

Data Quality Assurance (QA)
Procedures
Part 1: Completeness, Metadata and
Measurement Review
2016 Field Season

10/6/2016

*Columbia Habitat Monitoring Program
Metric Review Committee*

I. Introduction to Quality Assurance.....	3
II. Post-Season QA Review Process Steps	3
Step 1: Report In-season Site Rejections and Clean Hitches	3
Step 2: Complete Data Upload	5
Step 3. Tag Visits with Purpose.....	5
Step 4: Targeted Review of Measurements (Watershed Detail page)	6
Step 5. Review Control Network Metadata	10
III. Helpful Hints, Notes, and Tips.....	10
QA Process	10
Graphs.....	10
Webpage	11
IV. Introduction to Website Functionality	12
Visit Tab on Watershed Details Page.....	12
Watershed Details Page – Metrics Tab	13
Watershed Detail Page – Measurements Tab	15
Site Details Page.....	17

I. Introduction to Quality Assurance

For 2015, the end-of-season quality assurance review will build upon the quality assurance already completed during the end-of-day validation on the ipad, the post-process qa review in the GIS CHaMP Toolbar, and end-of-hitch validation performed while publishing data in the Data Broker (see Section 9 of the CHaMP field protocol). The goal of using electronic data loggers and the data upload functionality was to ensure a level of quality control during the data collection phase. Ensuring quality control early in the data collection process will help minimize the amount of quality assurance that must be done at the end of the season. Together these precautions should result in data that is much cleaner upon initial post-season quality assurance inspection. As a result, the focus of end-of-season quality assurance will be on visually reviewing the derived metrics for anomalous or spurious values. This review can be performed by sorting and filtering metric values in a table or by review charts of each metric.





This document provides guidance on performing end-of-season quality assurance using the functionality on CHaMPMonitoring.org. The quality assurance process will be most efficient if you first ensure that auxiliary and topographic data for all of your sites has been uploaded to CM.org using the Data Broker.

II. Post-Season QA Review Process Steps

Step 1: Report In-season Site Rejections and Clean Hitches

The goal of this step is to report in-season site rejections and to remove any visits that were downloaded to a hitch but not sampled. This work will be completed in the “Data Check In” tab on the “Field Support” tab.

Site	Stream	Hitch	Hitch Date	Sample	Auxiliary Data Files	Site Photos	Topographic Data	Air Temp Readings	Stream Temp Readings	Solar Input Photos	Visit Phase	Visit Status
 CBW05583-013151	Agency Creek	-	-	Sample	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection	Transferred
CBW05583-013151	Agency Creek	Lemhi Hitch 6	6/29/2012	Sample	Quality Assurance Measurements	Quality Assurance Measurements	Quality Assurance Measurements	Data Collection Field Collection	Data Collection Field Collection	Quality Assurance Measurements	Data Collection	Post Processing
CBW05583-009126	Hayden Creek	Lemhi Hitch 4	6/1/2012	Sample	Data Collection Field Collection	Quality Assurance Measurements	Quality Assurance Measurements	Data Collection Field Collection	Data Collection Field Collection	Quality Assurance Measurements	Data Collection	Post Processing
 CBW05583-001487	Big Timber Creek	-	-	Sample	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Data Collection Field Collection	Planned	Available For Do

a. Report In-season Site Rejections

For sites that were rejected in-season by the scout or field crew, click the pencil icon in the first column of the grid to update the original site evaluation. This will open the site evaluation form. Answer one or more of the questions and click save.

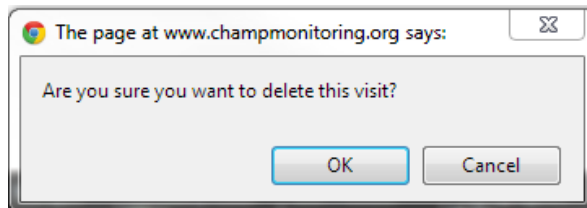
CBW05583-013151
Agency Creek

- Field Sampling Frame Evaluation**
 A frame evaluation that occurs during field evaluation
 Rejection:
 Notes:
Characters Remaining: 2000
- Field Sampling Safety Evaluation**
 Occurs during the visit to the site to collect sampling data
 Rejection:
 Notes:
Characters Remaining: 2000
- Field Sampling Landowner Permission Evaluation**
 Occurs during the visit to the site to collect sampling data
 Rejection:
 Notes:
Characters Remaining: 2000

a. Review all sites with Visit Status = Transferred. These are the sites that may need updated site evaluations because data has not been uploaded for at least one method.

b. Clean Hitches

b. For any sites that were added to a visit and then subsequently not needed for that hitch, it is necessary to remove that site from the hitch. If any of the sites with Visit Status = Transferred were not visited on a hitch, use the red minus icon to remove the site from the hitch. You will be asked to confirm deleting the visit. Click yes.



Step 2: Complete Data Upload

- a. From the “Data Check In” tab, review the visits where Visit Phase = Data Collection. These visits do not have a complete data upload. Review the Auxillary Data Files, Site Photos, Topographic Data, Air Temp Readings, Stream Temp Readings, and Solar Input columns to identify the missing data set(s).
- b. Use the Data Broker to complete data upload for all visits in the watershed.
- c. If there are data upload problems, create a new issue in the Field Season 2015 Project of [JIRA](#).
- d. *Note that after a set of data has been transferred by the Data Broker for a Visit, zipped data packages for Site Photos, Topographic Data, Air Temp, Stream Temp, Solar Input and Scanned Paper Forms and Maps can be loaded directly through cm.org through the Data Check in tab (click on the blue cloud with arrow next to the Site ID).*

Step 3. Tag Visits with Purpose

Tags are used to help track which visits were completed and why the visit was completed. This helps program leads to ensure that multiple objectives are met, helps data analysts find the set of visits that participate in various analyses, and supports flexibility for project collaborators. Watershed Managers and Crew Supervisor have the most direct know of what visits are completed during a field season, the purpose for those visits, and sites where overlapping monitoring occurs (e.g. sites where fish are monitored). Watershed Managers and Crew Supervisor should review and update the purpose of all visits completed in their watershed or by their organization.

- a. From the Visit tab on the Watershed Detail Page, review the set of columns that describe the purpose of this visit. A “Yes” should appear in each column that applies for the visit. Each visit can have multiple purposes.
 - a. CHaMP Core: Visits to site funded directly through CHaMP or by BPA and part of a watershed-wide sampling design. Note that not all sites within core watersheds should be considered CHaMP core if they do not meet study design requirements. Core watersheds include: Entiat (IMW and Status&Trend areas, Wenatchee, Methow, Tucannon, John Day, Grande Ronde, South Fork Salmon, Lemhi, Yankee Fork)
 - b. CHaMP 10% Revisit: Visit is part of the annual 10% repeat survey. Primary and repeat visits should both be tagged. Applicable for 2011, 2012, 2013 and 2015.
 - c. CHaMP-PiBO Comparison: Applicable for 2012. Visit was part of the CHaMP-PiBO Comparison study.

- d. **IMW:** Site is located within a designated Intensively Monitored Watershed (IMW area) (e.g. Asotin, Entiat, Lemhi, and Bridge Creek (John Day Basin)).
 - e. **Effectiveness:** Site is within a restoration treatment area or utilized as a control or reference area.
 - f. **Has Fish Data:** Fish data were collected in the same season as the Visit by your organization or another entity.
 - g. **Velocity Validation:** Applicable for 2013. Velocity measurements collected during visit for validation of hydraulic model.
 - h. **Bug Validation:** Applicable for 2013. Additional bug samples collected during visit for bug repeatability study.
 - i. **AEM:** Visit is part of Action Effectiveness Monitoring (AEM) study design, either as reference/control site or treatment area.
- b.

Site ID	Sample Date	Organization	Hitch	Crew	Visit ID	Stream Name	Edit Purpose of Visit	CHaMP Core	CHaMP 10% Revisit	CHaMP-PiBO Comparison	IMW	Effectiveness	Has Fish Data	Velocity Validation	Bug Validation
CBW05583-021113	07/11/2013	Tarassua Inc.	Hitch #2 (SD): July 10 - July 17 (Methow)	Kevin Deer		1213 Beaver Creek	<input checked="" type="checkbox"/>								
CBW05583-012569	07/27/2013	Tarassua Inc.	Hitch #3 (SD): July 24 to July 31 (Methow)	Bryna Deer		1614 Twisp River	<input checked="" type="checkbox"/>								
CBW05583-014178	08/12/2013	Tarassua Inc.	Hitch #1 (SD): Aug 27 to Aug 28 (Methow)	Bryna Deer		1722 Chewach River	<input checked="" type="checkbox"/>								
CBW05583-014817	08/12/2013	Tarassua Inc.	Hitch #4 (UE): Aug 7 to Aug 14 (Methow)	Joe Deer		1721 Boulder Creek	<input checked="" type="checkbox"/>								
CBW05583-014793	07/13/2013	Tarassua Inc.	Hitch #2 (SD): July 10 - July 17 (Methow)	Kevin Deer		1541 Liberty Creek	<input checked="" type="checkbox"/>								
CBW05583-013205	08/14/2013	Tarassua Inc.	Hitch #5 (SD): Sept 4 to Sept 11 (Methow)	Marin Deer		1970 Methow River	<input checked="" type="checkbox"/>								
CBW05583-021761	07/29/2013	Tarassua Inc.	Hitch #3 (SD): July 24 to July 31 (Methow)	Kevin Deer		1898 Twisp River	<input checked="" type="checkbox"/>								
CBW05583-021448	07/10/2013	Tarassua Inc.	Hitch #1 (SD): July 10 - July 17 (Methow)	Kevin Deer		1890 Picea Creek	<input checked="" type="checkbox"/>								
CBW05583-033861	07/24/2013	Tarassua Inc.	Hitch #3 (SD): July 24 to July 31 (Methow)	Kevin Deer		1818 Twisp River	<input checked="" type="checkbox"/>								
CBW05583-030807	07/15/2013	Tarassua Inc.	Hitch #2 (SD): July 10 - July 17 (Methow)	Kevin Deer		1821 Chewach River	<input checked="" type="checkbox"/>								
CBW05583-042127	07/28/2013	Tarassua Inc.	Hitch #1 (SD): July 24 to July 31 (Methow)	Kevin Deer		1818 Twisp River	<input checked="" type="checkbox"/>								
CBW05583-044213	07/28/2013	Tarassua Inc.	Hitch #3 (SD): July 24 to July 31 (Methow)	Kevin Deer		1897 Twisp River	<input checked="" type="checkbox"/>								
CBW05583-118177	08/09/2013	Tarassua Inc.	Hitch #4 (UE): Aug 7 to Aug 14 (Methow)	Joe Deer		1723 Methow River	<input checked="" type="checkbox"/>								
CBW05583-138706	08/13/2013	Tarassua Inc.	Hitch #4 (UE): Aug 7 to Aug 14 (Methow)	Joe Deer		1724 Methow River	<input checked="" type="checkbox"/>								
CBW05583-138708	08/13/2013	Tarassua Inc.	Hitch #4 (UE): Aug 7 to Aug 14 (Methow)	Joe Deer		1814 Methow River	<input checked="" type="checkbox"/>								
CBW05583-187337	08/25/2013	Tarassua Inc.	Hitch #1 (SD): Aug 21 to Aug 28 (Methow)	Bryna Deer		1741 South Fork Gold C.	<input checked="" type="checkbox"/>								
CBW05583-359389	09/04/2013	Tarassua Inc.	Hitch #1 (SD): Sept 4 to Sept 11 (Methow)	Marin Deer		1812 Methow River	<input checked="" type="checkbox"/>								
CBW05583-329809	08/08/2013	Tarassua Inc.	Hitch #4 (UE): Aug 7 to Aug 14 (Methow)	Joe Deer		1722 Early Winters Cree	<input checked="" type="checkbox"/>								
CBW05583-328621	09/04/2013	Tarassua Inc.	Hitch #1 (SD): Sept 4 to Sept 11 (Methow)	Marin Deer		1778	<input checked="" type="checkbox"/>								
CBW05583-312285	09/05/2013	Tarassua Inc.	Hitch #1 (SD): Sept 4 to Sept 11 (Methow)	Marin Deer		1872 Methow River	<input checked="" type="checkbox"/>								
CBW05583-388846	08/11/2013	Tarassua Inc.	Hitch #1 (SD): Sept 4 to Sept 11 (Methow)	Marin Deer		1742 South Fork Gold C.	<input checked="" type="checkbox"/>								
CBW05583-393487	08/22/2013	Tarassua Inc.	Hitch #1 (SD): Aug 21 to Aug 28 (Methow)	Bryna Deer		1778 Methow River	<input checked="" type="checkbox"/>								
CBW05583-398817	07/29/2013	Tarassua Inc.	Hitch #3 (SD): July 24 to July 31 (Methow)	Bryna Deer		1811 Wolf Creek	<input checked="" type="checkbox"/>								
CBW05583-447813	08/20/2013	Talia Tech	WSP10 Slab channel	Colin Deer		1987 Methow River	<input checked="" type="checkbox"/>								
WBT00001-18415_04	08/20/2013	Talia Tech	WSP10 Slab channel	Colin Deer		1992 Chewach River	<input checked="" type="checkbox"/>								
WBT00001-28415_04	08/20/2013	Talia Tech	WSP10 Slab channel	Colin Deer		1993 Chewach River	<input checked="" type="checkbox"/>								

- c. If the tags are not set correctly, edit the purpose of visits. In the column “Edit Purpose of Visit”, click the tag icon. Use the popup dialog to check on or off the different purposes of the visit. The following tags are applicable to the visits conducted in 2014: CHaMP Core, IMW, Has Fish Data, and AEM

Purpose of Visit
CBW05583-012569 (Twisp River)

2013
Hitch #3 (SD): July 24 to July 31 (Methow)

- CHaMP-PiBO Comparison
- CHaMP 10% Revisit
- IMW
- CHaMP Core
- Remove
- Effectiveness
- Has Fish Data
- Velocity Validation
- Bug Validation

Save Cancel

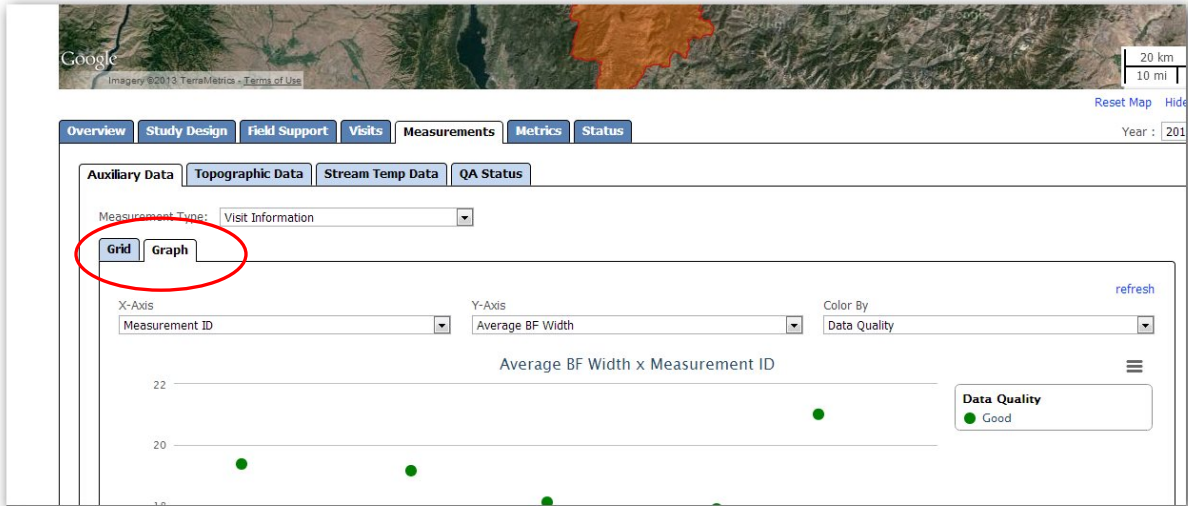
Review and update all visits completed by your organization.

Step 4: Targeted Review of Measurements (Watershed Detail page)

A limited set of quality assurance calculations are performed by CM.org and are displayed in the auxiliary data grids on the Measurements tab (e.g. Station Discharge, or Sum LWD Count

or Sum Of Fish Cover). Reviewing these calculated values provides an efficient means to identify outliers in the underlying measurement data.

There are two ways to review Measurement data on the Watershed Detail page: by GRID or GRAPH. Begin QA using the GRAPH tab, and switch to the GRID tab as needed to update data.



a. Review the following Measurement Type graphs for outliers and repair data.

Measurement Type	X	Y	Color By	Notes
Bankfull Width	Site Length	Average BF Width	Data Quality	
Visit Information	Site Length	Count of LWD	Data Quality	
Site Marker	Elevation	Elevation	Data Quality	Review Nulls
Monument	Elevation	Elevation	Data Quality	Review Nulls
Benchmark	Elevation	Elevation	Data Quality	Review Nulls
Control Point	Elevation	Elevation	Data Quality	
Cross-Section	Average Bankfull Width	Total Discharge	Data Quality Bankfull Width Category	
Discharge	Depth	Velocity	Data Quality	
Discharge	Depth	Station Discharge	Data Quality	
Channel Segment	Average Bankfull Width	Side Channel Length	Data Quality Bankfull Width Category	
Channel Segment	Average Bankfull Width	Side Channel Width	Data Quality Bankfull Width Category	
Channel Segment	Average Bankfull Width	Percent Wetted	Data Quality Bankfull Width Category	
Fish Cover	Average Bankfull Width	Total No Fish Cover	Data Quality Width Category	
Pebbles	Measurement ID	Cobble Percent Buried	Data Quality Strahler Order	
Pebbles	Measurement ID	Cobble Percent Fines	Data Quality Strahler Order	
Undercut Banks	Average Bankfull Width	Estimated Undercut Area	Data Quality Strahler Order	
Undercut Banks	Average Bankfull Width	Average Width	Data Quality Strahler Order	

Note that point colors are only used to highlight potential issues. There may be issues with 'green' (good) colored data and some red or orange colored points may be fine. There are no restrictions or flags tracked in the data that relate to point color.

b. Investigative Review of Measurement Types. After reviewing the recommended graphs listed in the table above, we recommend 10-15 minutes of free-form, investigative review of the Measurement data. The graphing interface allows efficient review of measurements, and this is an opportunity to review measurements crews may have had trouble with or are particularly interesting in your watershed. We suggest keeping this to a finite amount of time to avoid the 'rabbit hole' exploration of data.

c. Measurement Types to Skip. The following Measurement Types (aka tables) are low priority to review on champmonitoring.org. These measurement data are either QAed on the data logger or are better reviewed as metrics:

- Riparian Structure
- Transect Photos
- Drift Invertebrate
- Large Woody Piece
- Pool Tail Fines
- Pebble Cross Section
- *Drift Invertebrate Sample Results--not available until November 2015*
- *Taxon by Size Class Counts--not available until November 2015*
- *Sample Biomasses--not available until November 2015*

Layout

- *Crew*
- *Supplementary Photo*
- *Mid Channel Bottom of Site*

Site Attributes

Visit Pool Tail Fines
Channel Constraints
Channel Constraint Measurements
Artificially Placed Instream Structures
Artificially Placed Instream Structure Photo
Livestock
Livestock Photo

Transects

- *Transect Photos*
- *Riparian Structure*
- *Riparian Structure EMAP*
- *Canopy Cover*
- *Solar Pathfinder*
- *Stream Bank*

Invertebrates (all)

Fish Abundance (all)

Thalweg (all)

Barriers (all)

Drift Invertebrate Sample Results

Taxon by size class counts

Sample Biomasses

d. Measurement Types to Review using the Stream Temperature QA Protocol. The following tables are reviewed as part of the stream and air temperature data cleaning process and are covered in STEP 6, so don't panic.

- Stream Temperature Logger
- Air Temperature Logger
- Stream Temperature Logger Maintenance

Step 5. Review Control Network Metadata

a. Review metadata information for monuments, benchmarks, control points, and markers.

Note that elevations were reviewed during the Measurement Review in Step 3.

b. Review and update UTM coordinates as needed. Note that Benchmark and Control Point errors were likely repaired during Topo data review.

c. Review metadata within each table (e.g. marker types, benchmark retirement, etc) to ensure there are no outstanding control network questions in 2013.

c. Review and update crew notes as needed

d. Set the QA status for the following Measurement Types for each site:

Benchmark

Site Marker

Control Point

Monument

III. Helpful Hints, Notes, and Tips

QA Process

1. The goal of the quality assurance process is to visually review the data for outstanding anomalies.
2. It is necessary to click the “Save Changes” button after editing cells. If you forget to click “Save Changes” and leave the Measurements tab, all of your edits will be lost.
3. It may be necessary to select a visit from the drop down menu before you begin editing data.

Graphs

4. Outliers will appear as yellow or red circles. Null values will be gray.
5. If the cursor is in the dropdown menu for graph selection and the item name is highlighted, use the up/down arrows on the keyboard to quickly scan through the graphs.
6. Clicking on any item in the legend of a graph will toggle it on/off in the graph display
7. Hovering over an item in the graph will display the visit information of the selected data.

Webpage

8. Hiding the Map is just a click away. Click the light blue [Hide Map](#) link in the lower left of the map.
9. Holding the “Ctrl” key when clicking a link will open a new browser window.

IV. Introduction to Website Functionality

Visit Tab on Watershed Details Page

The visit tab provides a good view for tracking progress. This grid lists all visits that were planned for the current sampling year. Use the “Visit Phase” drop down to filter the list of visits by phase. Phase has three states (data collection, quality assurance, data approved). The goal is to get all visits to the “Data Approved” phase.

Rel#	Site ID	Sample Date	Crew	Visit Phase	Visit Status	Panel	Category	Stream Name	Edit Purpose of Visit	ChAMP Core	ChAMP 10% Revisit	ChAMP PBO Compar	IMW	Remove	Visit Objective
	WC503432-000152	7/5/2012	Reuben Crew	Quality Assurance	In QIA	Annual	Source-Public	Tronsen Creek	Yes	Yes	-	-	-	-	Primary Visit
	WENMASTER-000269	7/5/2012	Reuben Crew	Quality Assurance	In QIA	Annual	Source-Public	Tronsen Creek	Yes	-	-	-	-	-	Primary Visit
	WC503432-000049	7/12/2012	Reuben Crew	Quality Assurance	In QIA	Annual	Source-Public	East Fork Mission C	Yes	Yes	-	-	-	-	Primary Visit
	WC503432-000042	7/13/2012	Reuben Crew	Data Collection	Post Processing	Annual	Transport-Private	Chumstick Creek	Yes	-	-	-	-	-	Primary Visit
	CBW05583-492715	7/18/2012	Reuben Crew	Quality Assurance	In QIA	Annual	Transport-Public	Chikamin Creek	Yes	Yes	-	-	-	-	Primary Visit
	WC503432-000022	7/18/2012	Reuben Crew	Quality Assurance	In QIA	Rotating Panel 2	Source-Public	Chumstick Creek	Yes	-	-	-	-	-	Primary Visit
	WENMASTER-000057	7/18/2012	Matt Crew	Quality Assurance	In QIA	Rotating Panel 2	Source-Private	Grodsstone Creek	Yes	-	Yes	-	-	-	Primary Visit
	WENMASTER-000195	7/20/2012	Brent Crew	Quality Assurance	In QIA	Annual	Transport-Private	Chikamin Creek	Yes	-	Yes	-	-	-	Primary Visit
	CBW05583-492731	7/23/2012	Reuben Crew	Quality Assurance	In QIA	Rotating Panel 2	Transport-Private	Chikamin Creek	Yes	-	-	-	-	-	Primary Visit
	CBW05583-101099	7/25/2012	Brent Crew	Quality Assurance	In QIA	Rotating Panel 2	Transport-Public	East Fork Mission C	Yes	-	-	-	-	-	Primary Visit
	CBW05583-492923	7/26/2012	Brent Crew	Quality Assurance	In QIA	Rotating Panel 2	Transport-Private	Clear Creek	Yes	-	-	-	-	-	Primary Visit
	CBW05583-396907	7/30/2012	Brent Crew	Quality Assurance	In QIA	Rotating Panel 2	Source-Private	Kahler Creek	Yes	-	-	-	-	-	Primary Visit
	WC503432-000155	8/1/2012	Matt Crew	Quality Assurance	In QIA	Annual	Depositional-Private	Peshastin Creek	Yes	-	-	-	-	-	Primary Visit

It may be helpful to have the Visit Tab open in one internet browser window and then open a second window to view the Site Details page.

Note: Holding the “Ctrl” key when clicking a link will open a new browser window.

Measure #	Stream Name	Panel	Transect Width	Station Increment	Distance to LB	Depth	Velc
2416	Charley Creek	Annual	3.34 m	0.15 m	0.15 m	0.20 m	
2447	Charley Creek	Annual	3.34 m	0.15 m	0.30 m	0.30 m	
2448	Charley Creek	Annual	3.34 m	0.15 m	0.45 m	0.35 m	
2419	Charley Creek	Annual	3.34 m	0.15 m	0.60 m	0.37 m	
2450	Charley Creek	Annual	3.34 m	0.15 m	0.75 m	0.37 m	
2451	Charley Creek	Annual	3.34 m	0.15 m	0.90 m	0.39 m	

Watershed Details Page – Metrics Tab

1. From the Watershed menu, to navigate to your watershed page.
2. Click the Metrics Tab
3. This will display grid with calculated metrics for all visits from the selecting sampling year (drop down list highlight in red box).

Year: 2013

Metric Group: Visit Metric

Metric Tab

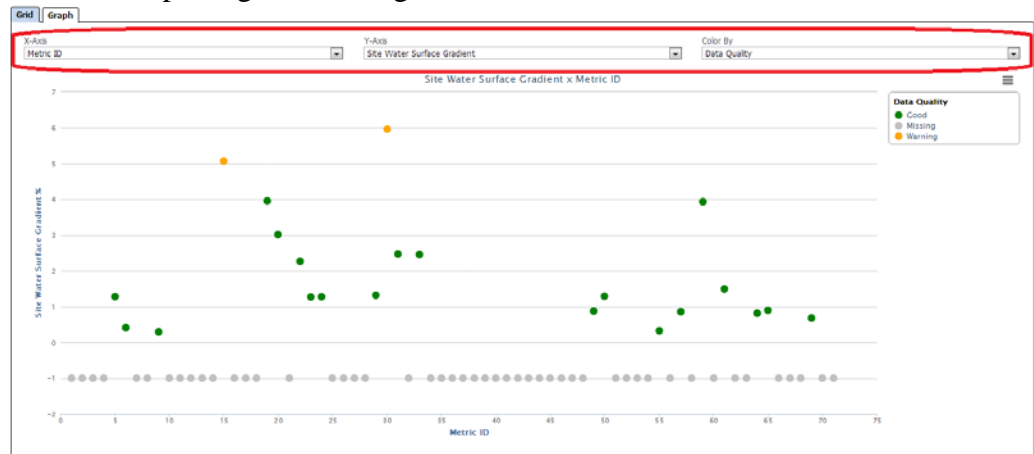
Watershed-level metrics... show more

Grid | Graph

Currently viewing 71 of 71 metrics

SiteID	Sample Date	VisitID	Visit Status	Visit Phase	Me #	Organization	Crew	Stream Name	Panel	Catgo	Julian Date	Visit Number	Site Water Surface Gradient	Site Sinuosity	Thalweg to Centerline Length Ratio	Sinuosity Via Centerline	Site Wetted Area	Site Bankfull Area	Wetted Volume	Bankfull Volume	Integrated Wetted Weath	Star Dev of H Delt DEM
CBV0558-01288	05/18/2011	1325	In QA	Quality Assurance	103	Oregon Department Of	Chris Hol	Paul Ore	Annual	Grande F	109	5										
CBV0552-02154	01/25/2011	1329	Post Processing	Data Collection	117	Columbia River Inter-TI	Laurinda	Grande F	Rotating	Upper Or	206	1										
CBV0558-02202	08/19/2011	1561	In QA	Quality Assurance	123	Oregon Department Of	Chris Hol	Meadow	Rotating	Upper Or	231	1										
CBV0555-03205	07/01/2011	1343	Post Processing	Data Collection	133	Columbia River Inter-TI	Laurinda	Cathrein	Rotating	Cathrein	238	1										
CBV0555-05289	07/01/2011	1441	In QA	Quality Assurance	104	Oregon Department Of	Chris Hol	Mia Cree	Extra	Cathrein	182	1	1.23 %	1.1145	0.5935	1.1035	404.81	457.23	33.52 m ³	81.02 m ³	3.15 m	
CBV0558-07177	08/02/2011	1330	Post Processing	Data Collection	119	Columbia River Inter-TI	Laurinda	Grande F	Rotating	Upper Or	214	1	0.41 %	1.1935	0.9013	1.1445	9907.76	13563.13	1547.21 m ³	8733.14 m ³	19.36 m	
CBV0563-08618	08/09/2011	1797	In QA	Quality Assurance	133	Oregon Department Of	Chris Hol	Cathrein	Annual	Cathrein	262	1										
CBV0562-09681	07/10/2011	1331	Post Processing	Data Collection	107	Columbia River Inter-TI	Laurinda	Grande F	Extra	Upper Or	191	1										
CBV0561-10585	08/04/2011	1332	Post Processing	Data Collection	134	Columbia River Inter-TI	Laurinda	Grande F	Rotating	Upper Or	247	5	0.3 %	1.1274	0.5816	1.1131	13532.74	19063.26	2230.66 m ³	10168.97 m ³	32.74 m	
CBV0563-03564	07/12/2011	1455	In QA	Quality Assurance	107	Oregon Department Of	Chris Hol	MaDey C	Annual	Grande F	193	1										
CBV0563-14248	08/25/2011	1320	In QA	Quality Assurance	104	Oregon Department Of	Chris Hol	Clark Ore	Annual	Grande F	177	1										
CBV0569-14702	08/27/2011	1798	In QA	Quality Assurance	127	Oregon Department Of	Chris Hol	Cathrein	Annual	Cathrein	239	1										

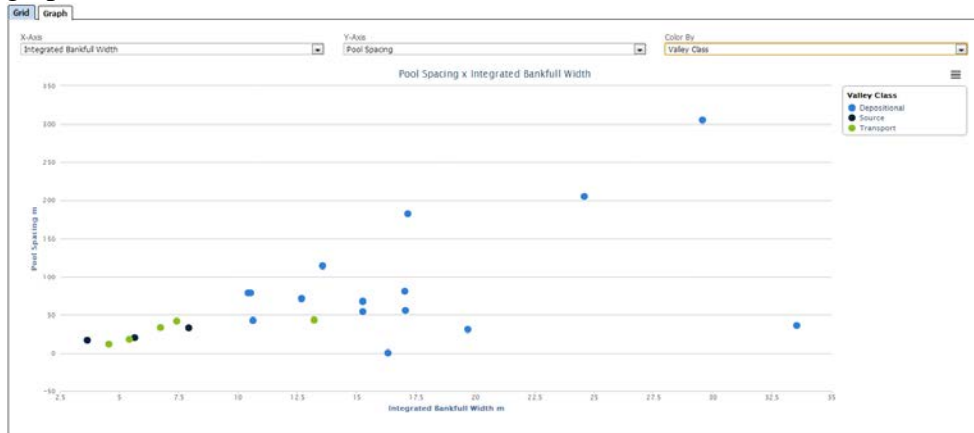
4. The grid has functionality that will help you explore and edit the data:
 - a. Clicking the name of any column will sort the column of data.
 - b. Entering a value in the white filter box will limit the rows of data showing in the grid (e.g. enter the right 6 digits of the SiteID to filter for a single site).
 - c. Using the greater than (>) or less than (<) symbol and a number will filter the grid for all rows were that column has a value matching that criteria
5. The second tab displays a graph.
 - a. Three drop-down menus are available to configure the graph
 - i. x-axis drop down – contains a subset of metrics that are indicative of channel size or other predictive metrics
 - ii. y-axis drop down – contains the full set of derived metrics
 - iii. color by drop down – contains sites covariates which may be useful for interpreting for filtering data



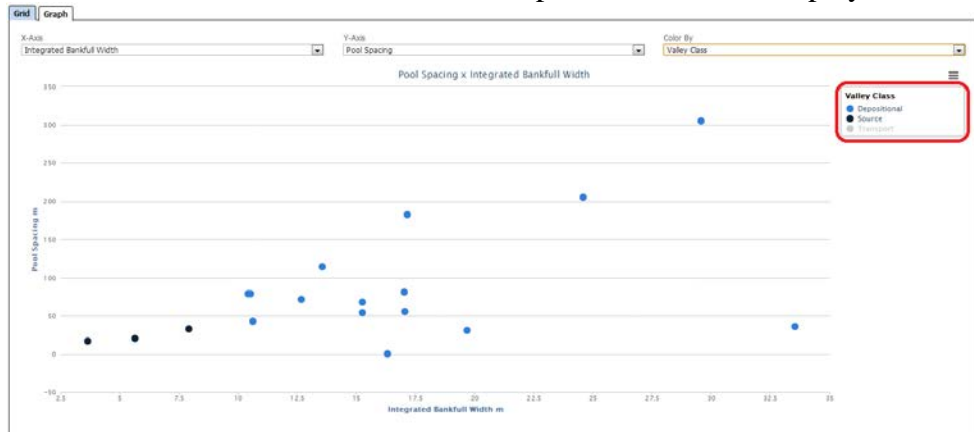
- b. The default for the x-axis is Metric ID, which will generate an index or y-scatter plot. It is recommended to use Metric Id as the x-axis for quality assurance review, as this encourages unbiased review of individual metric

values. If there is a known relationship between two metrics, then plotting the independent variable on the x-axis can be help in quality assurance review.

- c. The default for Color By is Data Quality. This will plot points as green, yellow, or red based on thresholds established by the program QA team. Yellow points are suspiciously high. Red points are likely invalid values for the given metric. The color coding is intended to draw reviewers eyes to the points, however, are should not be interpreted as hard-n-fast rules. Feedback during the 2013 end-of-season review will help refine the thresholds for 2014.
- d. Use the Color By drop down to review and filter data by a covariate. After a covariate is select from the Color By drop down, a legend will be added the graph. Click an item in the legend to hide the corresponding points from the graph. Here is the non-filtered version.



Here is the filtered version, where “Transport” sites are not displayed.



Watershed Detail Page – Measurements Tab

1. From the Watershed menu, to navigate to your watershed page.
2. Click the Measurements Tab
3. This will display the auxiliary data compiled across the watershed

SiteID	Sample Date	Visit #	Measure #	Crew	Visit Phase	Visit Status	Stream Name	Panel	Start Date	End Date	Time Zone	Survey	Overlook	Inflow	Access	Survey Sign Off	Bankfull Width 1	Bankfull Width 2	Bankfull Width 3	Bankfull Width 4	Bankfull Width 5	Average or Volum	W C	
CBW0583-01388	05/19/2011	1320	1707872	Chris Horn Ch	Quality Assur	In QA	Peet Creek	Annual	0/18/2013 10	0/18/2013 0	Pacific	np	1.00 m	ig	sh	np	3.9 m	3.9 m	3.9 m	3.9 m	3.9 m	3.9 m	3.9 m	
CBW0583-03186	07/26/2011	1328	1712287	Laurinda Owi	Data Collecti	Post Process	Orande Ronde Riv	Rotating Panel 3	7/26/2013 9	7/30/2013 9	Pacific	AD	4.0 m	ES	SH	LK	CD	AD	11.8 m	14.8 m	20.2 m	19.4 m	10.9 m	12.0 m
CBW0583-02028	08/18/2011	1481	1720508	Chris Horn Ch	Quality Assur	In QA	Meadow Creek	Rotating Panel 3	8/18/2013 9	8/18/2013 9	Pacific	AD	1.17 m						12.2 m	11 m	10.2 m	9.1 m	14.4 m	11.4 m
CBW0583-03626	08/28/2011	1443	1728281	Laurinda Owi	Data Collecti	Post Process	Catherine Creek	Rotating Panel 3	8/28/2013 12	8/27/2013 12	Pacific	IN	4 m	as	as	as	LK	14.6 m	12.8 m	11.8 m	14.8 m	16.4 m	13.6 m	
CBW0583-08289	07/01/2011	1441	1709788	Chris Horn Ch	Quality Assur	In QA	Mills Creek	Extra	7/1/2013 11	7/1/2013 7	06 Pacific	hayden	1.18 m	pasthos	massone	ph	3.3 m	4.6 m	3.9 m	3.6 m	3.7 m	3.8 m	3.8 m	
CBW0583-07177	08/02/2011	1330	17184081	Laurinda Owi	Data Collecti	Post Process	Orande Ronde Riv	Rotating Panel 3	8/2/2013 9	8/6/2013 4	06 Pacific	IN	0.9 m	as	as	as	LK	20.4 m	21.7 m	21.0 m	20.3 m	30.9 m	24.0 m	
CBW0583-08169	09/09/2011	1797	1723242	Chris Horn Ch	Quality Assur	In QA	Catherine Creek	Annual	9/9/2013 8	9/10/2013 12	Pacific	JE	1.3 m	sp	sp	je	12.2 m	10.2 m	10.9 m	13.3 m	10.6 m	12 m	12 m	
CBW0583-09661	07/10/2011	1331	17115162	Laurinda Owi	Data Collecti	Post Process	Orande Ronde Riv	Extra	7/10/2013 9	7/11/2013 1	06 Pacific	CD	1.02 m	CD	AD	ES	LH	as	7.6 m	9.7 m	7.9 m	6.9 m	8.4 m	7.3 m
CBW0583-09605	09/04/2011	1332	17282481	Laurinda Owi	Data Collecti	Post Process	Orande Ronde Riv	Rotating Panel 3	9/4/2013 8	9/5/2013 12	Pacific	IN	1.29 m	ig	as	as	LK	29 m	33.1 m	25.7 m	37.8 m	30.1 m	34.3 m	
CBW0583-09504	07/12/2011	1486	17115541	Chris Horn Ch	Quality Assur	In QA	Midcity Creek	Annual	7/12/2013 10	7/10/2013 0	06 Pacific	mv	2.09 m	np	je	mv	6.5 m	6.6 m	6.9 m	6.6 m	6.6 m	6.6 m	6.6 m	
CBW0583-14249	09/26/2011	1320	17082838	Chris Horn Ch	Quality Assur	In QA	Clark Creek	Annual	8/26/2013 2	9/27/2013 0	06 Pacific	mm	1.2 m	sp	je	mm	7 m	7 m	7 m	7 m	7 m	7 m	7 m	
CBW0583-14760	08/27/2011	1786	17093078	Chris Horn Ch	Quality Assur	In QA	Catherine Creek	Annual	8/27/2013 9	8/28/2013 0	06 Pacific	mv	1.03 m	ig	sp	je	as	26.5 m	26.8 m	26.6 m	15.2 m	19.9 m	22.8 m	
CBW0583-13661	07/11/2011	1486	17116832	Chris Horn Ch	Quality Assur	In QA	Stonson Creek	Annual	7/11/2013 9	7/12/2013 4	06 Pacific	megan	1.41 m	Washon	np	paslos	sh	6 m	6 m	6 m	6 m	6 m	6 m	6 m
CBW0583-02860	07/17/2011	1333	17189781	Laurinda Owi	Data Collecti	Post Process	Sheep Creek	Annual	7/17/2013 9	7/18/2013 0	06 Pacific	CD	0.69 m	ES	DM	AD	LH	CD	5.1 m	5.1 m	5.1 m	5.1 m	5.1 m	5.1 m
CBW0583-20420	09/12/2011	1344	17289512	Laurinda Owi	Data Collecti	Post Process	South Fork Cathlamet	Rotating Panel 3	9/12/2013 9	9/13/2013 10	Pacific	IN	1.1 m	as	as	as	as	7.3 m	6.4 m	11 m	8.9 m	7.2 m	8.6 m	
CBW0583-24079	09/17/2011	1327	17072971	Chris Horn Ch	Quality Assur	In QA	Hoop Creek	Annual	9/17/2013 9	9/18/2013 1	06 Pacific	WENELAN	2.11 m	hogg	as	massone	mv	4.8 m	5.9 m	5.9 m	6 m	6 m	5.9 m	
CBW0583-25273	07/28/2011	1501	17190268	Chris Horn Ch	Quality Assur	In QA	Meadow Creek	Annual	7/28/2013 1	7/29/2013 0	06 Pacific	as	2.8 m					19.4 m	19.4 m	19.4 m	19.4 m	19.4 m	19.4 m	
CBW0583-25278	07/24/2011	1019	17107991	Reuben Owi	Quality Assur	In QA	Meadow Creek	Annual	7/24/2013 9	7/25/2013 9	06 Pacific	JK	2.42 m	RM	AB	mm	19.4 m	19.4 m	19.4 m	19.4 m	19.4 m	19.4 m	19.4 m	
CBW0583-25330	09/10/2011	1345	17289491	Laurinda Owi	Data Collecti	Post Process	North Fork Cathlamet	Rotating Panel 3	9/10/2013 9	9/11/2013 8	06 Pacific	CD	DM	ES	AD	LH	CD	17.4 m	11.6 m	16.4 m	12.8 m	12.7 m	14 m	
CBW0583-28979	09/27/2011	1442	17289321	Chris Horn Ch	Quality Assur	In QA	South Fork Cathlamet	Rotating Panel 3	8/27/2013 9	8/28/2013 0	06 Pacific	je	1.63 m	sh	sh	as	as	9.8 m	8.6 m	8 m	7 m	7.6 m	9.1 m	
CBW0583-27890	08/30/2011	1798	17289748	Chris Horn Ch	Data Collecti	Post Process	Catherine Creek	Extra	8/30/2013 8	8/30/2013 12	Pacific	ham	1.18 m	hogg	as	as	as	12.8 m	16.6 m	14.4 m	18.8 m	14.8 m	14.6 m	
CBW0583-29420	09/29/2011	1336	17180201	Laurinda Owi	Data Collecti	Post Process	West Chickent Creek	Rotating Panel 3	8/29/2013 2	7/20/2013 10	Pacific	AD	1.09 m	CD	LH	ES	AD	2.6 m	2.6 m	2.6 m	1.7 m	2.1 m	2.3 m	
CBW0583-31148	08/15/2011	1346	17282534	Laurinda Owi	Data Collecti	Post Process	Catherine Creek	Rotating Panel 3	8/15/2013 12	8/19/2013 10	Pacific	as	3 m	as	as	IN	CD	12.9 m	12.4 m	12.2 m	12.3 m	13.3 m	12.0 m	
CBW0583-31149	07/30/2011	1599	17183691	Reuben Owi	Quality Assur	In QA	Catherine Creek	Rotating Panel 3	7/30/2013 2	7/31/2013 10	Pacific	AD	0.97 m	RM	AB	je	12.9 m	10.9 m	11.3 m	12.2 m	15.8 m	12.0 m		
CBW0583-32080	09/20/2011	1383	17427911	Laurinda Owi	Data Collecti	Post Process	Catherine Creek	Extra	9/20/2013 9	8/21/2013 0	06 Pacific	AD	2 m	DM	CD	ES	AD	19.8 m	21.4 m	20.4 m	17.7 m	17.2 m	19.3 m	
CBW0583-37048	09/28/2011	1384	17428168	Laurinda Owi	Data Collecti	Post Process	Sheep Creek	Extra	9/28/2013 9	9/29/2013 0	06 Pacific	AD	1.18 m	sp	sp	je	as	12.9 m	14.9 m	14.9 m	17.8 m	17.2 m	18.6 m	

The Measurements Tab has a measurement type drop down which lists each table. Selecting an item from the drop down will display the appropriate table in the grid. The grid has functionality that will help you explore and edit the data:

- a. Clicking the name of any column will sort the column of data.
- b. Entering a value in the white filter box will limit the rows of data showing in the grid (e.g. enter the right 6 digits of the SiteID to filter for a single site).
- c. Using the greater than (>) or less than (<) symbol and a number will filter the grid for all rows were that column has a value matching that criteria

Editing values in the grid:

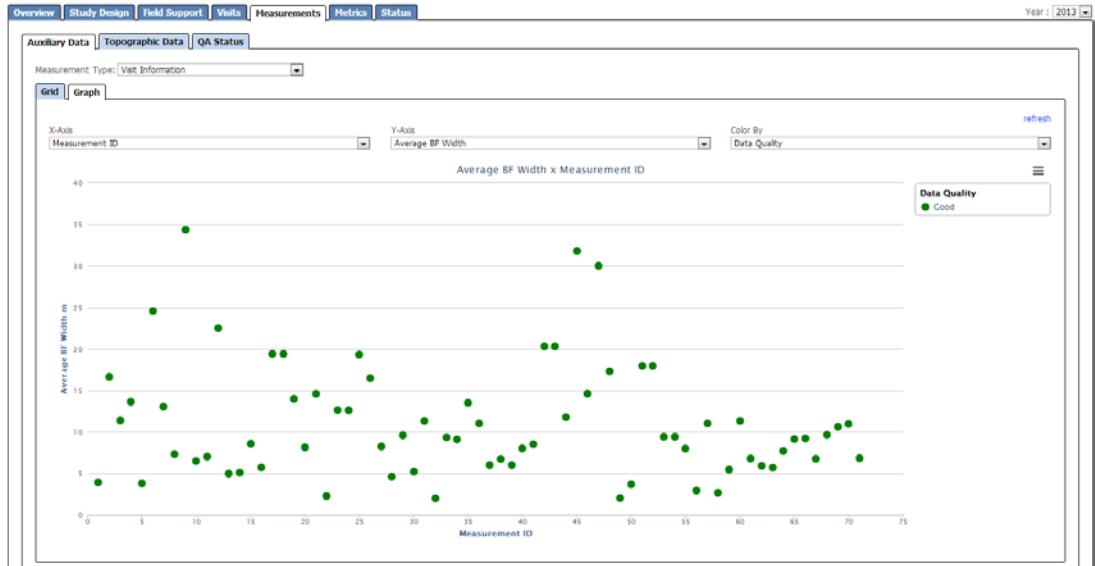
- a. Clicking in any cell will allow you to edit the value for that cell.
- b. **It is necessary to click the “Save Changes” button after editing cells. If you forget to click “Save Changes” and leave the Measurements tab, all of your edits will be lost.**

Charting data:

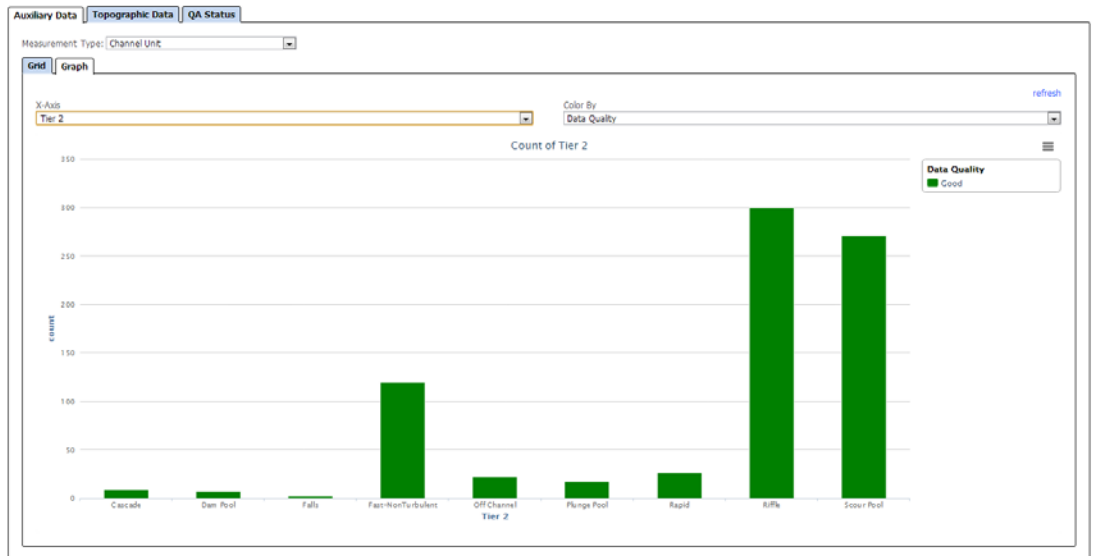
- a. The chart control is located in a separate tab. Selecting a column name from the dropdown menu will plot that data in the chart.
- b. Numeric data will be plotted as a y-scatter plot, where the x-axis is the Measurement # and the y-axis is the numeric value for the column you selected.

The purpose of the graph is to quickly plot the data and look for outliers.

Note: Outliers will appear as yellow or red circles. Null values will have no color. Clicking on a point will open a new tab to the Site Details page.



- c. Categorical data will be plotted as a horizontal bar-chart, where the x-axis displays the categories and the y-axis displays the number of rows corresponding to that category.



Site Details Page

If a spurious value is identified while reviewing metrics at the watershed-scale, it will be necessary to drill into that visit and review the measurements. Clicking the light blue SiteID (e.g. [CBW05583-013882](#)) from any grid will bring you to the Site Details page with the appropriate visit selected. From the Site Details page, go to the Measurements Tab. From this tab, you will be able to view, graph, and edit data for each table.

Note: Holding the “Ctrl” key when clicking a link will open a new browser window.

Note: The visit selector will allow you to switch between visits at the same site.

Editing values in the grid:

- Clicking in any cell will allow you to edit the value for that cell.
- It is necessary to click the “Save Changes” button after editing cells. If you forget to click “Save Changes” and leave the Measurements tab, all of your edits will be lost.

You are encouraged to provide a QA Ranking and Comment for each table. This ranking and comment applies to the individual visit only.