale (**Figure 21**). Therefore, the legend is dynamically configured based on what is viewable at the moment.

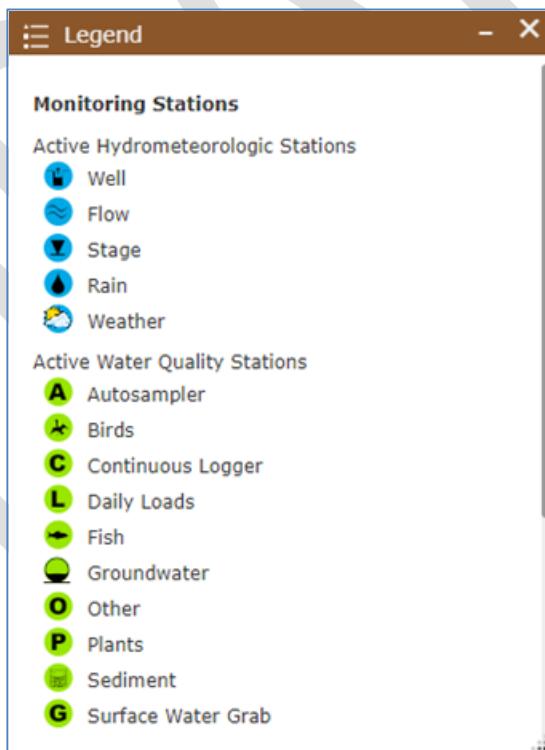


Figure 21. An example of the Legend widget display.

Layer List Widget

The Layer List widget controls which layers are turned on and off (**Figure 22**). All checkboxes in a layer hierarchy must be checked for the lower level layer to be visible. Arrows pointing to the right indicate there is additional information to be displayed, either another sub-layer or the symbol for that layer. Each layer has their own visibility scale defined so all layers may not be visible at all map scales.

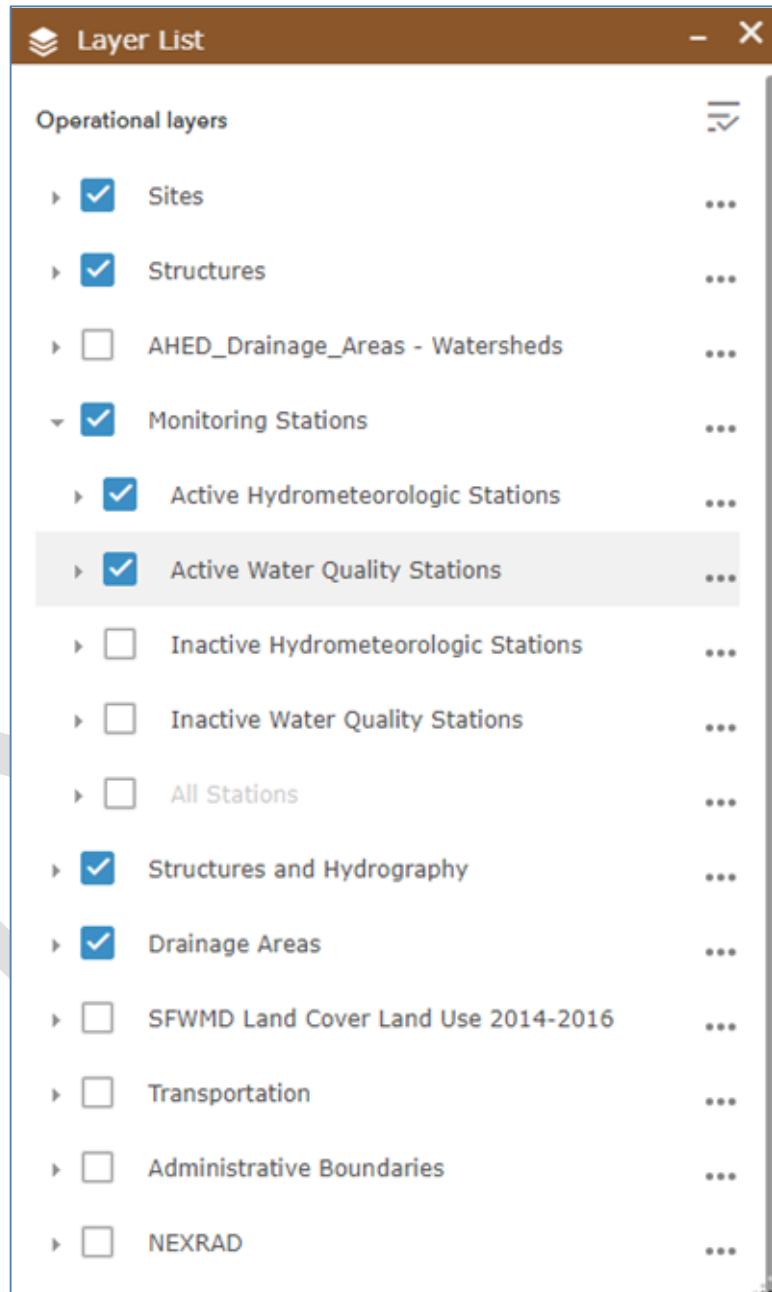


Figure 22. Layer level widget menu.

From the image in **Figure 23**, we see how the Legend List only shows the symbols for the map layers visible.

Selecting a station by clicking on its symbol on the map displays a pop-up with information about the station and a link to its data (**Figure 23**).

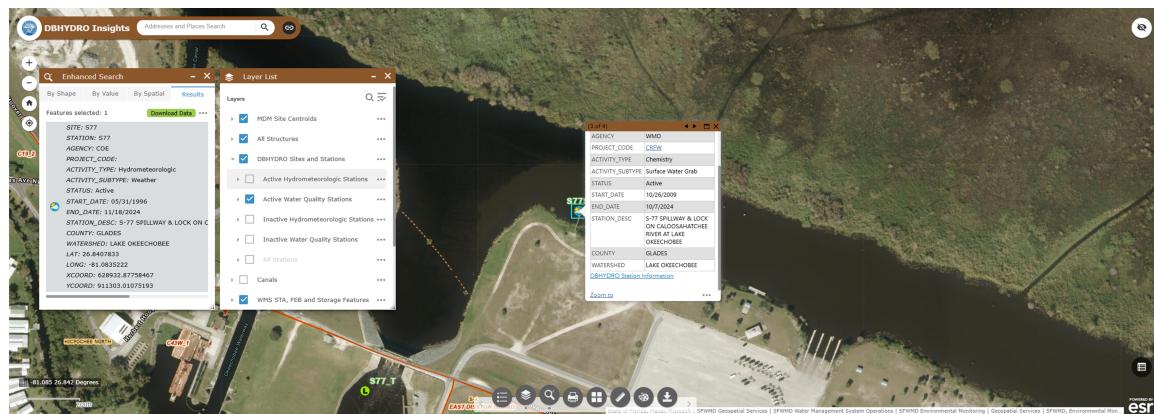


Figure 23. Legend list on the map with a pop-up with information about a station.

Basemap Gallery Widget

The Basemap Gallery widget allows the user to choose from 22 basemaps including imagery (**Figure 24**). The default basemap is Imagery. Some users find topographic useful. It is easy to switch among basemaps with the basemap widget.

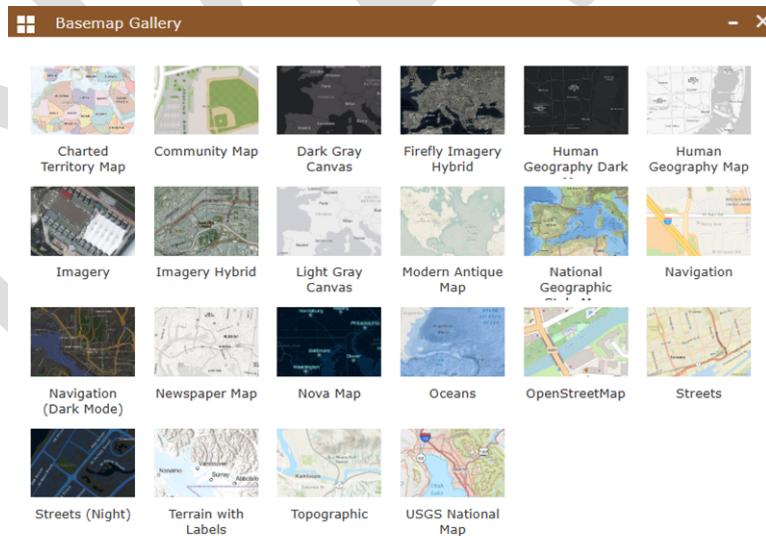


Figure 24. Basemap Gallery widget menu.

Search Widget

The Search widget allows the user to find a station or site based on its name, a structure by name, a Next Generation Radar (NEXRAD) cell by Feature ID, a water body by name, a watershed by name, a canal by name (or alias) or a county by name (**Figure 25**). In the example below the choice of the C-6 Watershed zooms the map to the watershed, highlights its boundary, and shows all the features turned on and revealed at that scale.

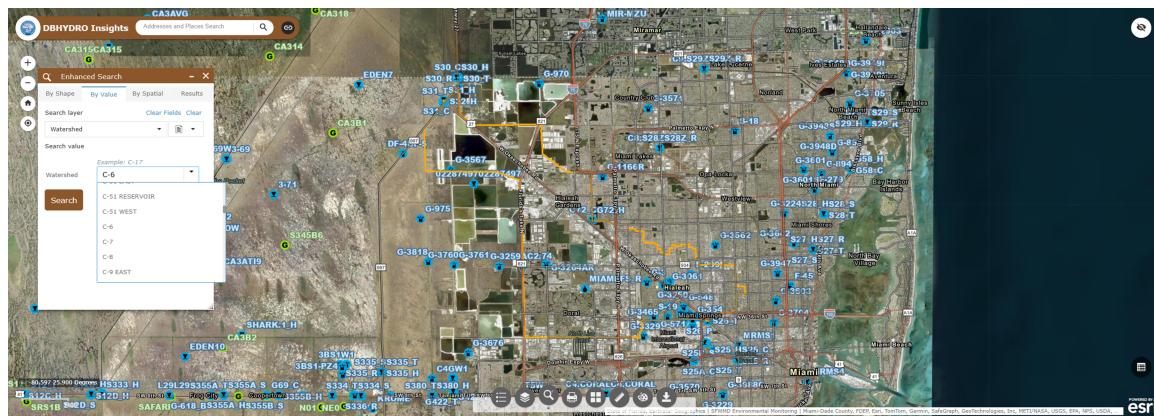


Figure 25. An example of a map displayed using the Search widget.

Print Widget

The Print widget provides the capability to save a quality map in a number of formats including PDF and JPG and then print it (**Figure 26**). Map title, author, and copyright are configurable as are image resolution, size, and extent. Layouts such as portrait or landscape and paper size can be selected from several choices.

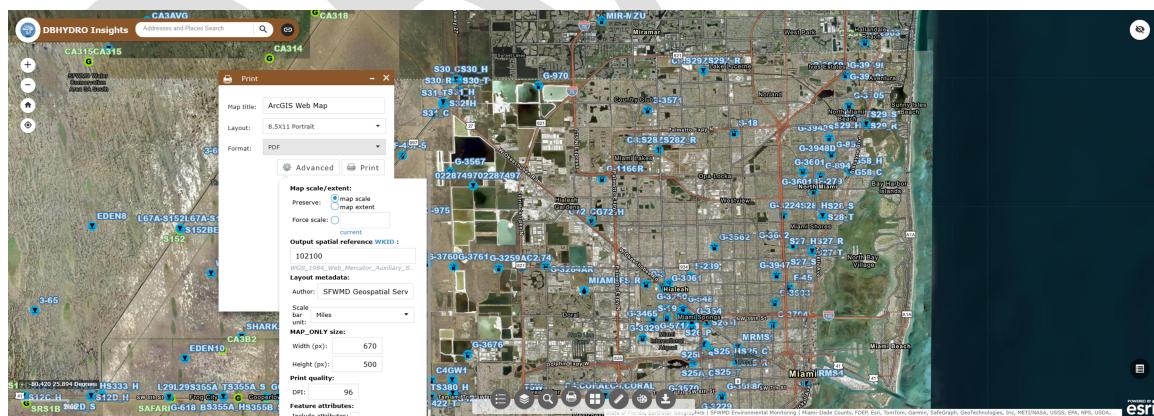


Figure 26. Print widget menu.

Measure Widget

The Measure widget allows the user to capture point location information and measure both linear distances and areas in a variety of measurement units (**Figure 27**).

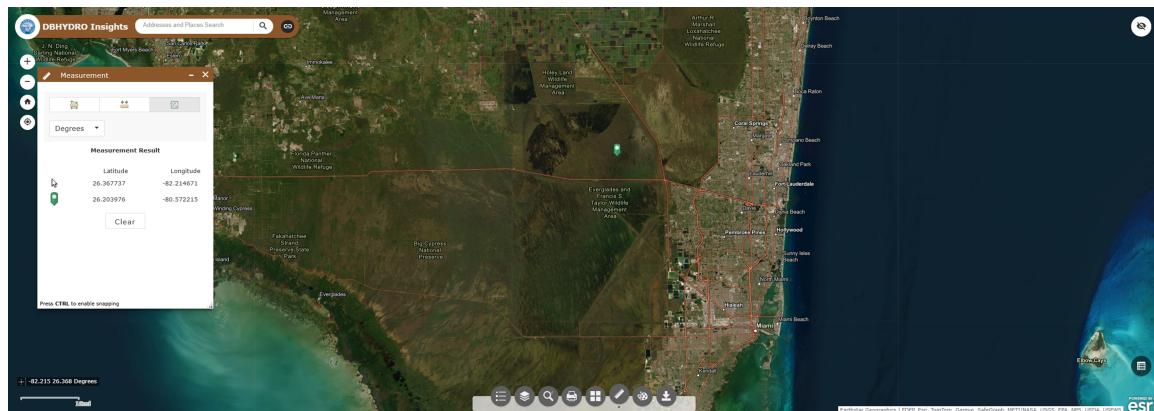


Figure 27. Measure widget menu.

Draw Widget

The Draw widget provides the ability to mark-up the map with points, lines, shapes, and text (**Figure 28**). Mark-ups are printed when using the Print widget. Note that the Print widget might want to print layers that are checked but not visible at the present scale. Please turn off all layers and their parent layers that you do not want printed before using the Print widget.

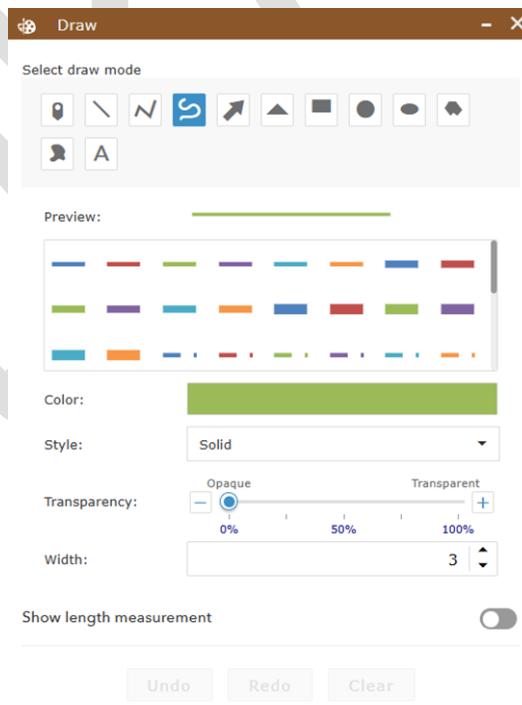


Figure 28. Draw widget menu.

Save Session Widget

The Save Session widget allows you to save your map (**Figure 29**). Open the widget and type the name you wish to give the session then click Save. The current map settings are saved. You may save multiple sessions. You have the option to save all sessions to your computer. Click Save to File and browse to your desired location. If you want to open a file click on Load from file and browse to that location. To edit the session name click on the pencil icon. To delete the session from the list click on the Delete icon. To save individual map files click on the desired session within the list of saved sessions and click on Download Map. To bring a particular saved map into view click on the desired session within the list of saved sessions and click on the Load Map icon.

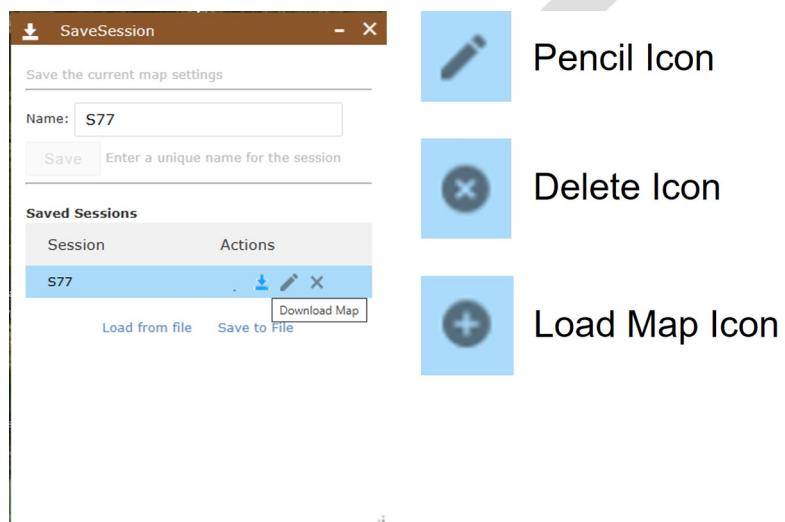


Figure 29. Save Session widget menu with icons defined.

To recall a previously saved session, select “Load from file” (**Figure 29**). Browse to your location. Locate the .zip file. Unzip the file using a program such as WinZip or 7-Zip. Locate the file within the .zip named session.json. Extract session.json to the current directory. This file contains your saved map. Select the file. Open the file. The file was added to your map. Click OK.

Reference Tables

Metadata includes descriptive information about the context, quality, and condition, or characteristics of the data. In the case of DBHydro Insights, each of the attributes of a time series or a measurement is such metadata. The domains from which these attributes are drawn are accessible by clicking on the Reference Tables option from the Data Lens. Upon selection, the Reference Tables screen shown in **Figure 30** appears. Clicking on any one of the items displays an up-to-date list of valid values for that particular attribute.

Reference Tables - Metadata 

Back / Reference Tables

Agencies

Basins

Cited Publications

Continuous Data Quality Codes

Counties

Data Types

Frequencies

Groups

NAVD88 to NGVD29 Site Offsets

Projects

Recorder Types

Station Types

Statistic Types

Structure Types

WQ Collection Methods

WQ Data Investigation

WQ Data Qualifier Descriptions

WQ Discharge Descriptions

WQ Gender Codes

WQ Matrix Descriptions

WQ Program Type Descriptions

WQ Sample Type Descriptions

WQ Sampling Purpose

WQ Species Codes

WQ Tissue Type Codes

WQ Up Dwn Stream Descriptions

WQ Validation Level

WQ Weather Code Descriptions

Select any list to view it

Download a file for each listing

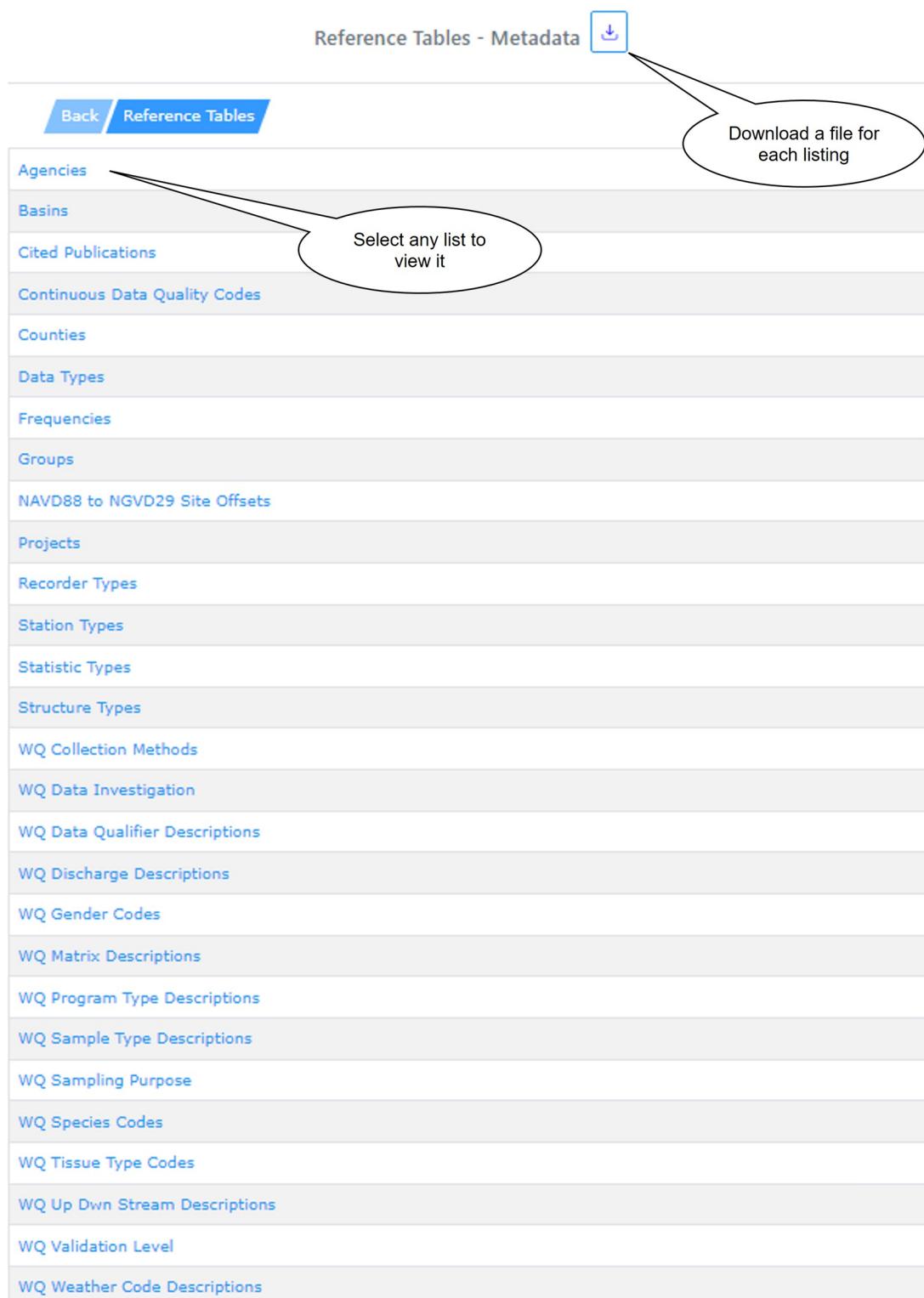


Figure 30. Reference Tables screen.

System Lens

The System Lens (**Figure 31**) provides a system-wide perspective for South Florida. At the time of publication of this version of the guide, the System Lens is in development.

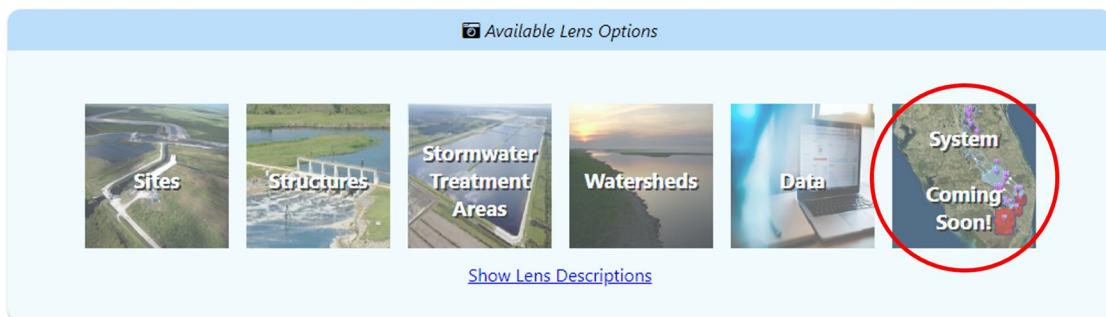


Figure 31. Available Lens Options menu with System Lens option circled.

3.0 PAGES

On the main menu, “**Pages**” provides links to DBHydro-related data and tools. These include access to the SFWMD Home page, the Discharge Calculator, reference tables, rainfall and evapotranspiration (ET) data, and reports such as the Stormwater Treatment Area (STA) Target Stage Report, On-Line Environmental Chemistry Analyst System (OLECAS) Report, and SFWMD Daily Rainfall Report. Other options include the Geospatial Open Data Portal, the Resiliency page, and updates under “What’s New,” as shown in **Figure 32**.

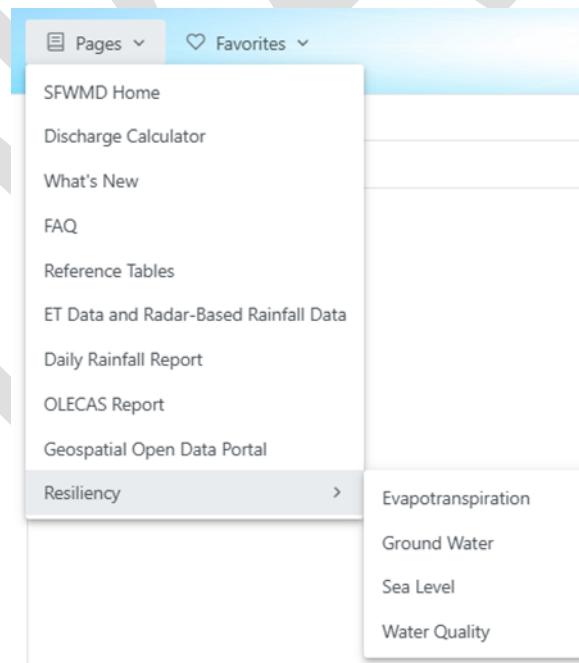


Figure 32. Pages menu.

Site Status (Real Time Data)

SFWMD real time data can be accessed from www.sfwmd.gov → Science & Data → Real-Time Data or <https://apps.sfwmd.gov/sitestatus>. Real-time weather data can also be accessed from Science & Data → Weather].

SFWMD Daily Rainfall Report

Several tabbed interfaces to SFWMD-wide rainfall data and other web-based climate resources from the “Daily Rainfall Report” link from the “Pages” menu are available via this page (**Figure 33**).

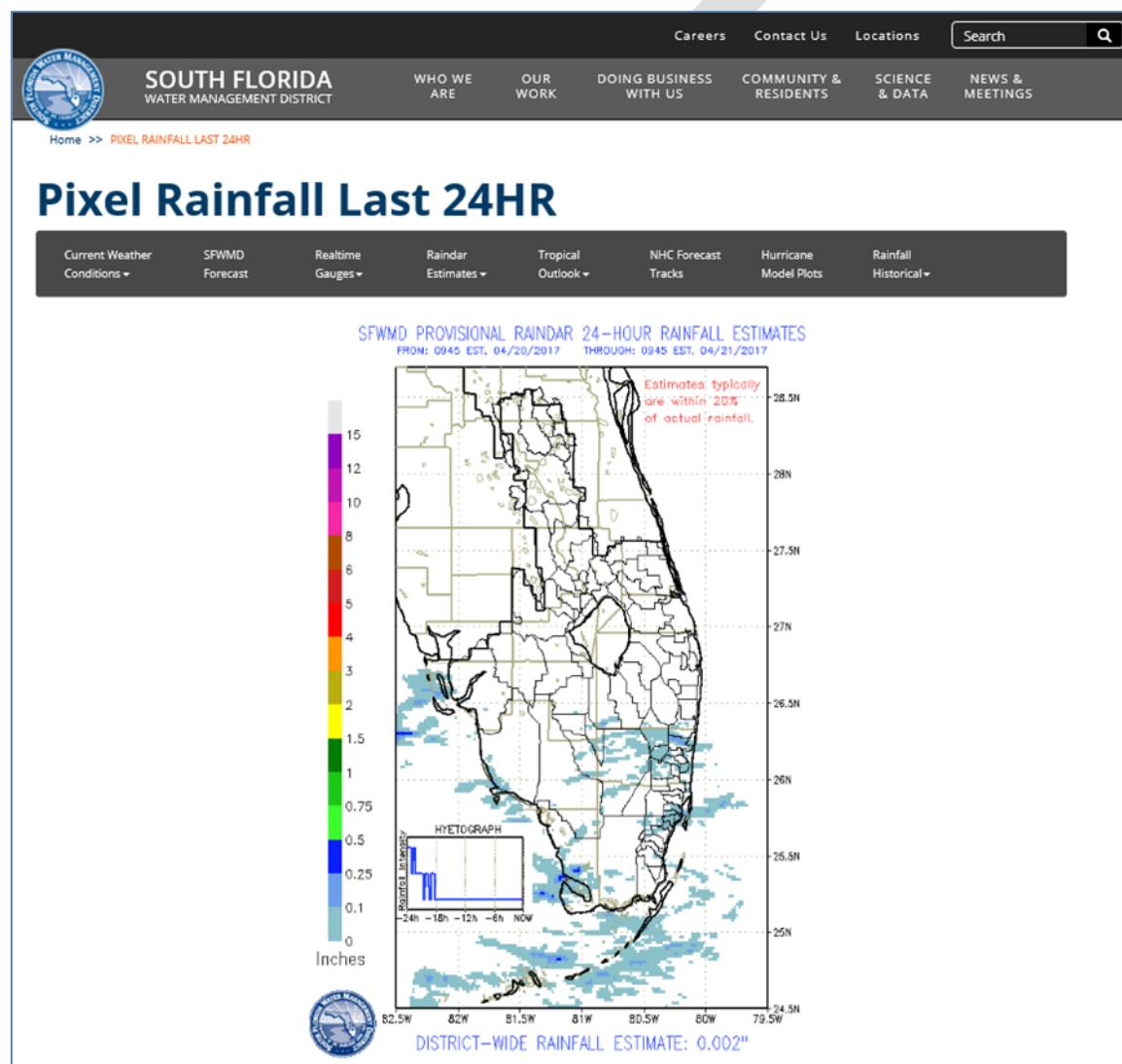


Figure 33. SFWMD Daily Rainfall Report menu and sample output.

OLECAS Report

The lab data On-Line Environmental Chemistry Analyst System (OLECAS) is available to network-authenticated users for reports on recently analyzed data and its comparisons to historical trends. OLECAS can help detect anomalies in data that may be investigated in a timely manner for possible analytical rework before the sample holding time expires. Holding times are the length of time a sample can be stored after collection without significantly affecting the analytical results.

ET Data and Radar-Based Rainfall Data

ET and radar-based rainfall data are available at <http://www.sfwmd.gov/nexrad2> (**Figure 34**). This application is also accessed from the “Pages” link on the main menu.

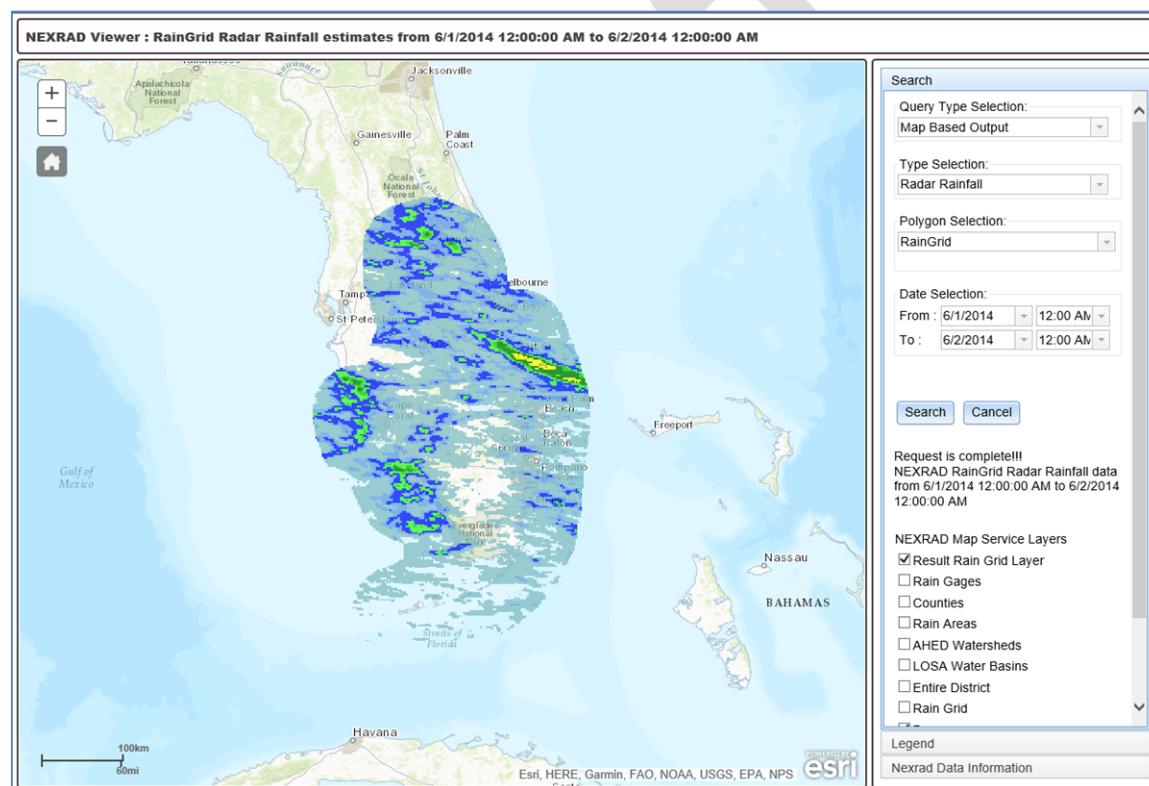


Figure 34. NEXRAD Viewer menu that displays when ET Data and Radar-Based Rainfall Data is chosen from the Pages menu.

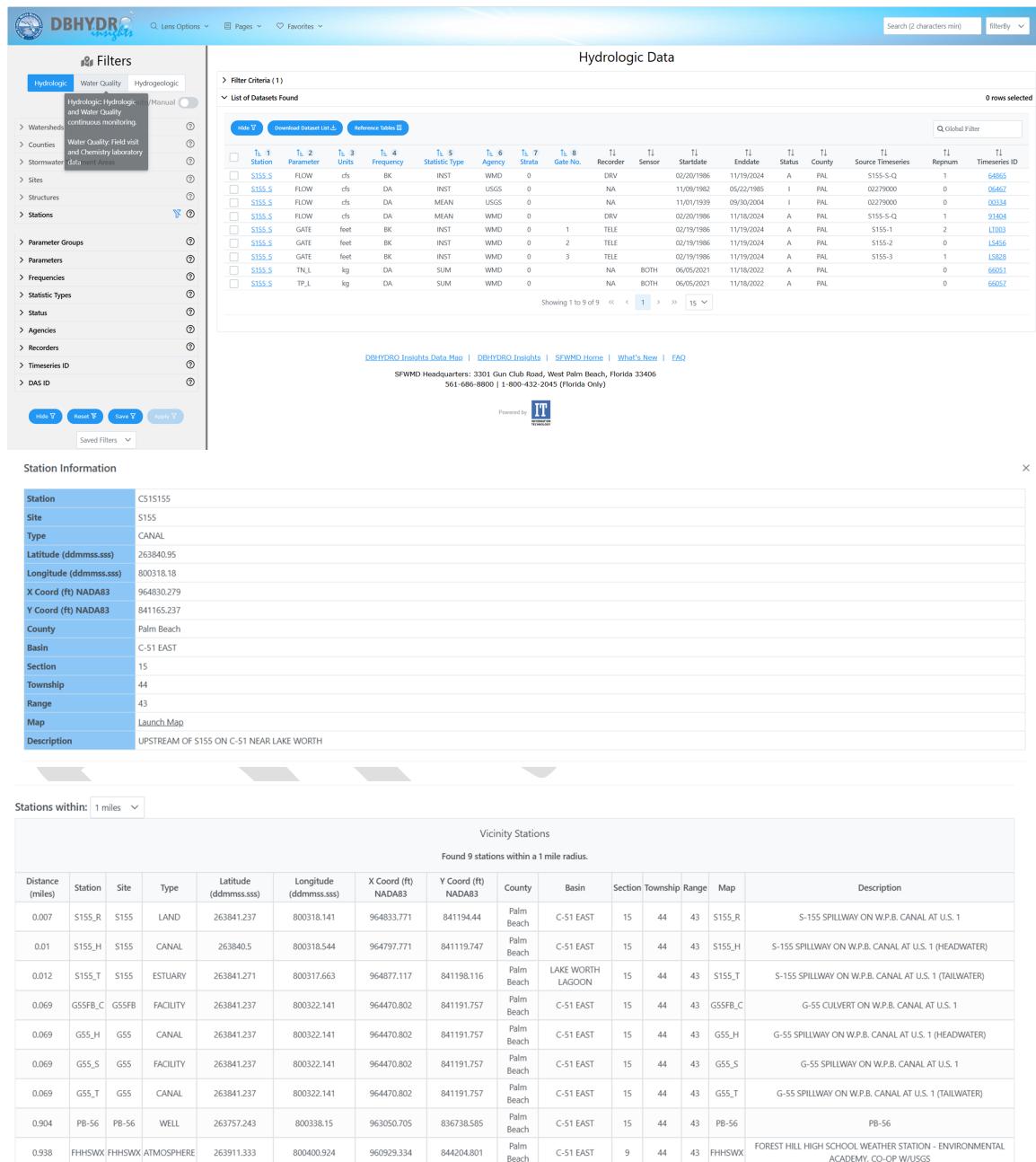
Next-Generation Radar (NEXRAD or Nexrad) is a network of high-resolution, S-band Doppler weather radars operated by the National Weather Service, an agency of the National Oceanic and Atmospheric Administration (NOAA) within the United States Department of Commerce. Its technical name is Weather Surveillance Radar, 1988, Doppler or WSR-88D. NEXRAD detects precipitation and atmospheric movement or wind. It returns data, which when processed can be displayed in a mosaic map, which shows patterns of precipitation and its movement (source: <http://en.wikipedia.org/wiki/NEXRAD>, accessed April 5, 2013).

At SFWMD, radar rainfall originates with National Weather Service data and is further gage-adjusted using measured rainfall amounts from the agency's rain gage monitoring network. As such, this radar rainfall is also called gage-adjusted radar-rainfall (GARR). The application, also known as NEXRAD or NEXRAIN, has its own user's guide, which may be accessed from the bottom of the main screen (as shown in **Figure 34**) to access the gage-adjusted radar-rainfall. Both map-based and text-based retrievals are available. Map-based retrievals result in thematic maps of rainfall amounts defined by the geographic layer of choice. Text-based retrievals result in data files that may be viewed or imported into other applications. Further information about NEXRAD radar data is available on-line at <https://www.ncdc.noaa.gov/data-access/radar-data/nexrad>.



Nearby Station Look-up

To locate stations near a specific station or coordinate, click the “**Station**” link. This will open a window displaying detailed information about the selected station, along with a list of nearby stations (**Figure 35**). The vicinity range can be adjusted using the dropdown menu within this window.



The screenshot displays the DBHYDRO Insights web application. On the left, a sidebar titled "Filters" shows various categories like Watershed, Counties, and Stations, with "Stations" currently selected. The main content area is titled "Hydrologic Data" and shows a table of datasets. The table includes columns for Tl_1 (Station ID), Tl_2 (Parameter), Tl_3 (Unit), Tl_4 (Frequency), Tl_5 (Statistic Type), Tl_6 (Agency), Tl_7 (Strata), Tl_8 (Gate No.), Tl_9 (Recorder), Tl_10 (Sensor), Tl_11 (Standarde), Tl_12 (Enddate), Tl_13 (Status), Tl_14 (County), Tl_15 (Source Timeserie), Tl_16 (Repubun), and Tl_17 (Timeseries ID). The table lists several entries for S155.S, such as FLOW in cfs at 800318.18 ft. Below the table, a message from SFWMD is displayed. The bottom section shows a "Station Information" card for S155, detailing its location (Palm Beach, C-51 EAST) and coordinates (800318.18, 964830.279). At the bottom, a "Vicinity Stations" table shows 9 stations within a 1-mile radius, including S-155 SPILLWAY ON W.P.B. CANAL AT U.S. 1 and G-55 SPILLWAY ON W.P.B. CANAL AT U.S. 1 (HEADWATER).

Station	C15155
Site	S155
Type	CANAL
Latitude (ddmmss.sss)	263840.95
Longitude (ddmmss.sss)	800318.18
X Coord (ft) NADAB3	964830.279
Y Coord (ft) NADAB3	841165.237
County	Palm Beach
Basin	C-51 EAST
Section	15
Township	44
Range	43
Map	Launch Map
Description	UPSTREAM OF S155 ON C-51 NEAR LAKE WORTH

Vicinity Stations														
Found 9 stations within a 1 mile radius.														
Distance (miles)	Station	Site	Type	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	X Coord (ft) NADAB3	Y Coord (ft) NADAB3	County	Basin	Section	Township	Range	Map	Description
0.007	S155_R	S155	LAND	263841.237	800318.141	964833.771	841194.44	Palm Beach	C-51 EAST	15	44	43	S155_R	S-155 SPILLWAY ON W.P.B. CANAL AT U.S. 1
0.01	S155_H	S155	CANAL	263840.5	800318.544	964797.771	841119.747	Palm Beach	C-51 EAST	15	44	43	S155_H	S-155 SPILLWAY ON W.P.B. CANAL AT U.S. 1 (HEADWATER)
0.012	S155_T	S155	ESTUARY	263841.271	800317.663	964877.117	841198.116	Palm Beach	LAKE WORTH LAGOON	15	44	43	S155_T	S-155 SPILLWAY ON W.P.B. CANAL AT U.S. 1 (TAILWATER)
0.069	G55FB_C	G55FB	FACILITY	263841.237	800322.141	964470.802	841191.757	Palm Beach	C-51 EAST	15	44	43	G55FB_C	G-55 CULVERT ON W.P.B. CANAL AT U.S. 1
0.069	G55_H	G55	CANAL	263841.237	800322.141	964470.802	841191.757	Palm Beach	C-51 EAST	15	44	43	G55_H	G-55 SPILLWAY ON W.P.B. CANAL AT U.S. 1 (HEADWATER)
0.069	G55_S	G55	FACILITY	263841.237	800322.141	964470.802	841191.757	Palm Beach	C-51 EAST	15	44	43	G55_S	G-55 SPILLWAY ON W.P.B. CANAL AT U.S. 1
0.069	G55_T	G55	CANAL	263841.237	800322.141	964470.802	841191.757	Palm Beach	C-51 EAST	15	44	43	G55_T	G-55 SPILLWAY ON W.P.B. CANAL AT U.S. 1 (TAILWATER)
0.904	PB-56	PB-56	WELL	263757.243	800338.15	963050.705	836738.585	Palm Beach	C-51 EAST	15	44	43	PB-56	PB-56
0.938	FHHSWX	FHHSWX	ATMOSPHERE	263911.333	800400.924	960929.334	844204.801	Palm Beach	C-51 EAST	9	44	43	FHHSWX	FOREST HILL HIGH SCHOOL WEATHER STATION - ENVIRONMENTAL ACADEMY, CO-OP W/USGS

Figure 35. An example of data retrieved from the Station link.

4.0 URL-BASED DATA ACCESS

Hydro Data Service

The Hydro Data Service is a collection of representational state transfer or RESTful web services which supply various types of time series data. The data can be requested in XML or JSON format. The service is defined in detail at <https://api.sfwmd.gov/v1/data> and outlined below.

A client secret is required for external access to the service. A client secret is a secret key that is only known to the authorization server and application. It is generated by the authorization server during the process of application registration. A client has to provide its client secret to authenticate itself to the authorization server and to be able to get a token to access the service.

The available data services include the following:

- **Timeseries** provides instantaneous values.
- **Daily Data** offers daily timeseries records.
- **Aggregate** delivers aggregated data, such as hourly mean derivations.
- **Interpolate** calculates interpolated data points.
- **Realtime** provides the current data point for a site
- **POR (Period of Record)** returns the date range of available data for a site.
- **Nexrad** focuses on rainfall data for a Nexrad polygon or grid cell.
- **Timeseries Arithmetic** calculates derived values, such as the sum of inflows into a watershed, based on specified dbkey timestamp combinations.

Other Web Services

If a user needs frequent access to data via DBHydro Insights, the screen or file download URL can be saved as a browser bookmark or in any document or other web page as a hyperlink. By embedding these hyperlinks in bookmarks or applications, the user can skip navigating the DBHydro Insights menu.

Users have the ability to create their DBHydro Insights URLs by knowing the URL syntax. The Data Lens also informs the user of the URL they, in effect, have created by selecting criteria from the accordions and Get Data selections (**Figure 36**). The links are reusable and will reflect the updated state of the database each time they are invoked.

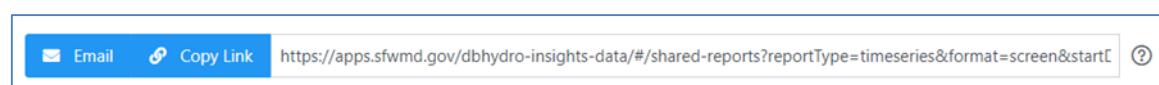


Figure 36. An example of a DBHydro Insights URL.

Note of caution: A valid URL cannot contain a space. What may appear as spaces (" ") in these URL examples are actually underscores ("_").

Extra note of caution: While the development team will take considerable effort to maintain the integrity of existing URLs, queries for specific data within DBHydro may not function in the future if the software or database is substantially changed. If these URLs change, this documentation will be updated.

There are different kinds of DBHydro Insights data and graph URLs:

- Water quality results
- Water quality **graphs**
- Hydrologic/continuous **instantaneous and daily values**
- Hydrologic/continuous graphs
- Hydrogeologic summaries

Water Quality Results URLs

The data fetch defaults to the past 365 days unless you change it on the accordion on the left hand side.

Water quality data access is controlled by the following:

- A base URL: <https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?> concatenated with:
- A series of URL variables with their corresponding values as shown in **Table 1**.

Table 1. A series of URL variables with their corresponding values.

URL Variable	Definition	Valid Values
watershed	SFWMD ArcHydro watershed name	Watershed names. Use %20 to encode a space in the name. See basins/watersheds list.
station	Dbhydro database station	See reference tables list
reportType		Timeseries crosstab stationsummary
format		screen csv
period	Timespan of data requested	1day, 3days, 1week, 2weeks, 30days, 365days, por, custom
reportFormat		screen csv
module	Required	wq
projects	DBHydro water quality project codes	See projects list.
parmgroups	A 1 to 3 letter code for the parameter group. For example, specify N for all nutrients and omit the test numbers.	O: organics, N: nutrients, M: metals, P: physical parameters, B: biological, F: field, MI: major ions, MIS: miscellaneous
parameters	The DBHydro 1 to 4 digit test number	See data types list for test numbers.
methods	A 1 to 3 letter code for the method of sample collection	See collection methods list.
matrices	A 1 to 3 letter code for the sampling material	See matrices list.
startDate	Earliest data to retrieve. Valid only for custom date range. Required when period is custom.	Format is yyyyymmdd.
endDate	Most recent data to retrieve. Valid only for custom date range. Required when period is custom.	Format is yyyyymmdd.

Examples

Send data to the screen, filtering by date range, test number, collection method, matrix, parameter group, and station:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=timeseries&format=screen&period=365days&reportFormat=screen&module=wq¶meters=417&methods=CSI&matrices=SE&parmgroups=O&station=C51S5A>

The past 365 days for station G722 as a csv file:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=timeseries&format=csv&period=365days&reportFormat=csv&module=wq&station=G722>

Querying by Project Code

All the water quality data for project_code BGARES from June 1, 2024 thru August 1, 2024 with output to the screen:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=timeseries&format=screen&startDate=20240601&reportFormat=screen&module=wq&projects=BGARES>

Querying for Multiple Stations

Generate a download for the report for water quality data for multiple stations with the following URL:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=timeseries&format=csv&startDate=19500101&endDate=20240819&reportFormat=csv&module=wq&station=G722,G724D>

The station list is separated by commas.

Querying by Test Number

Here is an URL for querying chemistry results for project EAA and test numbers 7 and 25 (water temperature and total phosphorus):

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=timeseries&format=screen&period=365days&reportFormat=screen&module=wq¶meters=7,25&projects=EAA>

Below is the same query by test number but for a cross-tab report:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?reportType=crosstab&format=screen&period=365days&reportFormat=screen&module=wq¶meters=7,25&projects=EAA>

Cross-tab reports exclude qualifiers. **Users do so at their own peril.**

Hydrologic Instantaneous and Daily Values URLs

Hydrologic instantaneous and daily values data access is controlled by the following:

- **A base URL:** <https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?>
- A series of URL variables with their corresponding values (**Table 2**).

Table 2. Hydrologic instantaneous and daily values data URL variables.

URL Variable	Definition	Valid Value(s)
timeseriesIds	Defines which data is to be accessed	A comma separated list of dbkeys
reportType	Defines the structure of the data presentation	timeseries dailynorms monthbymonth yearsummary compositemonthly periodofrecord dailymatrix multipledaily minmax triograph (only available as format=plot)
format	Defines tabular or graphical layout	json (interactive) plot (interactive) csv
period	Timespan of data requested	1day, 3days, 1week, 2 weeks, 30days, 365days, por
datum	Vertical datum of presented data	NGVD29, NAVD88 External agency data is available only in the datum in which it is provided to SFWMD. For instance, if an agency provides data only in NGVD29, we will not present it in NAVD88 and it must be requested only with datum=NGVD29 in order to be retrieved. SFWMD data is presented in the requested datum whenever possible.
reportFormat		When format=json reportFormat is ignored. When format=plot, options are as follows: graphSimple graphNavigator graphCombined When format=csv, reportFormat=csv
module	Required	continuous
interval	Defines the number of “bins” for histogram and cumulative distribution	1,2,3,...,20 for triograph only

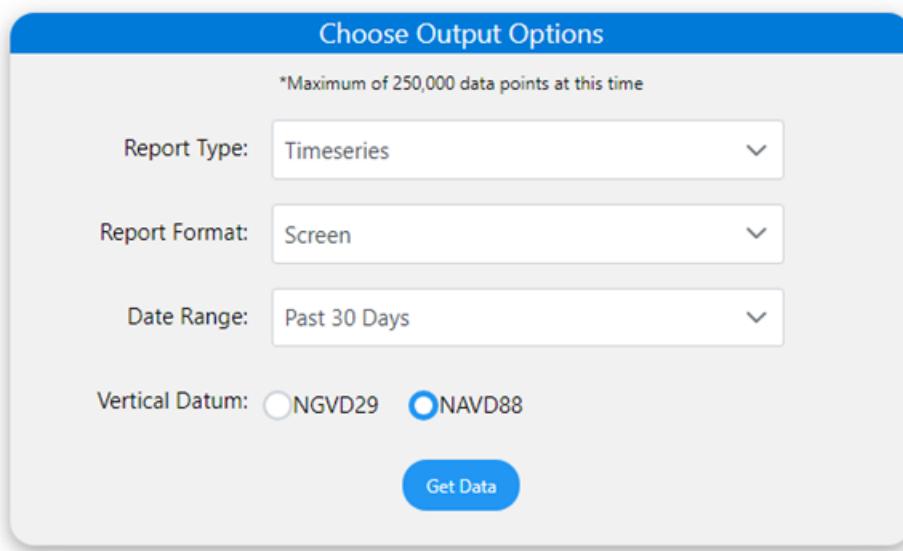
Examples

A daily values tabular report is generated for any dbkey (in this example, the dbkey is 06684) and date range or the past 30 days with the following URL:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?timeseriesIds=06684&reportType=timeseries&format=json&period=30days&datum=NAVD88&reportFormat=json&module=continuous>

Each input variable name, except for the first one, is preceded by the ampersand character and followed by the equals sign ('=').

The valid combinations of reportType and reportFormat are controlled in the user interface (**Figure 37**). When a report type is chosen only the valid report formats will be available for selection as indicated in **Table 3**.



Choose Output Options

*Maximum of 250,000 data points at this time

Report Type: Timeseries

Report Format: Screen

Date Range: Past 30 Days

Vertical Datum: NGVD29 NAVD88

Get Data

Figure 37. User interface that allows you to choose report type and report format for output from the Hydrologic Instantaneous and Daily Values URL.

Table 3. Valid combinations of reportType and report Format.

format = json			
reportType	reportFormat		
	reportFormat is ignored and can be omitted		
timeseries		●	
dailynorms		●	
monthbymonth		●	
yearsummary		●	
compositemonthly		●	
periodofrecord		●	
dailymatrix		●	
multipledaily		●	
minmax		●	
triograph	● (graphSimple reportFormat is implied)		

format = plot			
reportType	reportFormat		
	graphSimple	graphNavigator	graphCombined
timeseries	●	●	●
dailynorms	●	●	
monthbymonth	●	●	
yearsummary	●	●	
compositemonthly	●	●	
periodofrecord			
dailymatrix			
multipledaily			
minmax			
triograph	●		

format = csv	
reportType	reportFormat
	csv
timeseries	●
dailynorms	●
monthbymonth	●
yearsummary	●
compositemonthly	●
periodofrecord	●
dailymatrix	●
multipledaily	●
minmax	●
triograph	

A hydrograph of the past 7 days of instantaneous near real-time values from the four gages contributing to the Lake Okeechobee daily average is generated as follows:

Obsolete DBHydro Browser syntax:

http://my.sfwmd.gov/dbhydroGraph/servlet/DbhydroGraphServlet.do?v_report_type=format6&v_period=1week&v_dbkey=IX846/IX865/IX875/IY030 (takes 7 seconds)

Supported DBHydro Insights syntax:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?timeseriesIds=IX875,IY030,IX846,IX865&reportType=timeseries&format=plot&period=1week&datum=NAVD88&reportFormat=graphCombined&module=continuous> (takes 27 seconds)

Increasing the number of dbkeys and the duration will increase the time it takes to generate the graph. Multiple dbkeys are separated by a comma.

To generate a hydrograph of the past year of daily stage values from four water level gages on Lake Okeechobee, enter the following URL in the browser:

Obsolete DBHydro Browser syntax:

http://my.sfwmd.gov/dbhydroGraph/servlet/DbhydroGraphServlet.do?v_report_type=format6&v_period=year&v_dbkey=16022/12509/12519/16265 (takes 2 seconds)

Supported DBHydro Insights syntax:

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?timeseriesIds=16022,12509,12519,16265&reportType=timeseries&format=plot&period=365days&datum=NAVD88&reportFormat=graphCombined&module=continuous> (takes 26 seconds)

Each input variable name, except for the first one, is preceded by the ampersand character (&) and followed by the equals sign (=).

An error may be encountered if there are no data available for the specified period.

Hydrogeologic Data Summaries

Hydrogeologic URL access is controlled by the following:

- A base URL: <https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports>?
- A series of URL variables with their corresponding values as provided in **Table 4**.

Table 4. Hydrogeologic data summaries valid variables and values.

URL Variable	Definition	Valid Value(s)
wellNames	Comma separated list of well names	
reportType		geophysical constructionDetails corelab flowChars formation hydraulic lithologic allReports
reportFormat		screen file
module	Required	hydrogeologic

Example

<https://apps.sfwmd.gov/dbhydro-insights-data/#/shared-reports?wellNames=BS-3&reportType=geophysical&reportFormat=screen&module=hydrogeologic>

5.0 CONTACT INFORMATION

Application Enhancements and Data Requests

SFWMD staff should contact the SFWMD IT Help Desk at 561-682-6080 or email the IT Solution Center.

Non-SFWMD users may email datarequests@sfwmd.gov. Your request will be routed to the appropriate individuals at SFWMD.

6.0 LITERATURE CITED

esri. 2024. Arc Hydro: GIS for Water Resources. Available at www.esri.com/en-us/industries/water-resources/arc-hydro. Accessed August 8, 2024.

7.0 APPENDICES

Appendix A - Water Quality Report Column Descriptions

Depending on how you receive data from SFWMD, the following information may, or may not, be in your requested data.

PROJECT CODE

A short identifier given to a collection of samples from a group of related stations. The code identifies project-specific samples. The code is typically derived from the project description. e.g. "A1FEB" is the project code for samples collected in the A-1 Flow Equalization Basin. Project codes are listed in the metadata/reference tables listings pages.

STATION ID

Identifies the sampling station name for the water quality data sample collection activity.

SAMPLE ID

Identifies a discrete sample within a project. Legacy data was assigned sample IDs per project. Sample IDs are now assigned as unique across all projects and represent a single field sample.

FIRST TRIGGER DATE

Populated for autosampler data. Date and time the first sample in a collection time period of deployment was triggered to be collected by the autosampler.

COLLECTION DATE

Date and time the sample was collected by the field person.

SAMPLE TYPE NEW

Code that describes the type of sample collected. Samples may either be an environmental sample (regular sample of type "SAMP") or a type of field quality control sample that is collected as a part of a quality assurance program. Codes are listed in the metadata/reference tables listings pages.

COLLECTION METHOD

The method by which the sample was collected. For example, "G" means grab sample. Codes are listed in the metadata/reference tables listings pages.

DEPTH

The depth below the water surface at which the sample was taken.

DEPTH_UNITS

The units of measure of the depth value. Depth units depends on the matrix (e.g., meters for surface water and feet for groundwater are defaults) and applies to both the sampling depth and the Total Depth (Total Depth as a test is reported as SDU, [See Depth Units]).

MATRIX

A code that represents the type of material being sampled. Codes are listed in the metadata/reference tables listings pages.

TEST_NUMBER

Numeric code used to identify individual tests within the laboratory. e.g., 25 = TPO4 (total phosphorus).

TEST NAME

A description of the test performed.

STORET CODE

The United States Environment Protection Agency (USEPA) legacy 5-character string that uniquely identifies a water quality test.

METHOD

The field or laboratory method by which the sample was analyzed.

MEASURE DATE

The date and time the laboratory analysis was conducted.

VALUE

Numeric field that contains the analysis result for a specific test.

SIGFIG VALUE

The test result shown to no more significant figures than instrumentation actually provides.

UNCERTAINTY

The reporting of estimated analytical measurement uncertainty values for all analytes was implemented at the SFWMD Chemistry Laboratory in July 2012. The values entered into DBHYDRO for the SFWMD's laboratory reflect only analytical uncertainty (i.e., without the contributions from field activities). The uncertainty has a probabilistic basis and reflects incomplete knowledge of the quantity. All measurements are subject to uncertainty and a measured value is only complete if it is accompanied by a statement of the associated uncertainty:

The uncertainty value in DBHydro has been estimated using the nested hierarchical methodology by Ingersoll (2001) in combination with a mathematical model found in the Eurachem/CITAC (2000) guide on uncertainty. This QC-based nested approach uses the statistical QC data attributed to laboratory measurement activities and does not include uncertainty attributed to field sampling activities. The estimated uncertainty is calculated using the following equation:

$$u(x) = \sqrt{s_o^2 + (s_1^2 x^2)}$$

in which:

$u(x)$ is the combined standard uncertainty in the result x .

s_o is a constant contribution to the overall uncertainty derived from the procedure to determine the MDL.

s_1 is a proportionality constant derived from nested hierarchical methodology by Ingersoll.

Many factors contribute towards deviation from the true value of the measurement including:

- Imperfections in the measuring instrument
- Imperfections in the measurement method
- Operator effects

MDL

The method detection limit (MDL) is particular to each laboratory and is calculated based on statistical analysis of the results of repeated analyses of the same standard. It "is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte...The MDL for an analytical procedure may vary as function of sample type. The procedure requires a complete, specific, and well-defined analytical method. It is essential that all sample processing steps of the analytical method be included in the determination of the method detection limit." (Code of Federal Regulations Part 136 Appendix B; revised July 1998).

PQL

The practical quantification limit (PQL) is the smallest concentration of an analyte of interest that can be quantitatively reported with a specific degree of confidence. It is verified for each matrix, technology, and analyte. The validity of the PQL is verified by analysis of a quality control sample containing the analytes of concern. For any component for which spiking solutions or quality control samples are not available, the PQL is 12 times the standard deviation derived from the procedure used to determine the MDL, or can be assumed to be four times the method detection limit.

RDL

The reportable detection limit (RDL) and is the lowest value the analyst has confidence reporting.

UNITS

Contains the units in which a test value is reported by the laboratory (SFWMD or contractor) such as micrograms per liter ($\mu\text{g/L}$). Ideally, all units for a given test should be reported the same. When a laboratory gives us different units for a test it should trigger a review of the value so we make sure the dataset is consistent with respect to units. Note: Units of SDU indicate to refer to the "See the Depth Units" associated with the sample.

REMARK_CODE

Comprised of zero, one, or more data qualifiers as applied by the lab or project manager. The list of data qualifiers and their meaning, except for project manager remark (PMR) and project manager flag (PMF), are approved by the Florida Department of Environmental Protection. Qualifiers are important factors that any data user should be aware of and neglecting them is perilous and fails to recognize that they are the single most important tool for data validation. No one should ever use data without reviewing all of the qualifiers (and associated sample qualifier comments) very closely. Qualifier codes are listed in the metadata/reference tables listings pages.

FLAG

Indicates questionable data. (eg., "EOV" is the Extreme Outlier Value based on historical statistics. Flag is <null> unless there is a "fatal" qualifier in the remark code. In such a case the flag is equal to the remark code or contains the value "yes".

RECEIVE DATE

The date the sample was received at the SFWMD laboratory from the field.

LIMS_NUMBER

Unique string generated by the laboratory at sample log in. Used to identify a discrete sample and all results for a sample (e.g., "L345-670").

SOURCE

Identifies the source laboratory of the sample data (e.g., "USGS" indicates data came from the United States Geological Survey).

OWNER

Typically, the organization that paid for the analysis.

VALIDATION LEVEL

The degree to which post laboratory data validation occurred. Codes are listed in the metadata/reference tables listings pages.

VALIDATOR

The organization responsible for the post-laboratory validation of the data.

SAMPLING PURPOSE

Code that describes the reason the sample was collected. The purpose of the sample provides context for potential reuse of the data for other purposes.

DATA INVESTIGATION

Indicates whether the data have been subject to additional investigation subsequent to validation. Presence of the indicator helps prevent unnecessary reinvestigations of data. Results of investigations are kept on file for future inquiries. Codes are listed in the metadata/reference tables listings pages.

TDEPTH

The total depth of the water column at the location of the sample. This column is a legacy of an older process. Currently total depth is recorded in the table as a test (test_number = 99).

DCS

DCS is depth to consolidated substrate. Values are in meters.

FILTRATION DATE

The date the sample was filtered, if applicable, and known.

SAMPLE TYPE

Two-digit number for legacy applications. Information embedded here is contained explicitly in other columns. Indicates sample type (e.g., 01 = RAIN, 02 = WELL). Rendered obsolete by the sample_type_new column.

QCTYPE

A legacy code indicating sample is a QC sample otherwise null (e.g., EB = equipment blank). Rendered obsolete by the sample_type_new column.

DISCHARGE

A code representing a visual observation of flow at the time of sample collection (required only when grab samples are collected). The observation is made from where the sampling personnel stand to collect the sample. There is no requirement to use any procedure to help in the determination of flow such as using sand or a dye to determine flow.

Valid codes are as follows:

- 0** Undefined, no observation, no sample is collected or equipment blank (EB), field collected equipment blank (FCEB), and field blank (FB) sample types. The code for discharge is recorded as a “0” for coastal sample collection, autosampler collection, rain sample collection, or if no observation is made.
- 1** Flow
- 2** No Flow
- 3** Reverse Flow

UP DWN STREAM

Indicates where a sample was collected with respect to a control structure. If downstream and flowing, then higher turbidity may be expected. Codes are as follows:

- 0** Undefined,
- 1** Upstream
- 2** Downstream.

WEATHER CODE

The code for weather is recorded for grab sample collections only and must represent a visual observation of the ambient weather at the time of sample collection. Valid codes are as follows:

- 0** Autosampler collection, rain sample collection, quality control samples (EB, FCEB, and FB) or no observation is made
- 1** Clear Skies
- 2** Slight Overcast
- 3** Medium Overcast
- 4** Very Overcast
- 5** Drizzle (*Note:* measures must be taken to protect sample from contamination and *must be documented*)
- 6** Rain (*Note:* measures must be taken to protect sample from contamination and *must be documented*)

PROGRAM TYPE

Distinguishes routine monitoring data from experimental data.

NDEC

The number of digits to the right of the decimal place to be displayed in reports. NDEC is used by sigfig_value.

Appendix B - Unit Conversions

Length

1 meter = 3.281 feet

Area

1 acre = 43,560 square feet

Volume

1 cubic foot per second-day = 86,400 cubic feet

1 cubic foot = 7.481 gallons

1 acre-foot = 43,560 cubic feet

1 acre-foot = 325,900 gallons

Temperature

${}^{\circ}\text{Fahrenheit} = ({}^{\circ}\text{Celsius} \times 9/5) + 32$

${}^{\circ}\text{Celsius} = ({}^{\circ}\text{Fahrenheit} - 32) \times 5/9$

Appendix C - Unit Abbreviations/Symbols

Symbol	Unit of Measurement
mg/L	milligrams per liter
$\mu\text{g}/\text{L}$	micrograms per liter
ng/L	nanograms per liter
g/cc	grams per cubic centimeter
uS/cm	microsiemens per centimeter
ug/kg	micrograms per kilogram
mm	millimeters
ft	feet
ft NAVD88	feet North American Vertical Datum of 1988
ft NGVD29	feet National Geodetic Vertical Datum of 1929
cfs	cubic feet per second

Appendix D – Acronyms and Abbreviations Used in Metadata

The acronyms or abbreviations, listed and defined below may appear in database text fields including, but not limited to, station descriptions, project descriptions, sample comments, and result comments.

Acronym	Description
A/S or AS	Autosampler
ACF	Autosampler Composite Flow
ACODES	Analysis Code
ACS	American Chemical Society
ACT	Autosampler Composite Time
ADT	Autosampler Discrete Time
ASEB	Autosampler Equipment Blank
ATF	Autosampler Composite Time Flow
AFW	Analyte Free Water
BWF/M	Bi-Weekly Flow or at Least Monthly Collection
BWRF	Bi-Weekly Recorded Flow
CCV	Continuing Calibration Verification
CH/DH	Clean Hands / Dirty Hands
COC	Chain of Custody
COND	Specific Conductance
CR10	Campbell Remote Scientific Data Logger
DBHydro	SFWMD's Water Quality, Hydrologic, and Hydrogeologic Database
DCS	Depth to Consolidated Substrate
DEP	Department of Environmental Protection
DI	De-Ionized
DO	Dissolved Oxygen
DQOs	Data Quality Objectives
DS	Discharge or flow code
DVS	Data Validation Section
EB	Equipment Blank
EFA	Everglades Forever Act
EMRP	Environmental Monitoring Review Process
EMRT	Environmental Monitoring Review Team
EVPA	Everglades Protection Area
F	Filter (preservation code)
FAC	Florida Administrative Code
FAV	Floating Aquatic Vegetation
FB	Field Blank
FCEB	Field Cleaned Equipment Blank
FD	Field Duplicate
FDEP	Florida Department of Environmental Protection
FOC	Field Operations Center
FPM	Field Project Manager
FSQM	Field Sampling Quality Manual
FST	First Sample Trigger

Acronym	Description
ft	feet (measurement)
FTR	Field Test Report
GPS	Global Positioning System
H ₂ SO ₄	Sulfuric Acid
HCl	Hydrochloric Acid
HFDM	Horizon Field Data Manager
HNO ₃	Nitric Acid
HW	Headwater (water level or stage upstream of a structure)
IC	Initial Calibration
ICV	Initial Calibration Verification
ID	Identification
KCl	Potassium Chloride
LDO	Luminescent Dissolved Oxygen
LIMS	Laboratory Information Management System
LST	Last Sample Trigger
m	meter (measurement)
Maint	Maintenance (abbreviation)
MOSCAD RTU	Motorola SCADA Remote Terminal Unit
MDL	Method Detection Limit
NA	Nitric Acid (preservation code)
NIST	National Institute of Standards and Technology
NOB	No Sample Bottle
PAR	Photosynthetically Active Radiation
PSR	Pre-login Summary Report
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
QAO	Quality Assurance Officer
RPD	Relative Percent Difference
RS	Replicate Sample
RSD	Relative Standard Deviation
RTU	Remote Terminal Unit
SA	Sulfuric Acid (preservation code)
SAV	Submerged Aquatic Vegetation
SCADA	Supervisory Control and Data Acquisition
SDD	Secchi Disk Depth
SFWMD	South Florida Water Management District
SSID	Standard Set Identification Number
SOB	Secchi On Bottom
SOP	Standard Operating Procedure
SPR	Sample Problem Report
SS	Split Sample
STA	Stormwater Treatment Area
STS	Science Technician Supervisor
TD	Total Depth

Acronym	Description
TOC	Technical Oversight Committee
TW	Tailwater (water level or stage downstream of a structure)
UD	Reference-to-structure designation code (Upstream/Downstream/Undefined)
USB	Universal Serial Bus
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WQB	Water Quality Bureau
WCA	Water Conservation Area
WQM	Water Quality Monitoring

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