“Streamgaging 101”

USGS

Outline

1. Monitoring Network Development
2. Collection of Data
3. Surface Water Data
4. Water Quality Data
5. Ground Water Data
6. Precipitation
7. Computation of Discharge Records

Monitoring Network Development

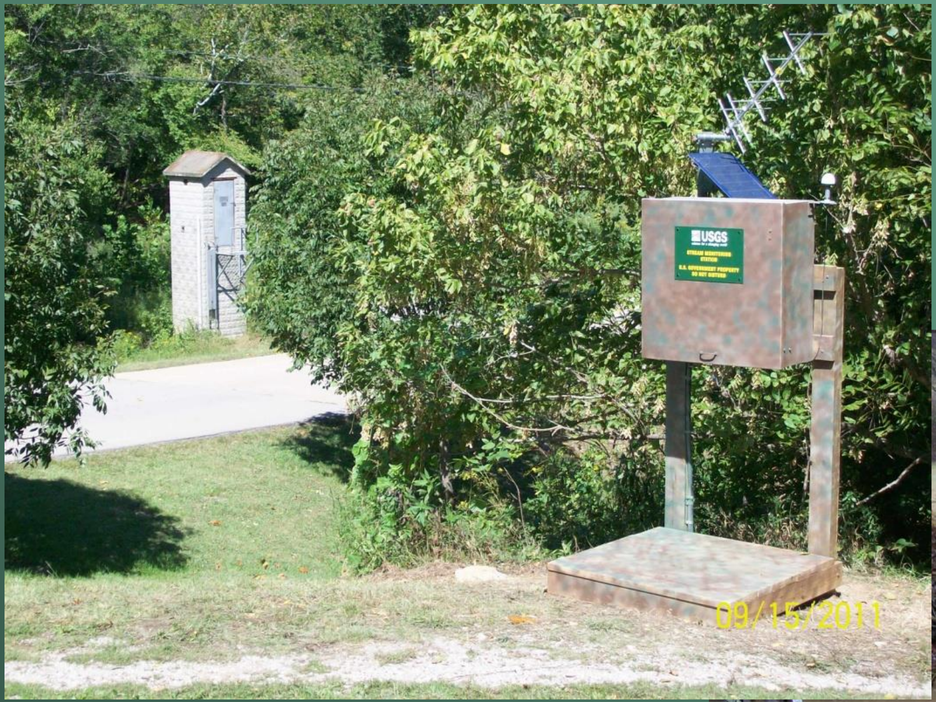
- Gages
- Site Location
- Naming and numbering schemes
- Gage set-up

USGS

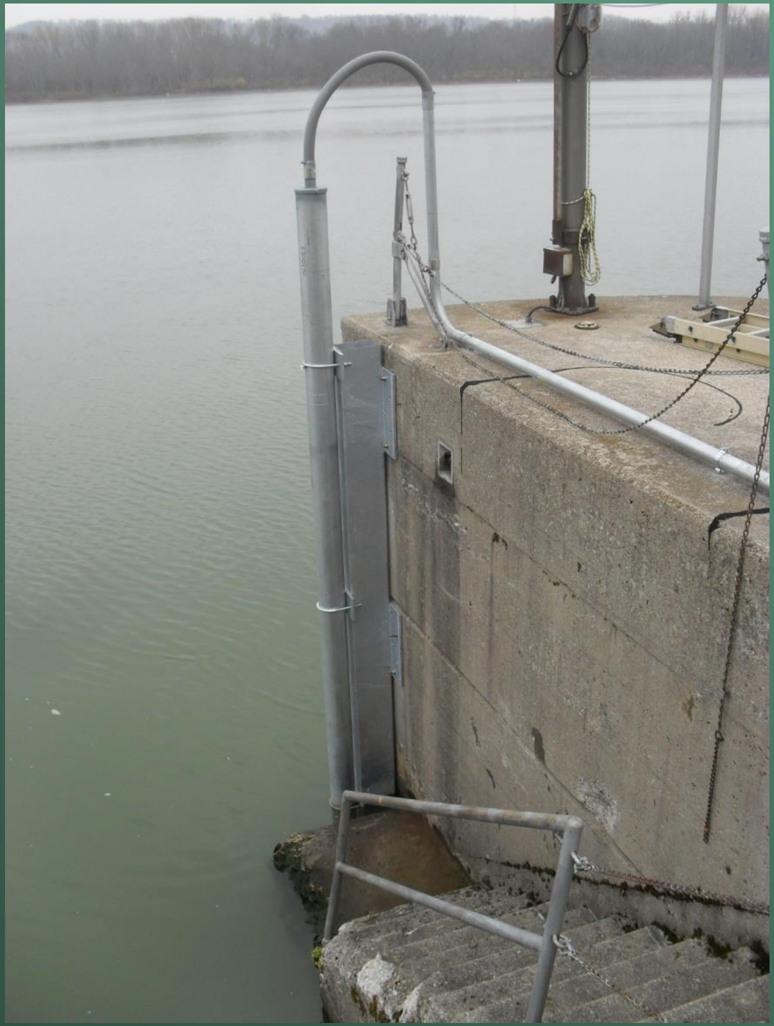
GAGES

USGS

Streamgages



Water Quality Gages



Ground Water Gages

Precipitation Gages

Site Selection

Why are sites located where they are?

USGS

Where does a site need to be located:

That's EASY

The location the Cooperator needs the data!

Where does a site need to be located:

Understand Cooperator's need

- Permit requirements
- Flood Warning
- Regulatory
- Infrastructure Design

Understand What type of data is needed

- Flow data
  - Low Flow
  - High Flow
- Water Quality
  - Parameters
  - Required

USGS

But what makes a good site:

- **Readily accessible**
  - **Installation of Gage**
  - **Operation of Gage**
- **General course of stream should be straight**
- **Flow should be confined to one channel at all stages**
- **Streambed should not be subject to scour or fill**
- **Unchanging control**
- **Water measurement area in close proximity of gage**
  - **Bridge, high banks, cableway, wading**
- **Gage outside effects of backwater of other water bodies**

USGS

USGS


Downstream
12/13/2007


Control


WADING SECTION

USGS

Debris is an issue!

Naming and numbering schemes

03260100 Elijahs Creek at Elijahs Creek Road nr Hebron, KY

03289200 Town Branch at Yarnallton Road at Yarnallton, KY

03285000 Dix River near Danville, KY

Traditionally "at" within 1 mile of town, "near" beyond 1 mile (but many towns grow)

Naming and numbering schemes

03260100 Elijahs Creek at Elijahs Creek Road nr Hebron, KY

03289200 Town Branch at Yarnallton Road at Yarnallton, KY

03285000 Dix River near Danville, KY

Downstream order numbers

- "03" is Ohio River, "04" is Great Lakes, "05" is Illinois River, "07" is Mississippi, typically followed by 6 more digits (8-digits in all), but more digits to right if necessary.
- Sites have unique IDs. Must coordinate with neighboring states.

USGS

a. **What if a gage is moved upstream or downstream?**

(Priorities regarding data and view of data changes over time)

- i. **Reasons to keep same station number – keeps data together.**
- ii. **Reasons to change station number – different location, represents different site.**

b. **What if the gage stays at same location, but the nature of flow changes?**

- i. **Stage-discharge relation may undergo a major change**
- ii. **New or different groups might use the data (hazard planning, water supply, etc.)**

USGS

Gage Setup

Installing a gage

(it's not an easy job)

USGS

USGS

USGS


09/16/2010

USGS

USGS

USGS

USGS

Collection of Data

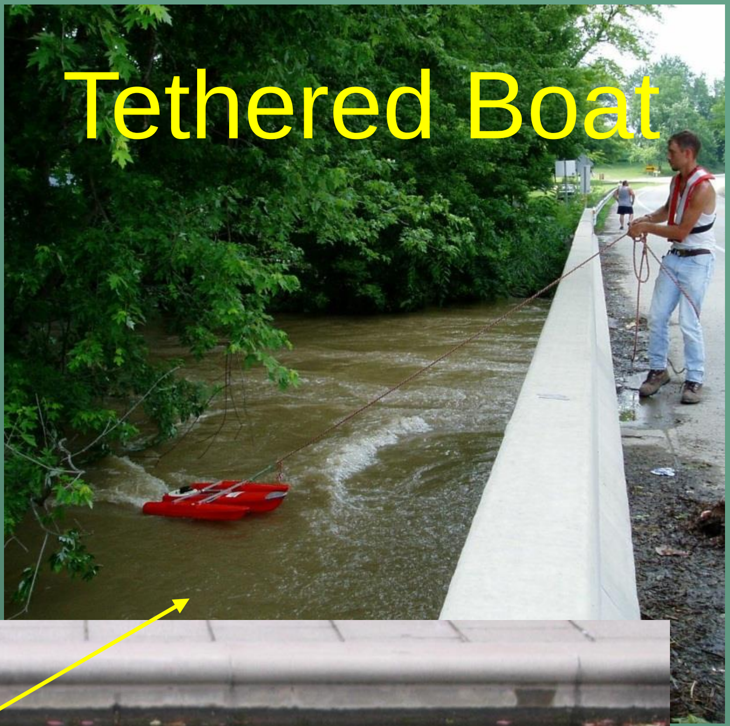
Collecting Data

How are most streamflow measurements collected?

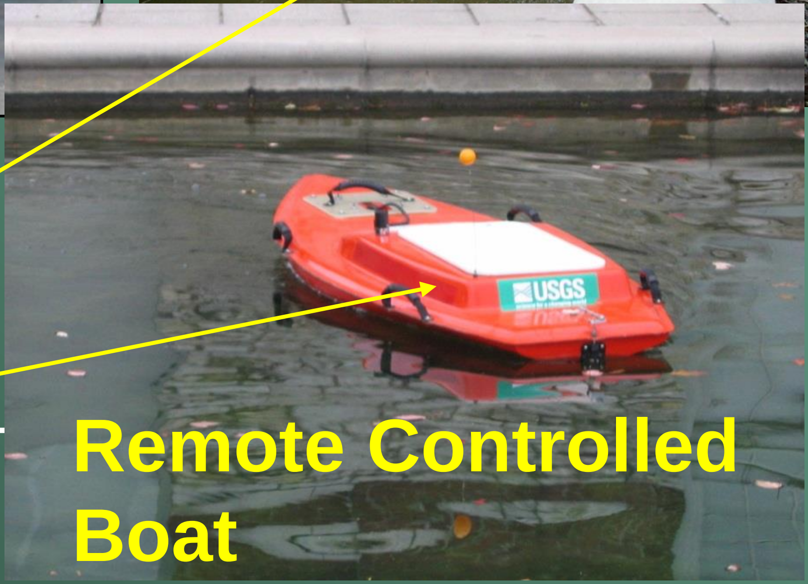
USGS

More ways to collect streamflow data

Manned Boat



Tethered Boat



Remote Controlled Boat

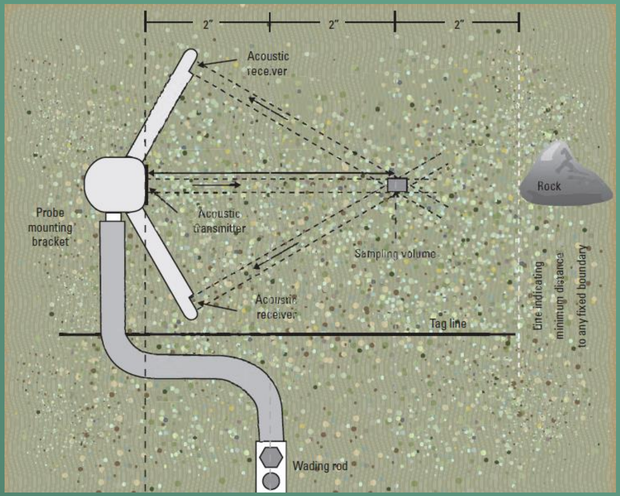
ALL use ADCPs

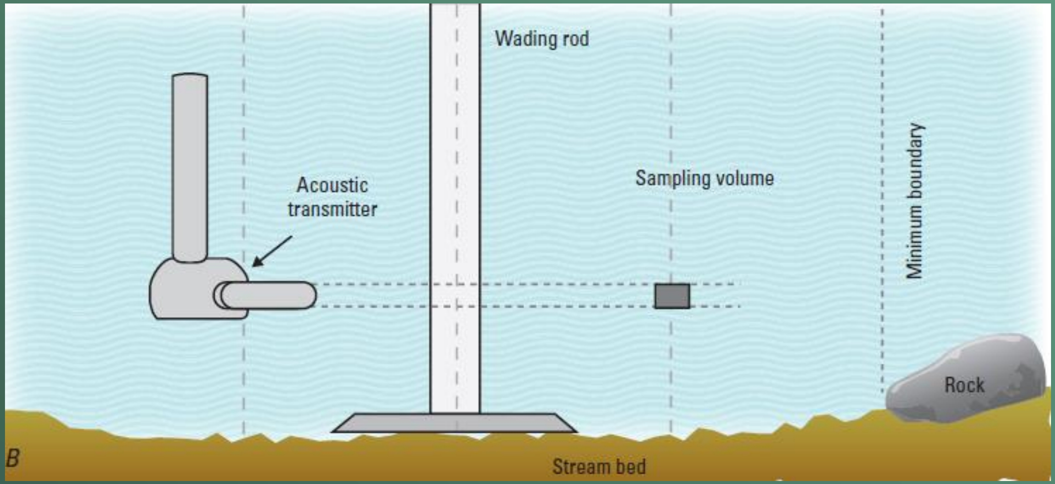
USGS

Price AA Current Meter

VERT	DIST	TDPTH	IDRFT	EDPTH	OBS	TIME	REVS	HA	HC:VF	METH	CLOCK	MVEL	OVEL	VVEL	SSAREA	SSQ	SSPCT	FLAGS
1	2.00	0.00	0.00	0.00	E						13:48			0.00	0.00	0.00	0.0%	
2	8.00	3.70	0.00	3.70	o6	40.32	67	0	1.00	1.00	13:52	3.68	3.68	3.68	18.50	68.11	3.0%	
3	12.00	4.50	0.00	4.50	o6	40.23	72	0	1.00	1.00	13:54	3.96	3.96	3.96	18.00	71.35	3.2%	
4	16.00	4.50	0.00	4.50	o6	40.34	97	0	1.00	1.00	13:58	5.32	5.32	5.32	18.00	95.75	4.3%	
5	20.00	5.20	0.00	5.20	o6	40.29	82	0	1.00	1.00	14:01	4.51	4.51	4.51	20.80	93.71	4.2%	
6	24.00	5.50	0.00	5.50	o6	40.02	106	0	1.00	1.00	14:03	5.86	5.86	5.86	22.00	128.87	5.7%	
7	28.00	5.60	0.00	5.60	o6	40.36	90	0	1.00	1.00	14:06	4.93	4.93	4.93	22.40	110.53	4.9%	
8	32.00	6.00	0.00	6.00	o6	40.24	74	0	1.00	1.00	14:08	4.07	4.07	4.07	24.00	97.74	4.4%	
9	36.00	6.00	0.00	6.00	o6	40.13	51	0	1.00	1.00	14:10	2.82	2.82	2.82	24.00	67.68	3.0%	
10	40.00	6.00	0.00	6.00	o6	40.96	35	0	1.00	1.00	14:12	1.90	1.90	1.90	30.00	57.05	2.5%	
11	46.00	6.00	0.00	6.00	o6	43.44	14	0	1.00	1.00	14:16	0.73	0.73	0.73	24.00	17.48	0.8%	
12	48.00	6.00	0.00	6.00	W				1.00	1.00	14:16			0.73	6.00	4.37	0.2%	
13	52.00	6.20	0.00	6.20	W				1.00	1.00	14:17			2.44	6.20	15.15	0.7%	
14	54.00	6.20	0.00	6.20	o2	40.31	63	23	0.92	1.00	14:38	3.46	3.19					
14	54.00	6.20	0.00	6.20	o8	40.59	31	0	1.00	1.00	14:37	1.70	1.70	2.44	18.60	45.46	2.0%	
15	58.00	6.50	0.00	6.50	o2	40.25	62	18	0.95	1.00	14:44	3.41	3.24					
15	58.00	6.50	0.00	6.50	o8	41.00	32	18	0.95	1.00	14:43	1.74	1.65	2.45	26.00	63.64	2.8%	
16	62.00	6.50	0.00	6.50	o2	40.36	77	0	1.00	1.00	14:47	4.22	4.22					
16	62.00	6.50	0.00	6.50	o6	41.38	28	0	1.00	1.00	14:48	1.51	1.51					
16	62.00	6.50	0.00	6.50	o8	41.69	19	0	1.00	1.00	14:46	1.02	1.02	2.07	26.00	53.73	2.4%	
17	66.00	6.50	0.00	6.50	o2	40.41	91	0	1.00	1.00	14:51	4.98	4.98					
17	66.00	6.50	0.00	6.50	o8	40.28	76	0	1.00	1.00	14:50	4.18	4.18	4.58	26.00	119.09	5.3%	
18	70.00	6.70	0.00	6.70	o2	40.29	117	0	1.00	1.00	14:54	6.42	6.42					
18	70.00	6.70	0.00	6.70	o8	40.21	112	0	1.00	1.00	14:53	6.16	6.16	6.29	26.80	168.56	7.5%	
19	74.00	6.50	0.00	6.50	o2	40.14	133	0	1.00	1.00	14:57	7.32	7.32					
19	74.00	6.50	0.00	6.50	o8	40.07	118	0	1.00	1.00	14:56	6.51	6.51	6.92	19.50	134.88	6.0%	
20	76.00	6.40	0.00	6.40	o2	40.15	129	0	1.00	1.00	15:00	7.10	7.10					
20	76.00	6.40	0.00	6.40	o8	40.05	111	0	1.00	1.00	14:59	6.13	6.13	6.62	12.80	84.67	3.8%	
21	78.00	6.30	0.00	6.30	o2	40.05	125	0	1.00	1.00	15:03	6.90	6.90					
21	78.00	6.30	0.00	6.30	o8	40.05	92	0	1.00	1.00	15:02	5.08	5.08	5.99	18.90	113.23	5.0%	
22	82.00	6.20	0.00	6.20	o2	40.16	120	0	1.00	1.00	15:05	6.61	6.61					
22	82.00	6.20	0.00	6.20	o8	40.27	87	0	1.00	1.00	15:04	4.78	4.78	5.69	24.80	141.20	6.3%	
23	86.00	6.20	0.00	6.20	o2	40.09	113	0	1.00	1.00	15:08	6.23	6.23					
23	86.00	6.20	0.00	6.20	o8	40.67	72	0	1.00	1.00	15:07	3.92	3.92	5.08	24.80	125.90	5.6%	
24	90.00	5.90	0.00	5.90	o6	40.30	91	0	1.00	1.00	15:10	5.00	5.00	5.00	23.60	117.91	5.3%	
25	94.00	5.10	0.00	5.10	o6	40.22	94	0	1.00	1.00	15:12	5.17	5.17	5.17	20.40	105.48	4.7%	
26	98.00	4.20	0.00	4.20	o6	40.53	74	0	1.00	1.00	15:14	4.04	4.04	4.04	18.90	76.42	3.4%	
27	103.00	3.30	0.00	3.30	o6	40.68	46	0	1.00	1.00	15:16	2.51	2.51	2.51	16.50	41.43	1.8%	
28	108.00	2.00	0.00	2.00	o6	40.06	47	0	1.00	1.00	15:18	2.60	2.60	2.60	10.00	26.05	1.2%	
29	113.00	0.00	0.00	0.00	E						15:20			0.00	0.00	0.00	0.0%	

ADV (Acoustic Doppler Velocimeter)





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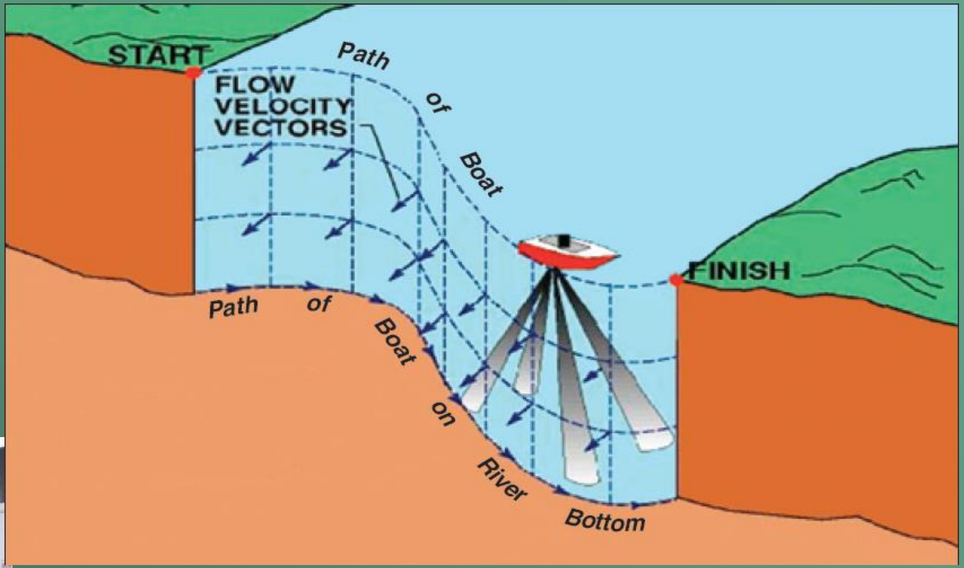
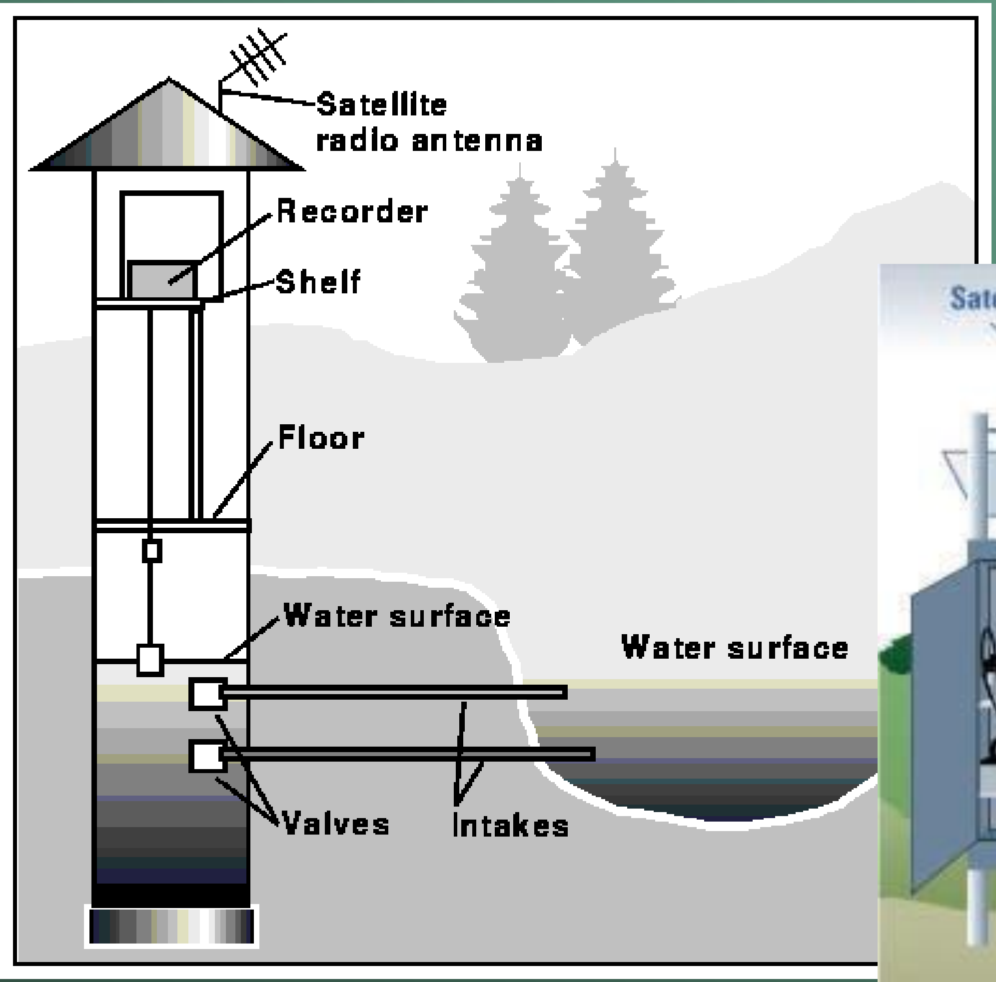
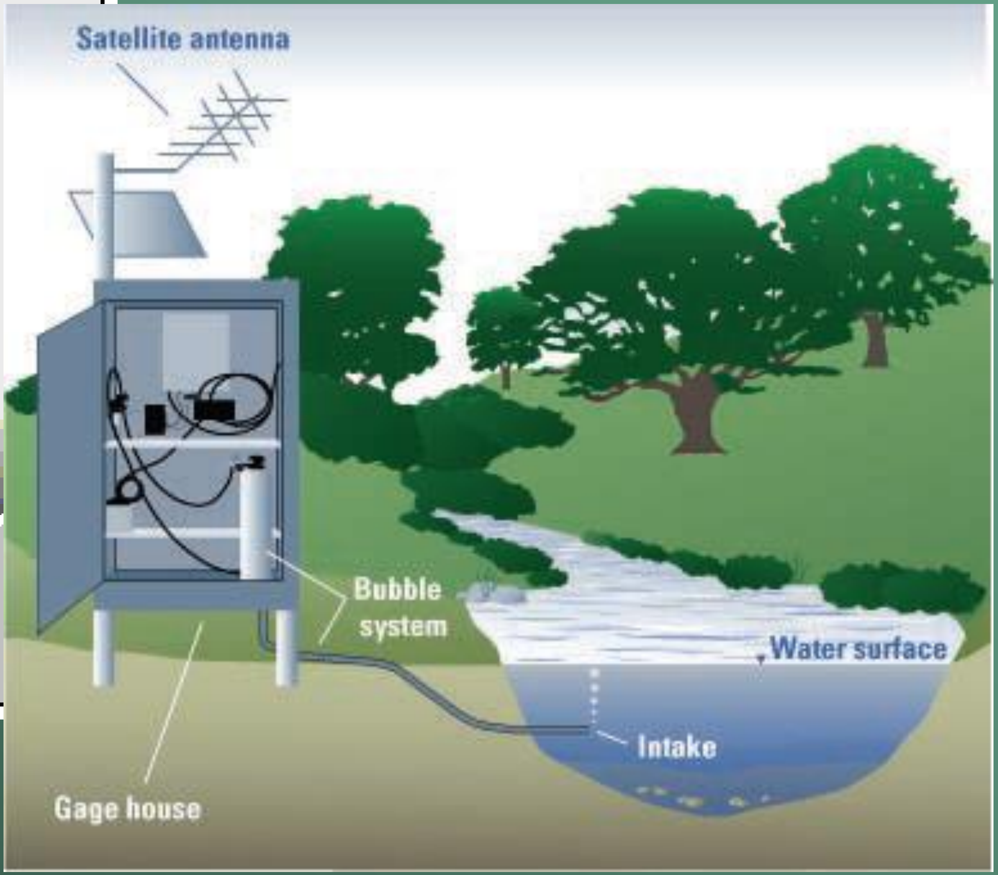
ADCP (Acoustic Doppler Current Profiler)



How is the level (Stage) of the water collected?





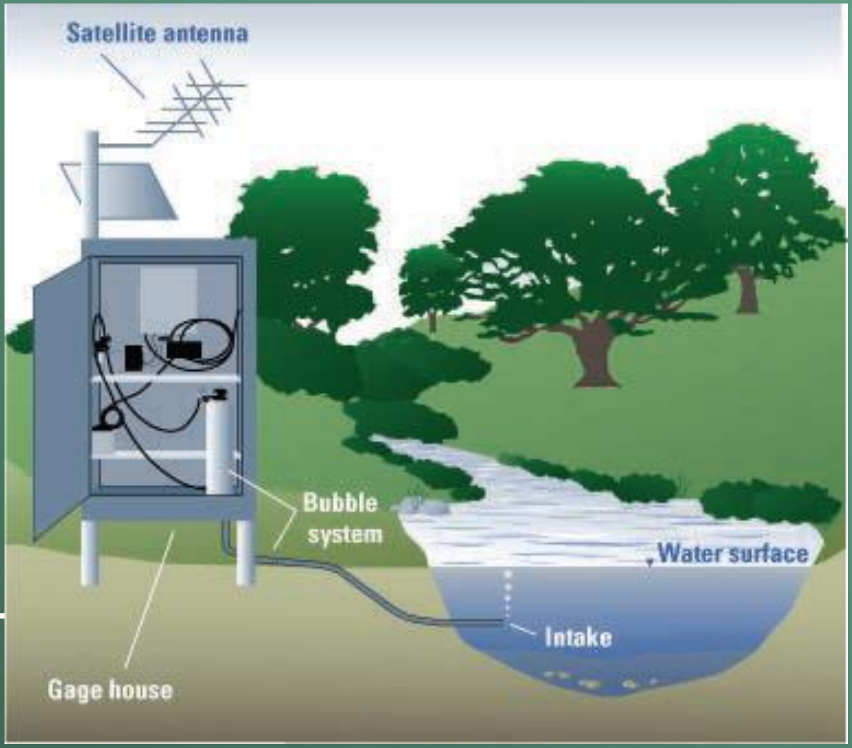
What is a USGS Gaging Station?

A device that can provide continuous information on precipitation, surface water quantity and quality, or groundwater.

USGS

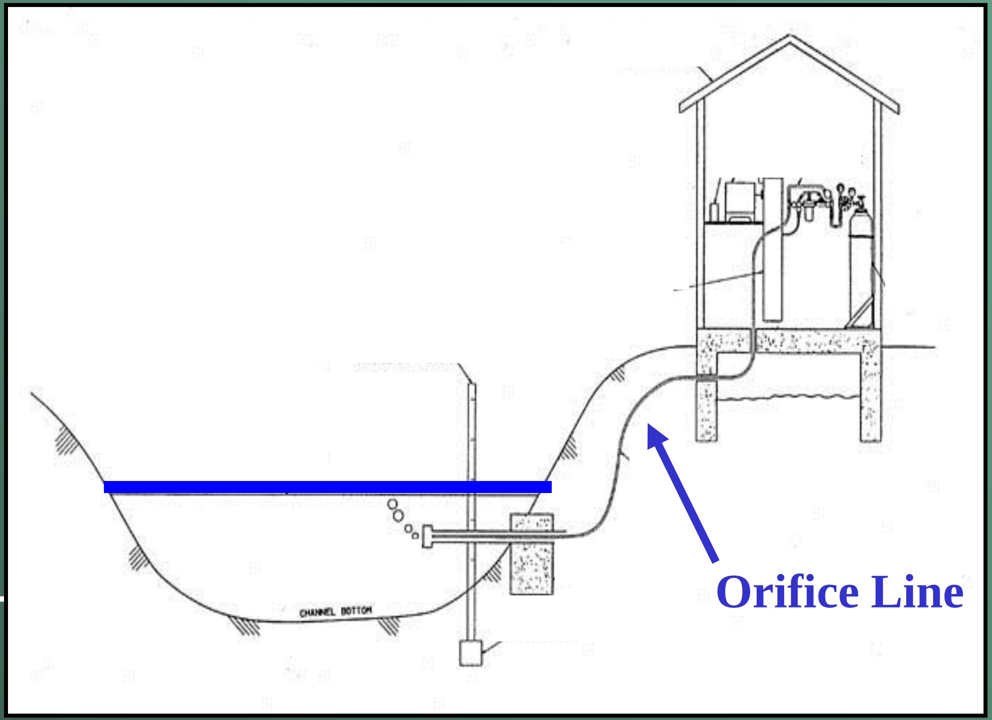
How Does a Stream Gage Work?

It tracks water-level rises and falls



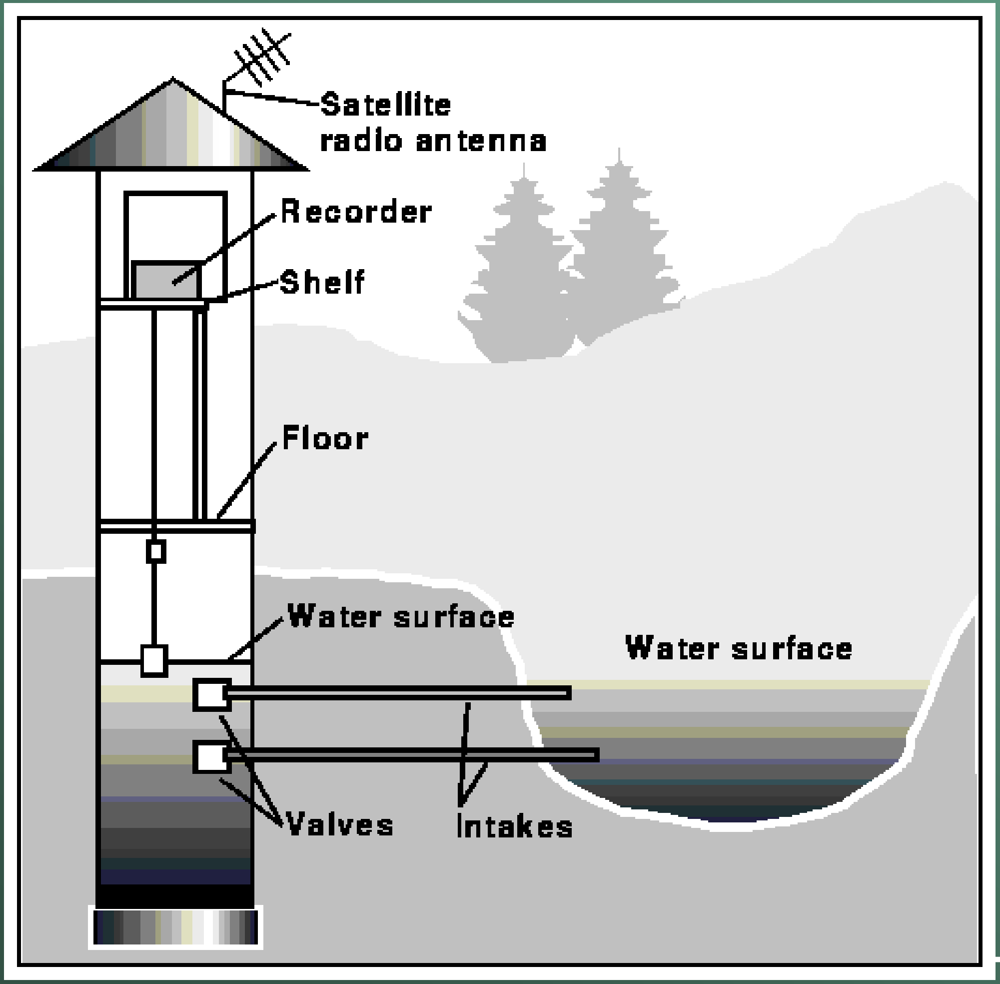
Stage can be sensed using PRESSURE TRANSDUCERS

Kentucky River @ Lock 10



USGS

Stage can be sensed using STILLING WELLS

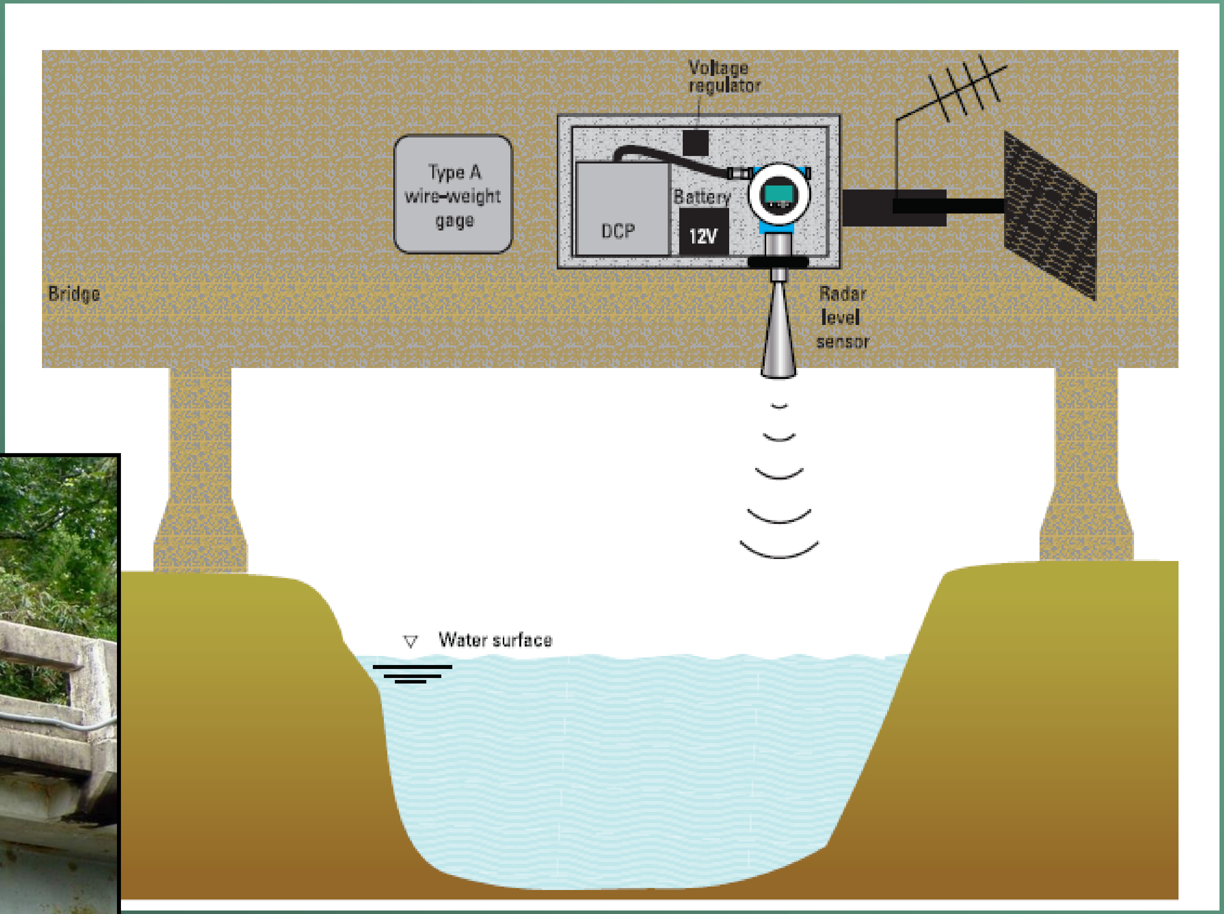


Kentucky River @ Lock 4

USGS

Non-Contact Stage Measurement

Radar Technology

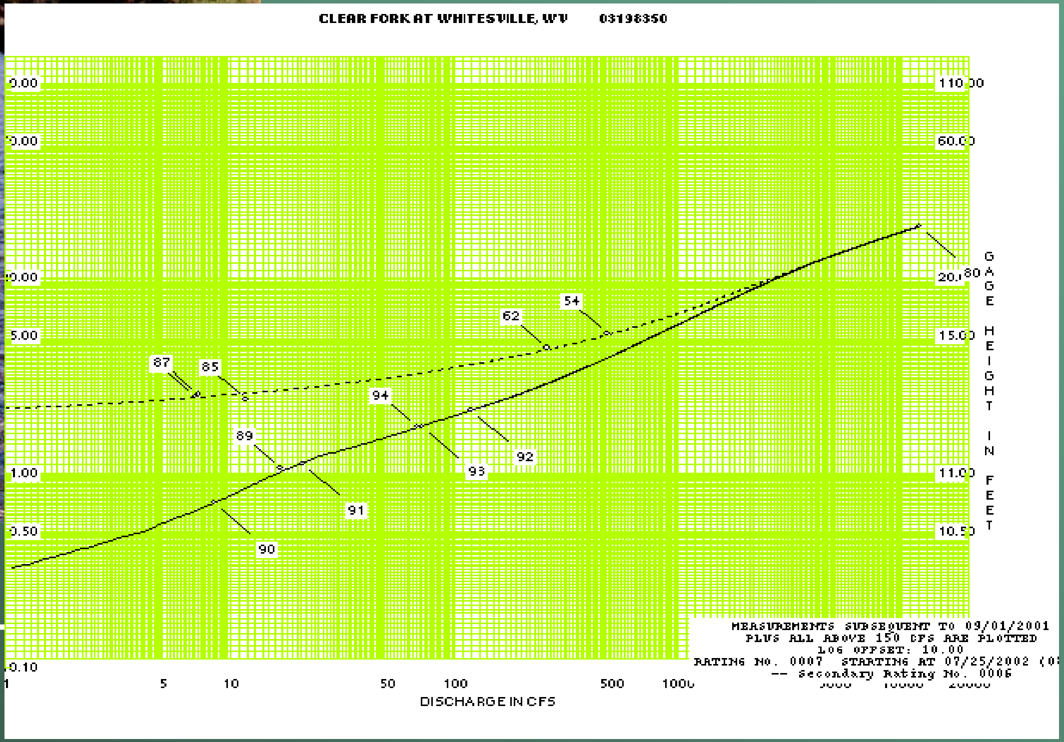


USGS

Most users of streamflow information need to know the discharge of the stream

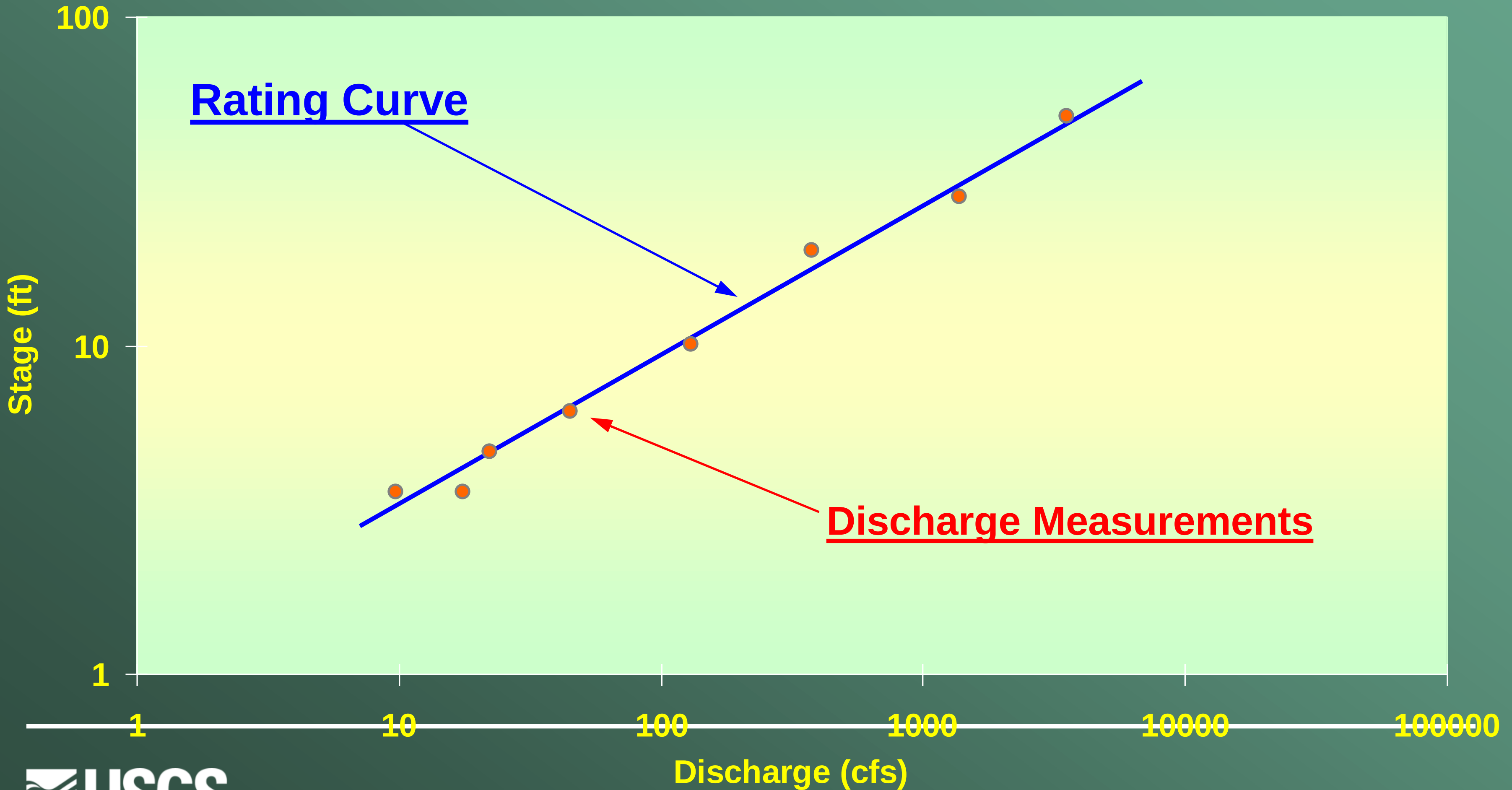
Discharge Measurement by wading methods

Stage data becomes streamflow (CFS) by means of a rating curve – this is labor intensive and requires great skill.

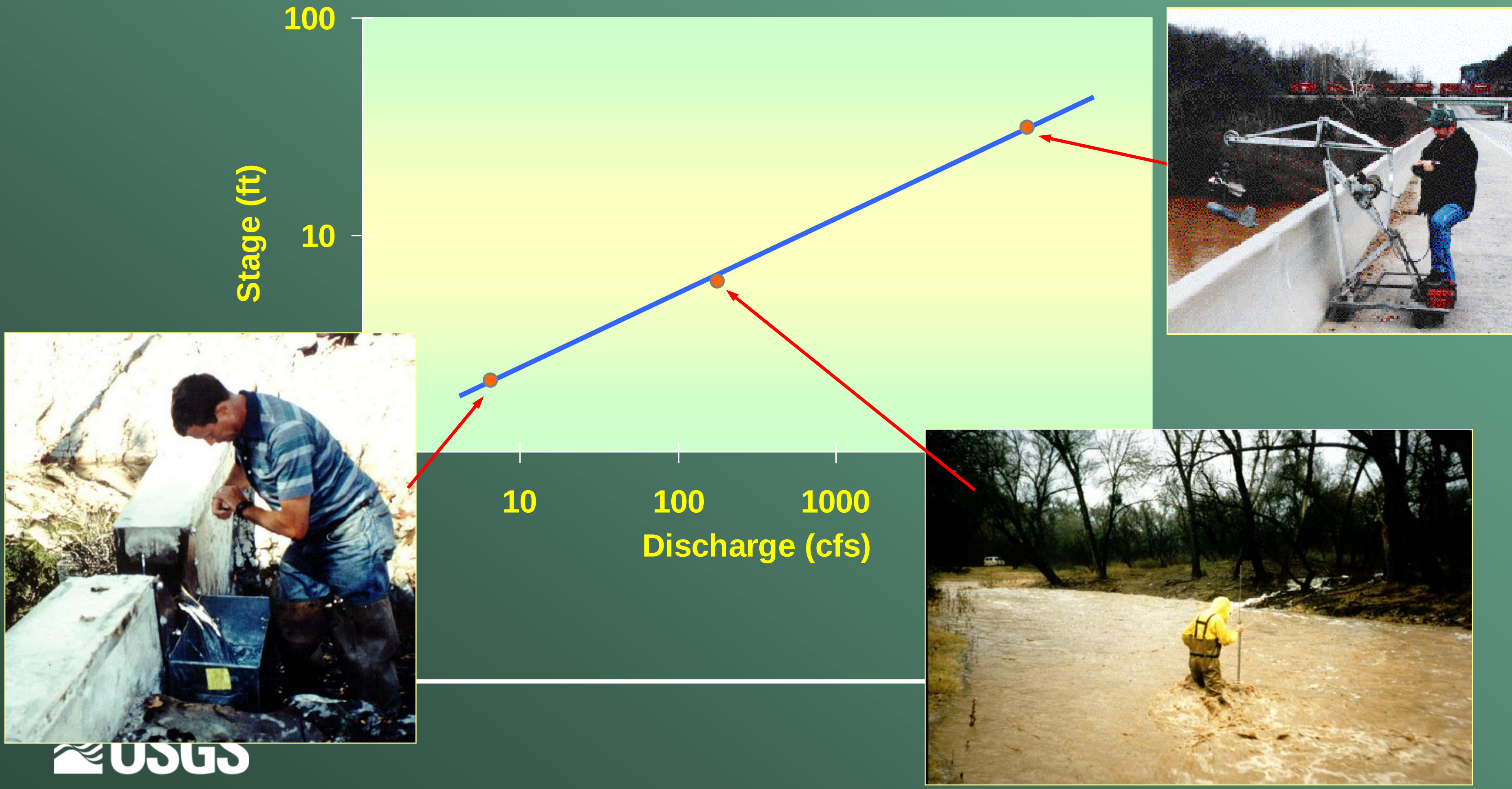


USGS

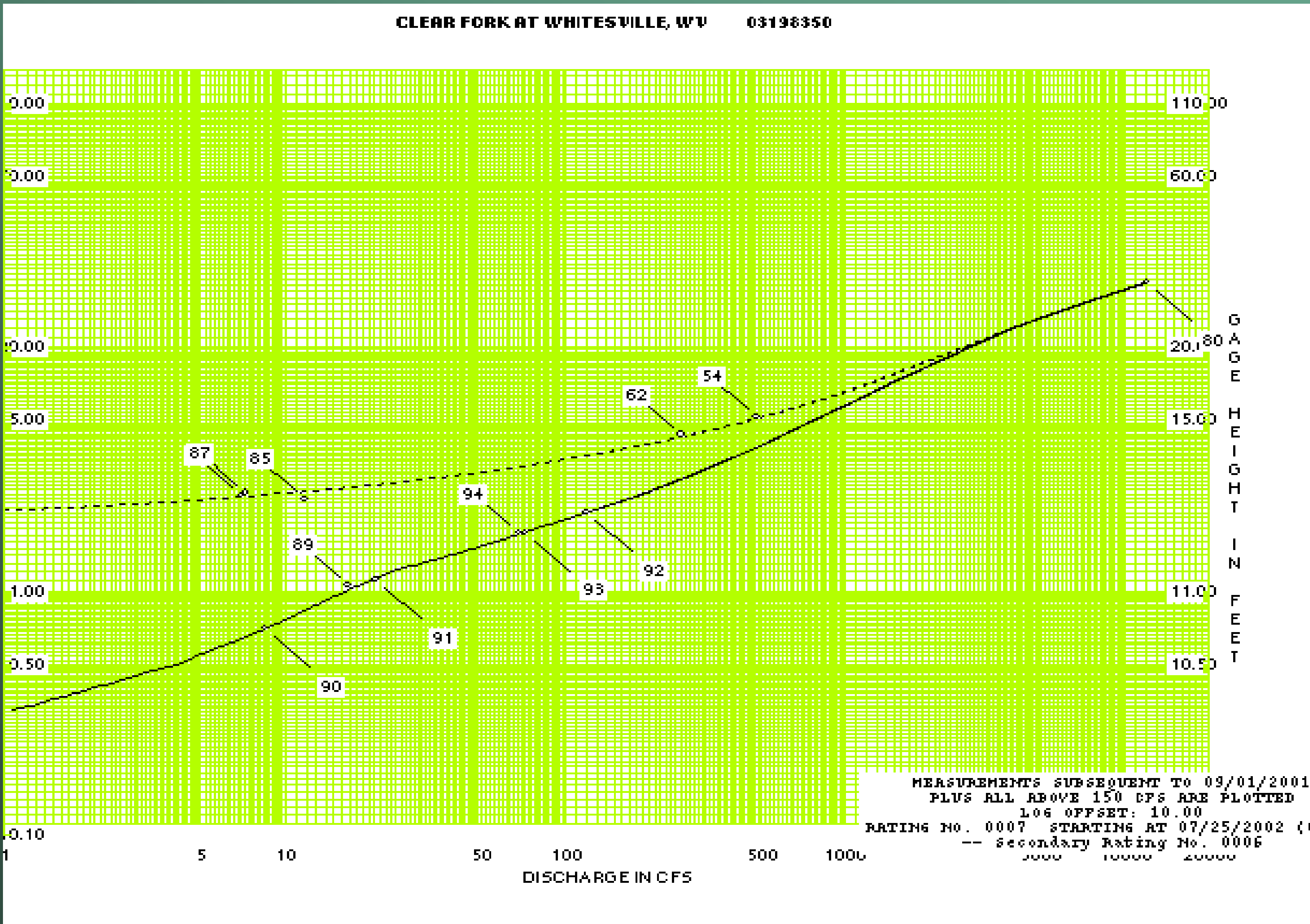
Discharge measurements are used to develop rating curves



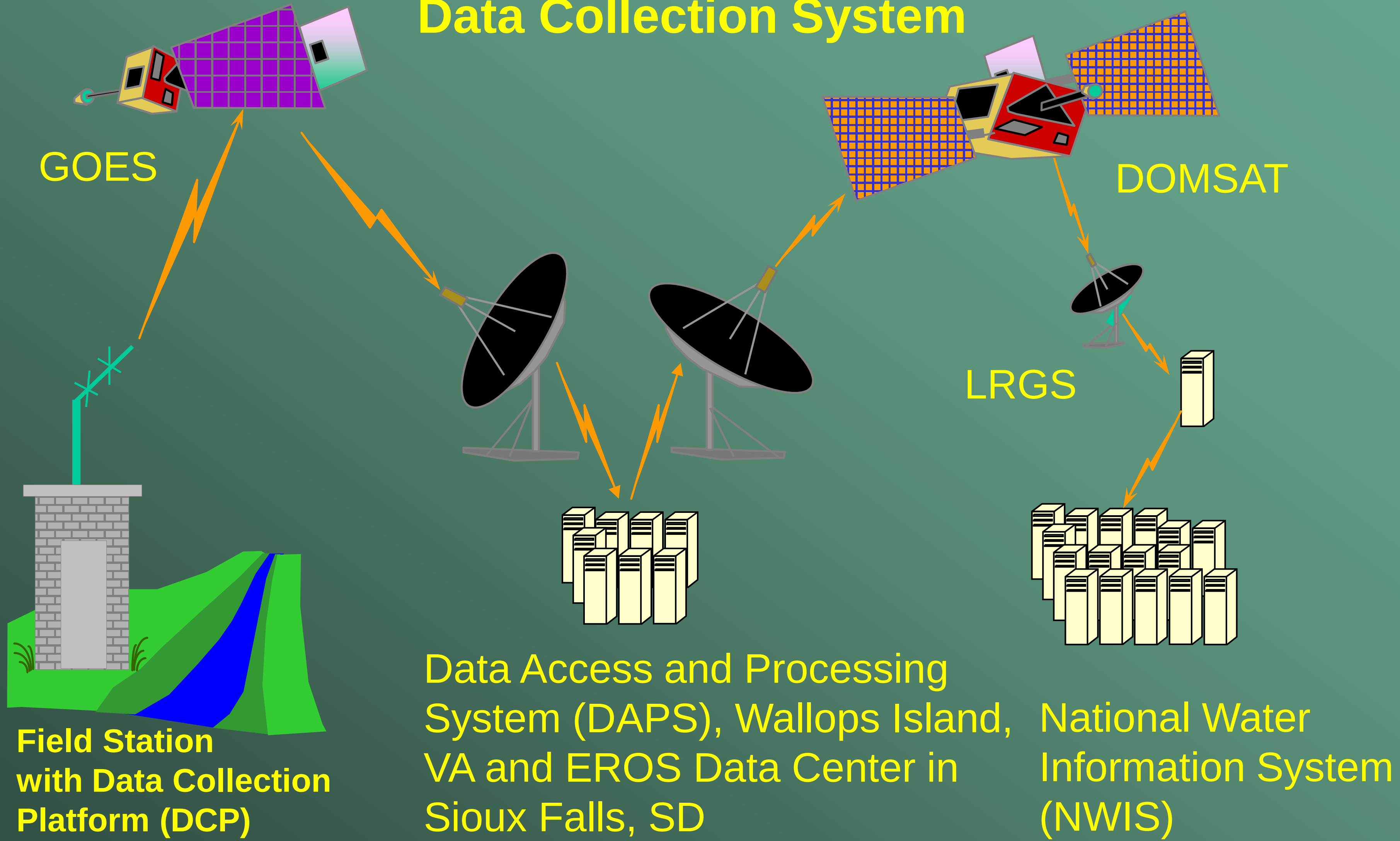
Discharge must be measured at all stages



The Rating Curve



USGS GOES near real-time Data Collection System



USGS science for a changing world

National Water Information System: Web Interface

USGS Water Resources (District Access)

News updated April, 2012

Current Conditions for Kentucky: Streamflow -- 205 site(s

PROVISIONAL DATA SUBJECT TO REVISION

--- Predefined displays ---	Group table by	Select sites by number or name
Kentucky Streamflow Table	Major River Basin	go

Cu
curr

Station Number	Station name	Date/Ti		
Undefined				
03213700	TUG FORK AT WILLIAMSON, WV	06/05 13:0		
03378500	WABASH RIVER AT NEW HARMONY, IN	06/05 11:3		
03381700	OHIO RIVER AT OLD SHAWNEETOWN, IL-KY	06/05 10:3		
	[Radar]	06/05 10:3		
Other				
03373550	ORANGEVILLE RISE AT ORANGEVILLE, IN	06/05 12:3		
Ohio River Mainstem				
03216000	OHIO RIVER AT ASHLAND, KY	06/05 13:0		
03216600	OHIO RIVER AT GREENUP DAM NEAR GREENUP, KY			
	STAGE - HEADWATER	06/05 12:3		
	STAGE - TAILWATER	06/05 12:3		
03217200	OHIO RIVER AT PORTSMOUTH, OH	06/05 13:0		
03238000	OHIO RIVER AT MAYSVILLE, KY	06/05 13:00 EDT	33.94	--
03238680	2~OHIO RIVER AT MELDAHL DAM NEAR CHILO, OH	06/05 12:30 EDT	15.08	--
	HEADWATER	06/05 12:30 EDT	12.55	--
03255000	OHIO RIVER AT CINCINNATI, OH	06/05 13:00 EDT	26.92	--
03277200	OHIO RIVER AT MARKLAND DAM NEAR WARSAW, KY	06/05 12:45 EDT	15.18	--
03293548	OHIO RIVER AT 2ND STREET BRIDGE AT LOUISVILLE, KY	06/05 13:00 EDT	12.74	--
03293551	2~OHIO RIVER AT PENN CENTRAL BRIDGE AT LOUISVILLE,KY	06/05 12:15 EDT	12.29	--
03294500	OHIO RIVER AT LOUISVILLE, KY	06/05 13:00 EDT	13.01	67,100
03294600	OHIO RIVER AT KOSMOSDALE, KY	06/05 13:00 EDT	10.73	--
03303280	OHIO RIVER AT CANNELTON DAM AT CANNELTON, IN	06/05 12:00 CDT	12.37	--
03304300	OHIO RIVER AT NEWBURGH LOCK AND DAM, IN	06/05 12:00 CDT	14.76	--
03322000	OHIO RIVER AT EVANSVILLE, IN	06/05 12:00 CDT	14.54	--
03322190	OHIO RIVER AT HENDERSON, KY	06/05 11:45 CDT	12.96	--
03322420	OHIO RIVER AT UNIONTOWN DAM, KY	06/05 12:00 CDT	14.51	--
03384500	OHIO RIVER AT DAM 51 AT GOLCONDA, IL	06/05 12:00 CDT	29.55	--
03399800	OHIO RIVER AT SMITHLAND DAM, SMITHLAND, KY	06/05 12:00 CDT	12.77	--
	HEADWATER	06/05 12:00 CDT	12.39	--
03611000	OHIO RIVER AT PADUCAH, KY	06/05 12:00 CDT	15.66	--
03611500	OHIO RIVER AT METROPOLIS, IL	06/05 11:15 CDT	15.46	95,100
03612500	OHIO RIVER AT DAM 53 NEAR GRAND CHAIN, IL	06/05 12:00 CDT	12.91	--
03612600	OHIO RIVER AT OLMSTED	06/05 12:00 CDT	9.88	--
Lakes and Reservoirs				

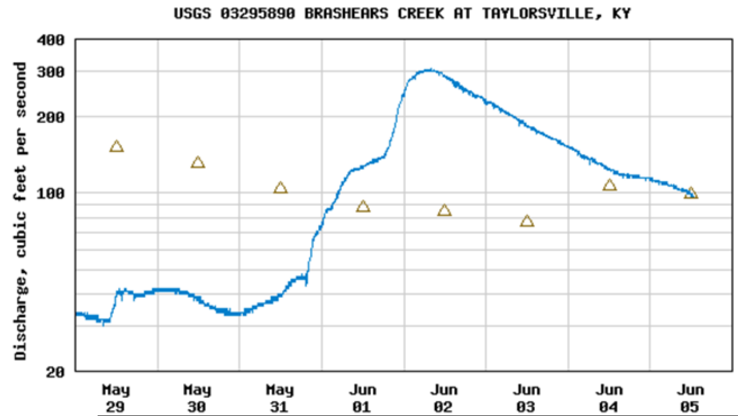
Available Parameters	Available Period		Output format	Begin date
All 4 Available Parameters for this site			Graph	2012-05-29
00060 Discharge	2007-10-01	2012-06-05	Graph w/ stats	End date
00065 Gage height	2012-02-06	2012-06-05	Graph w/o stats	2012-06-05
00045 Precipitation	2012-02-06	2012-06-05	Table	GO
70969 DCP battery voltage	2012-04-13	2012-06-05	Tab-separated	

Summary of all available data for this site

Instantaneous-data availability statement

Discharge, cubic feet per second

Most recent instantaneous value: 97 06-05-2012 12:45 EDT



USGS 03295890 BRASHEARS CREEK AT TAYLORSVILLE, KY

Available data for this site | SUMMARY OF ALL AVAILABLE DATA | GO

Stream Site

DESCRIPTION:
Latitude 38°02'13", Longitude 85°20'27" NAD27
Spencer County, Kentucky, Hydrologic Unit 05140102
Drainage area: 259.0 square miles
Datum of gage: 466.85 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations (availability statement)	2007-10-01	2012-06-05	
Daily Data			
Discharge, cubic feet per second	1981-07-01	2012-06-04	20447
Daily Statistics			
Discharge, cubic feet per second	1981-07-01	2011-11-07	11087
Monthly Statistics			
Discharge, cubic feet per second	1981-07	2011-11	
Annual Statistics			
Discharge, cubic feet per second	1981	2012	
Peak streamflow	1982-01-23	2010-05-03	29
Field measurements	1981-05-19	2012-05-09	266
Field/Lab water-quality samples	1981-10-16	1995-08-21	137
Additional Data Sources	**Begin Date**	**End Date**	**Count**
Instantaneous-Data Archive **offsite**	1987-10-01	2007-09-30	188479
Annual Water-Data Report (pdf) **offsite**	2006	2011	6

OPERATION:
Record for this site is maintained by the USGS Kentucky Water Science Center
Email questions about this site to Kentucky Water Science Center Water-Data Inquiries

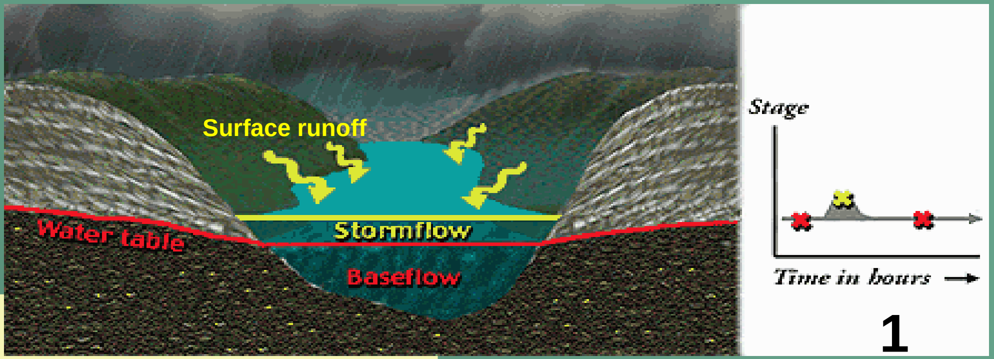
Hydrologic Surveillance (Data)

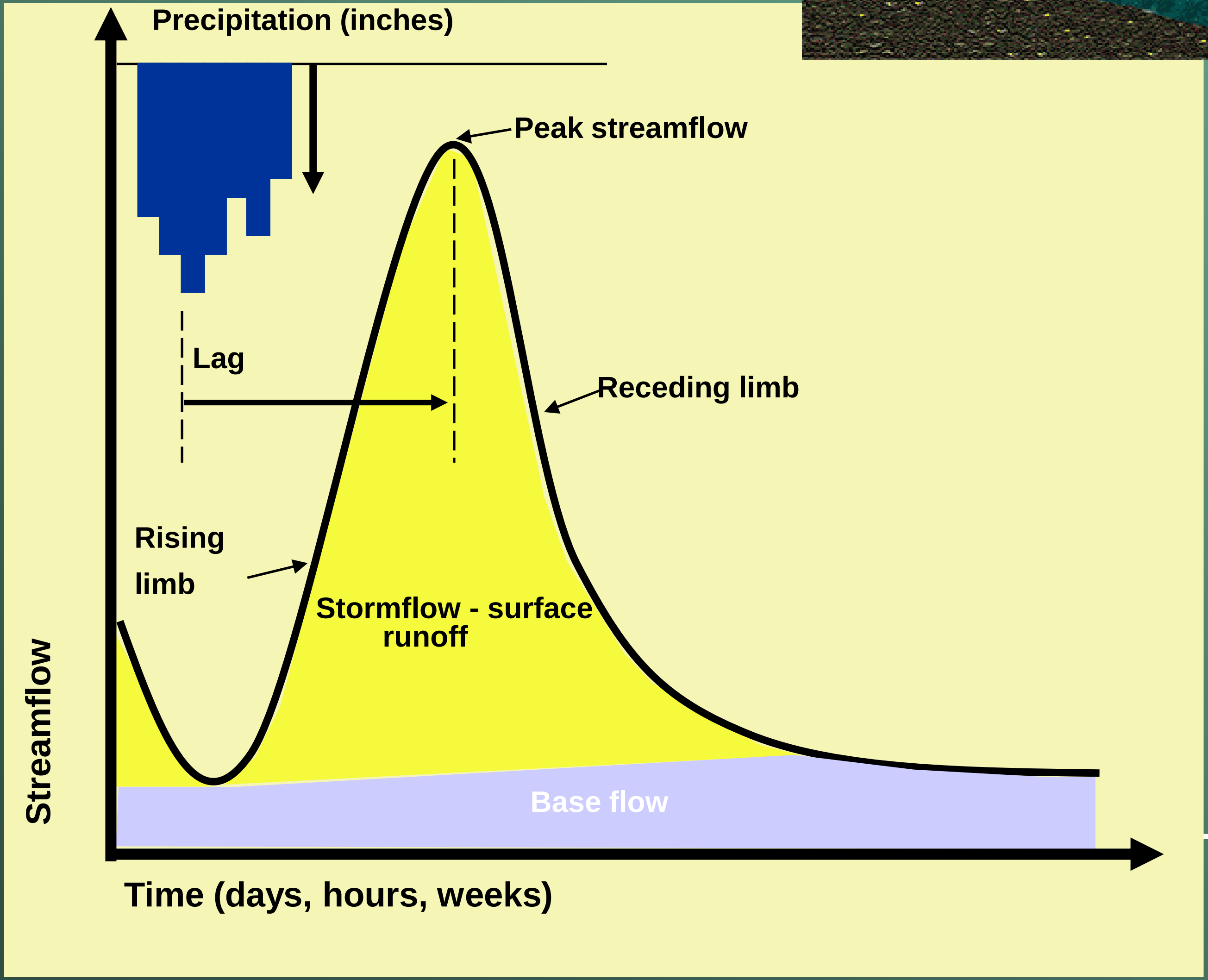
Surface Water Data

Streamflow

Volume of water that passes a point on a stream per unit of time

USGS

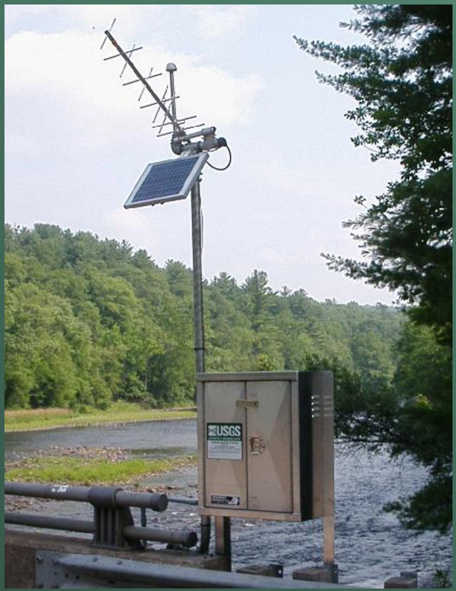

Surface runoff
Water table
Stormflow
Baseflow
Stage
Time in hours
1


Precipitation (inches)
Peak streamflow
Lag
Receding limb
Rising
limb
Stormflow - surface
runoff
Base flow
Streamflow
Time (days, hours, weeks)

Surface Water

Our most popular product is from stream gaging.

Stream gaging: is a technique used to measure the discharge, or the volume of water moving through a channel per unit of time, of a stream.



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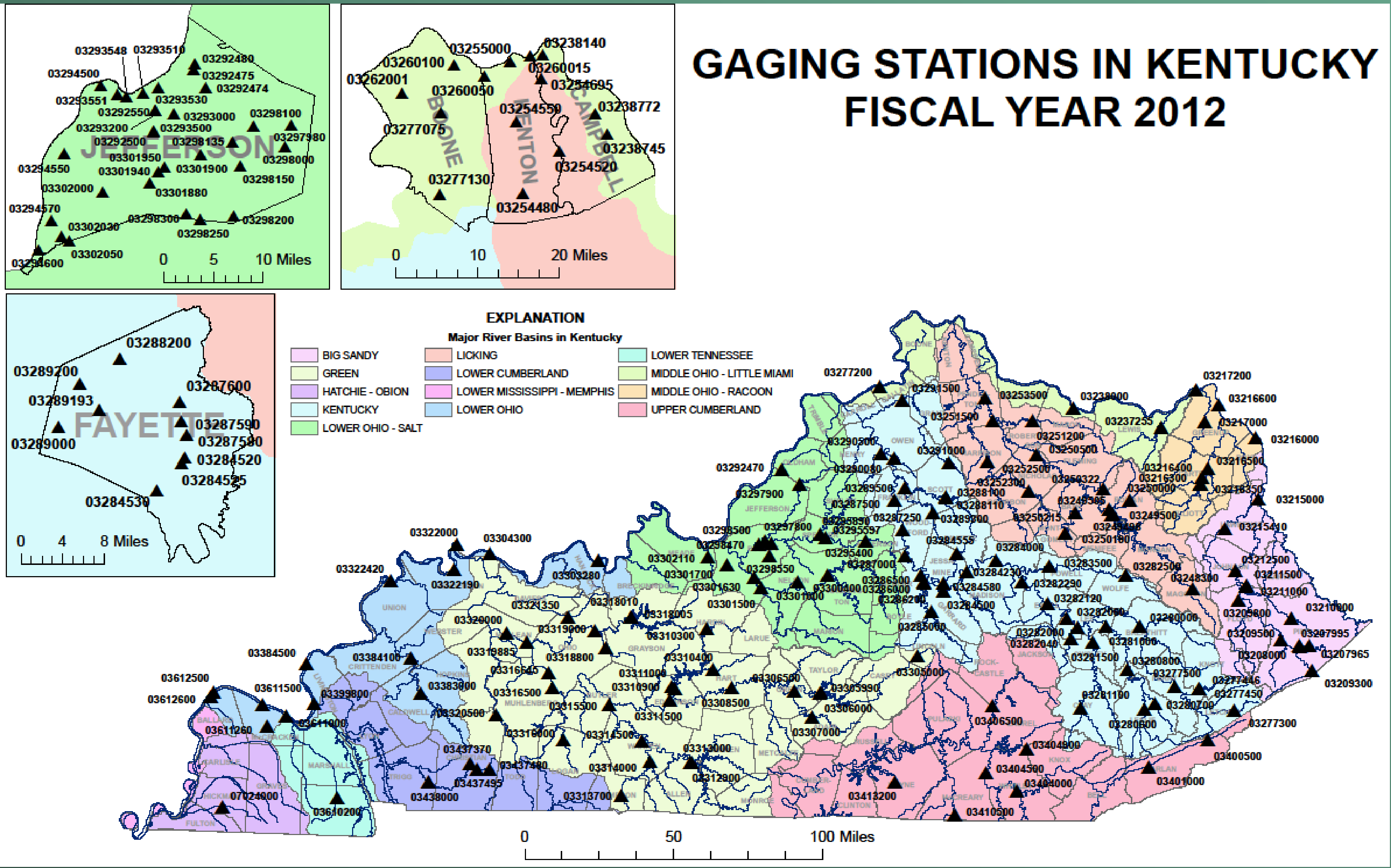
Kentucky Streamflow Gages



Surface Water – Stream Gaging

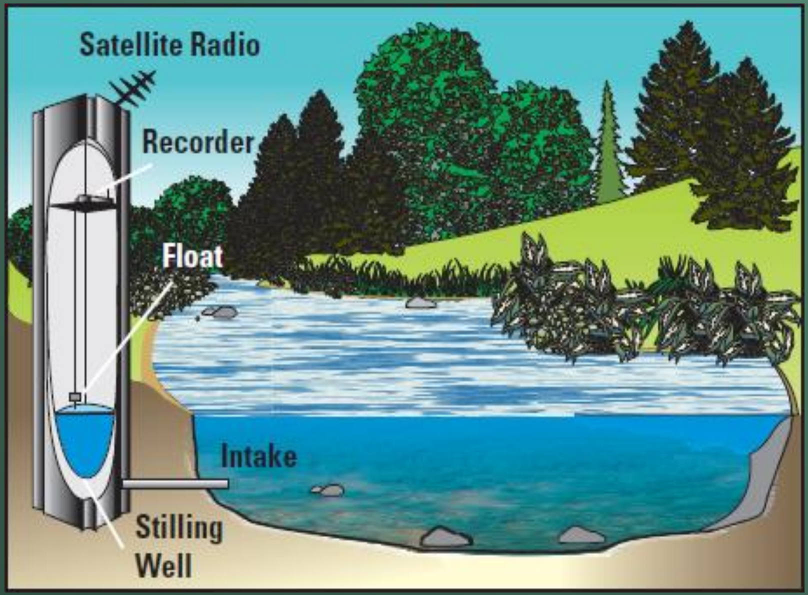
The elevation of the water surface in the stream channel, known as a stage or gage height, can be used to determine the discharge in a stream. When used in conjunction with velocity and cross-sectional area measurements, stage can be related to discharge for a stream.

USGS

Surface Water – Stream Gaging

How Are Streams Gaged?

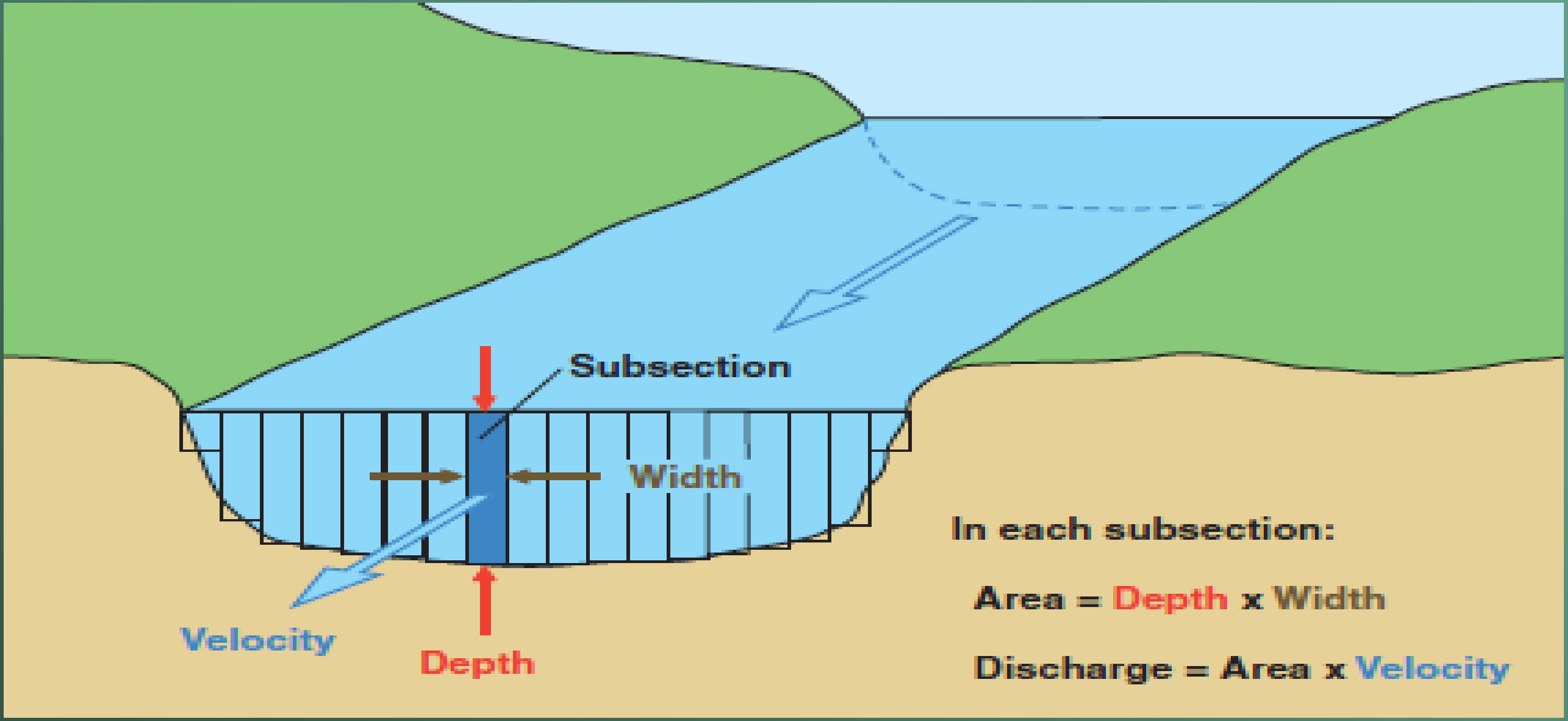
Stream gaging can be done by first measuring the stage, or water level, at a given location.



USGS

Surface Water – Stream Gaging

How Are Streams Gaged? (cont'd)

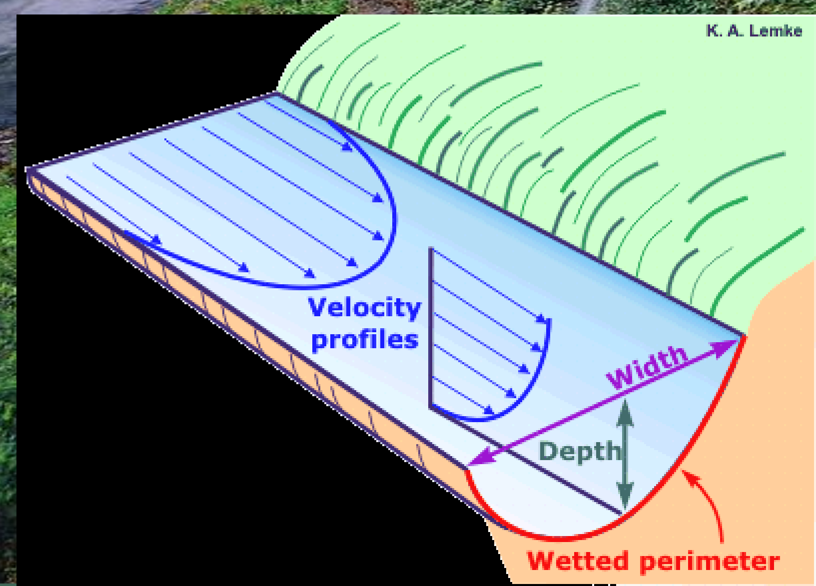


USGS

Measuring Streamflow

$$Q = V\bar{A}$$

$$A = w \times \bar{d}$$



DISCHARGE IS USUALLY MEASURED USING THE VELOCITY-AREA METHOD

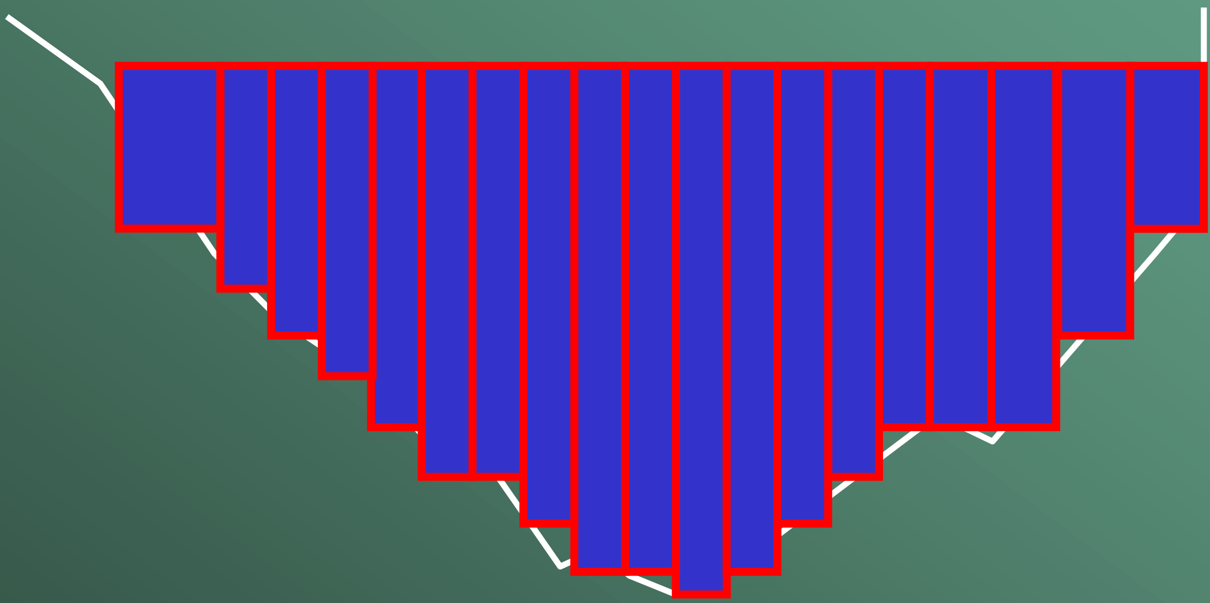
Discharge = (Area of water in cross section) x (Water velocity)

x Water Velocity

Cross section area

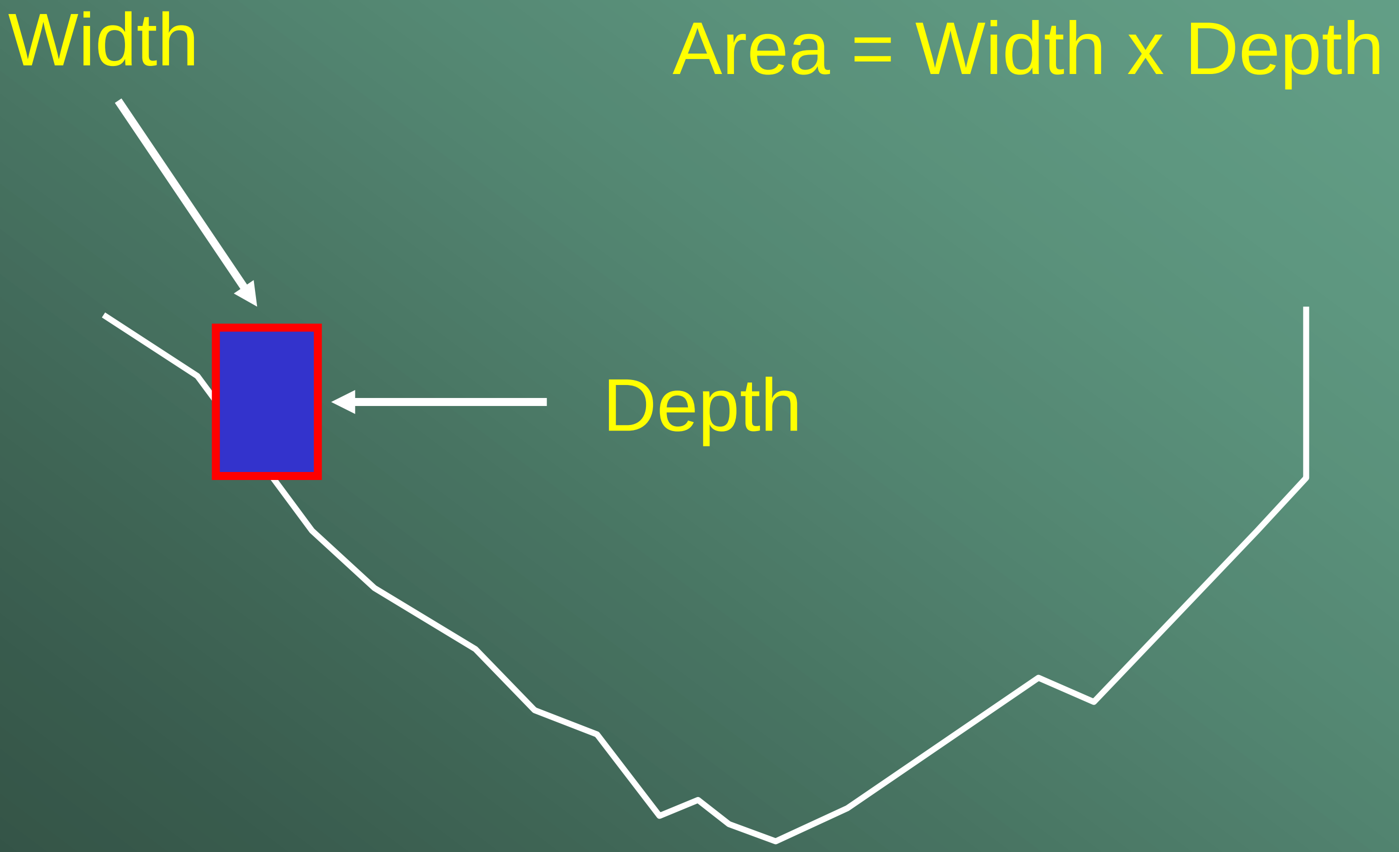
USGS

Channel cross section is divided into numerous sub sections

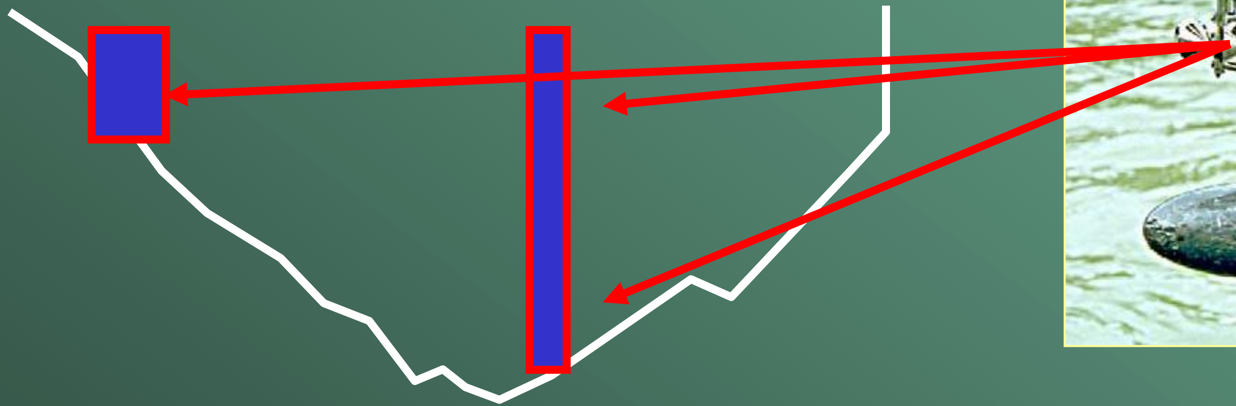


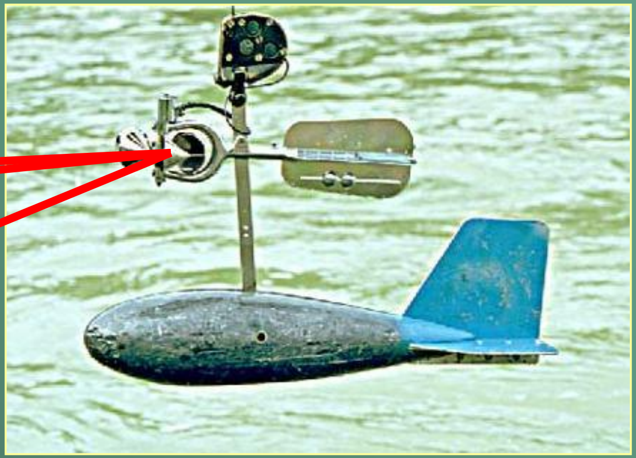
Discharge of each sub-section = Area x Average Water Velocity

Area of each sub-section determined by directly measuring width and depth



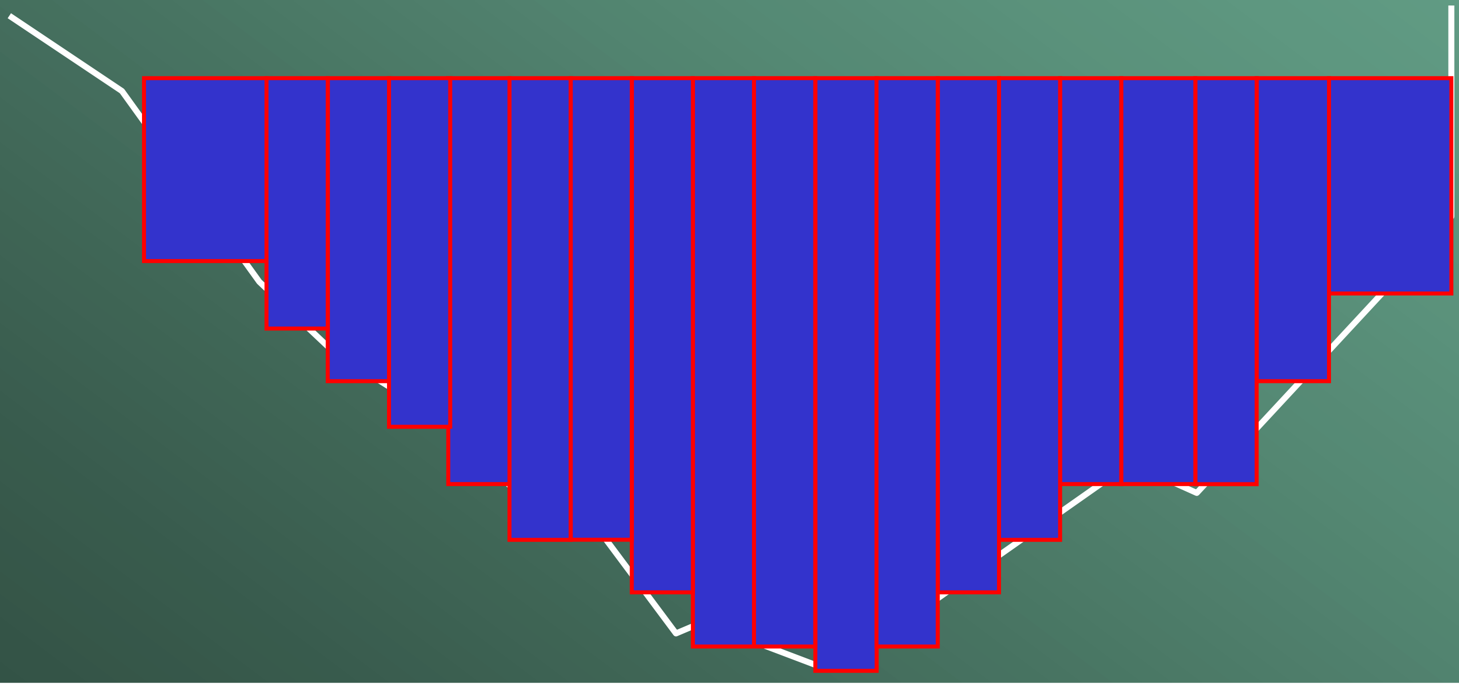
Water velocity in each sub-section is measured using a current meter at selected locations





Stream discharge is sum of discharges in all sub-sections

Total Discharge = ((Area$_1$ x Velocity $_1$) + (Area$_2$ + Velocity$_2$) + ….. (Area$_n$ x Velocity$_n$))

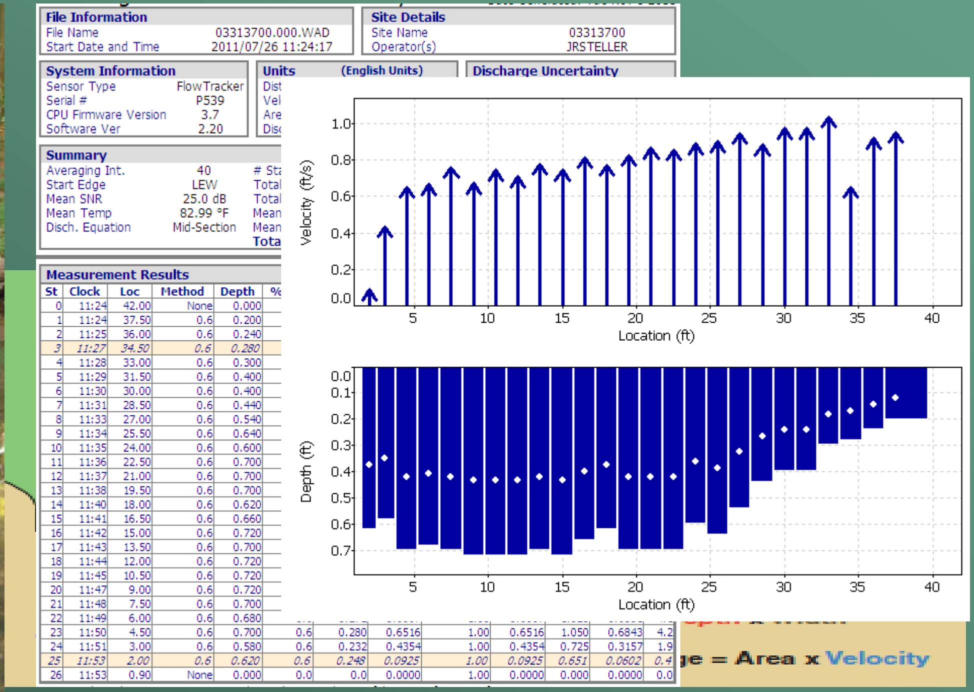


USGS

Surface Water – Stream Gaging

How Are Streams Gaged? (cont'd)

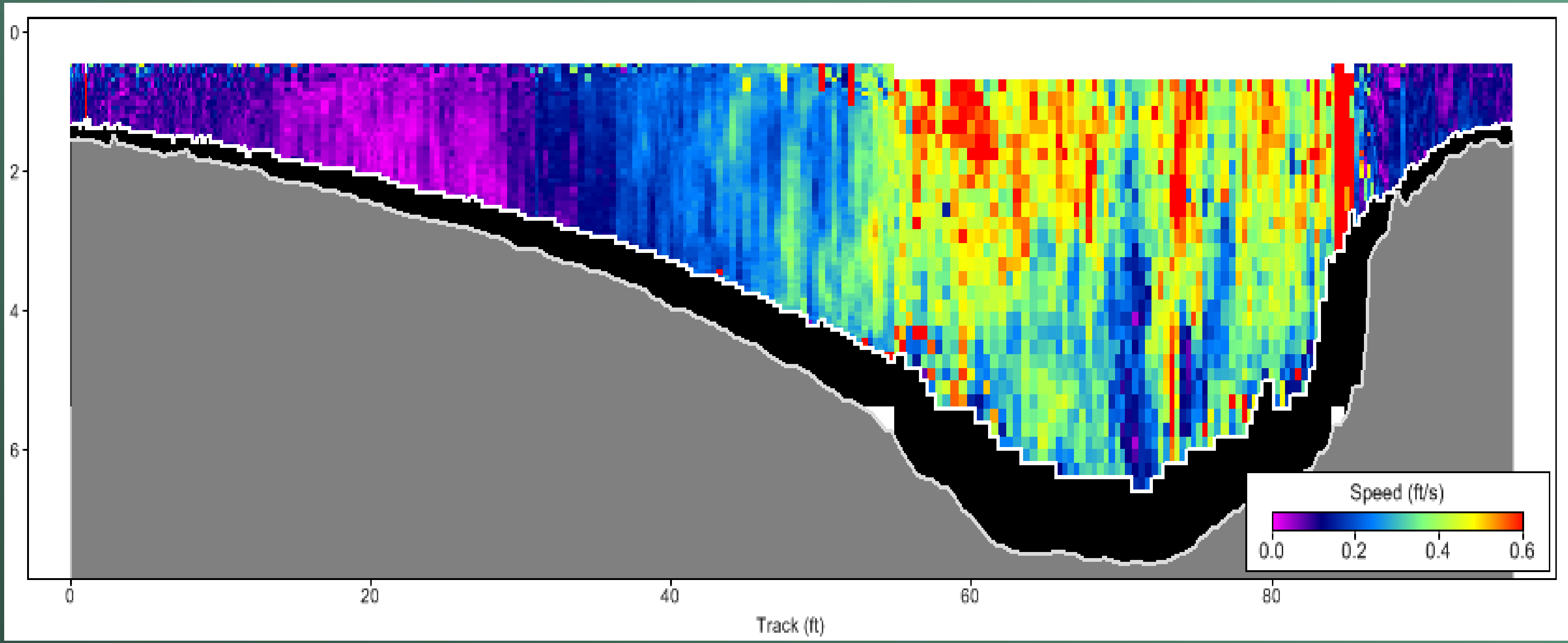
Subsection Method (cont'd) – How is velocity measured?



Surface Water – Stream Gaging

How Are Streams Gaged? (cont'd)

Current Meters – ADCP (Acoustic Doppler Current Profiler)

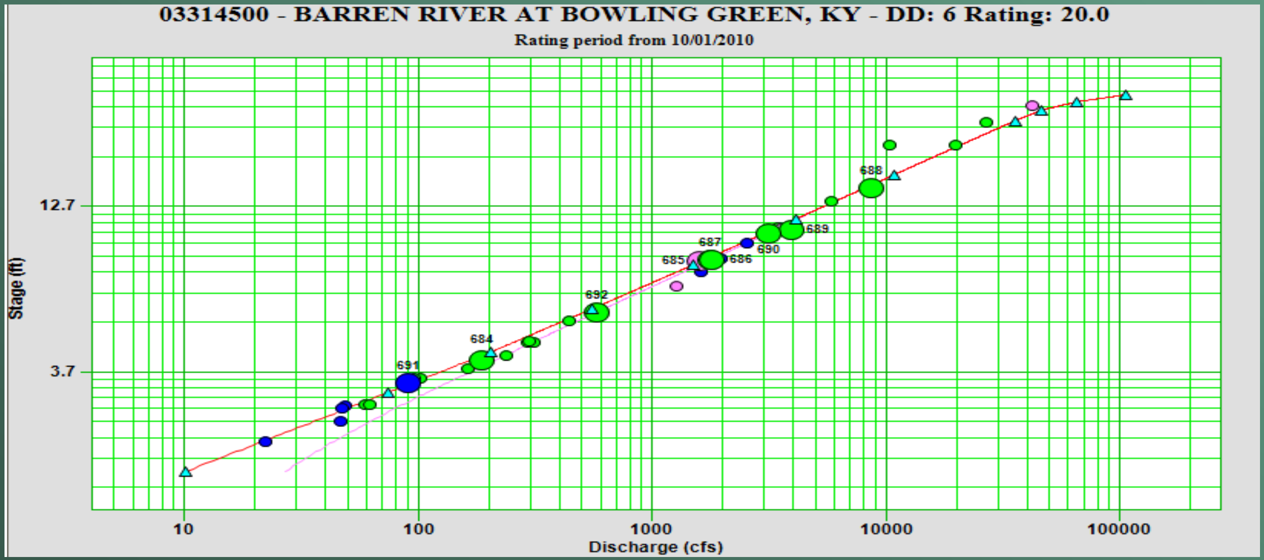


USGS

Surface Water – Stream Gaging

How Are Streams Gaged? (cont'd)

Finally, discharge, or the volume of water flowing in a stream over a set interval of time, can be computed and plotted.



Water Quality Data

Water Quality - Sampling

NASQAN – National Stream Quality Accounting Network.

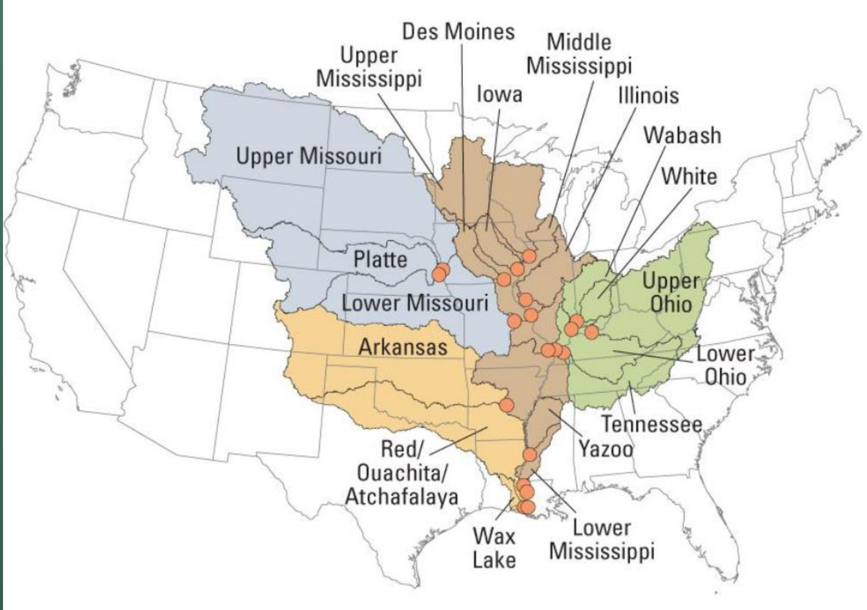
The major objective of the NASQAN program is to annually monitor and assess concentrations and loads of selected constituents delivered by major rivers to the coastal waters of the United States.

Monitor and identify major source areas in select inland sub-basins that contribute significantly to adverse conditions in receiving waters.

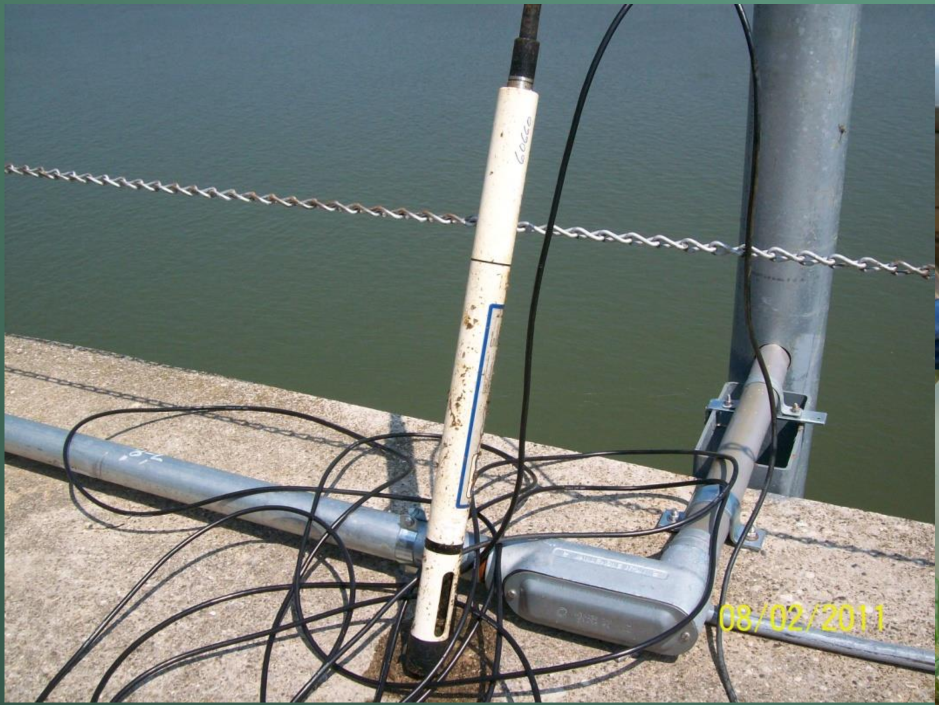
Water Quality - Sampling

NASQAN – National Stream Quality Accounting Network (cont'd).

- 33 National NASQAN monitoring stations
- 20 monitoring stations in the Mississippi River Basin



Real-Time Water-Quality Monitoring



USGS

Ground Water Data

Groundwater Gages

- **Water-supply evaluations**
- **Drought prediction and monitoring**
- **Long-term hydrologic perspective**

USGS



USGS

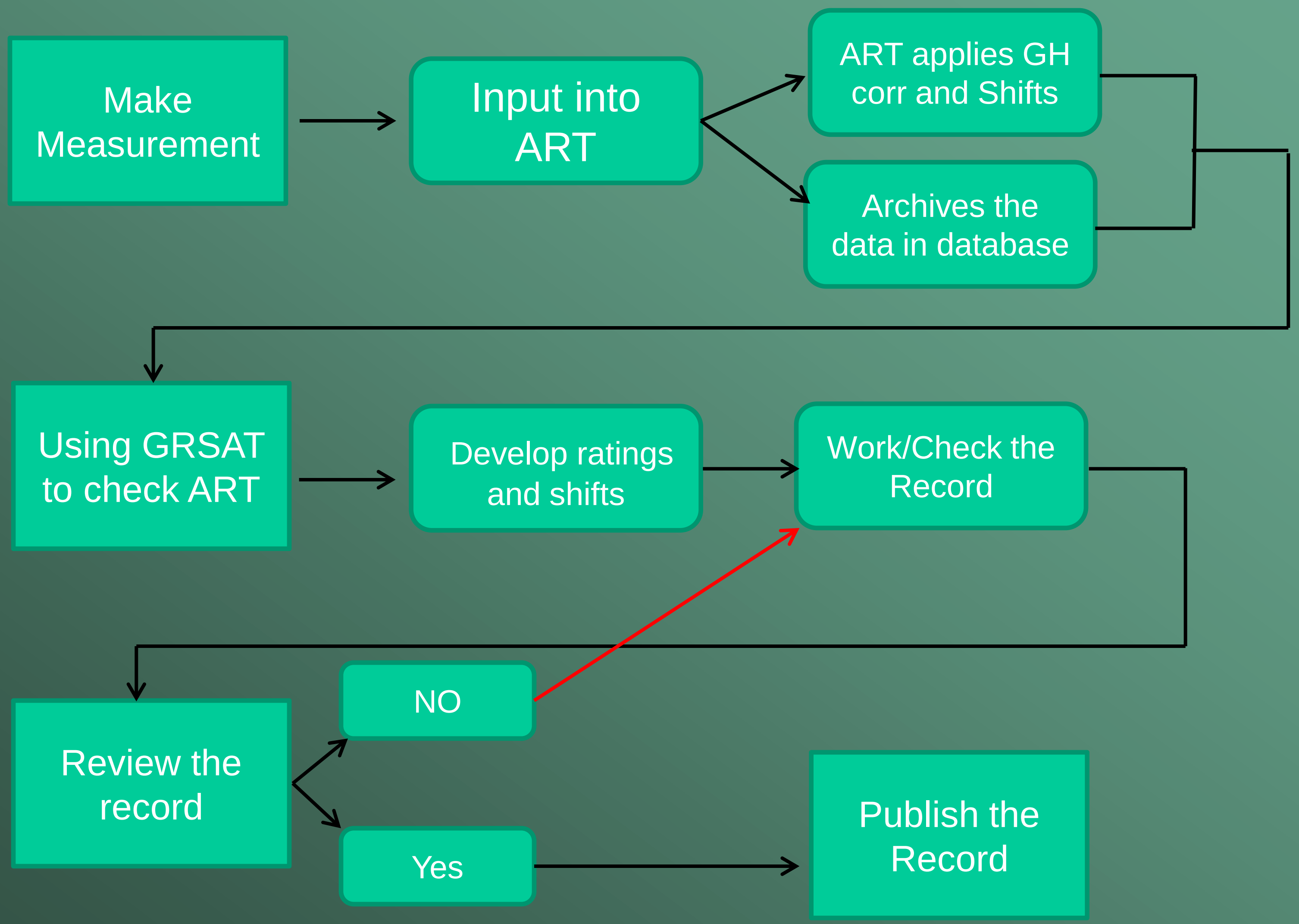
Precipitation Data

Precipitation Gages

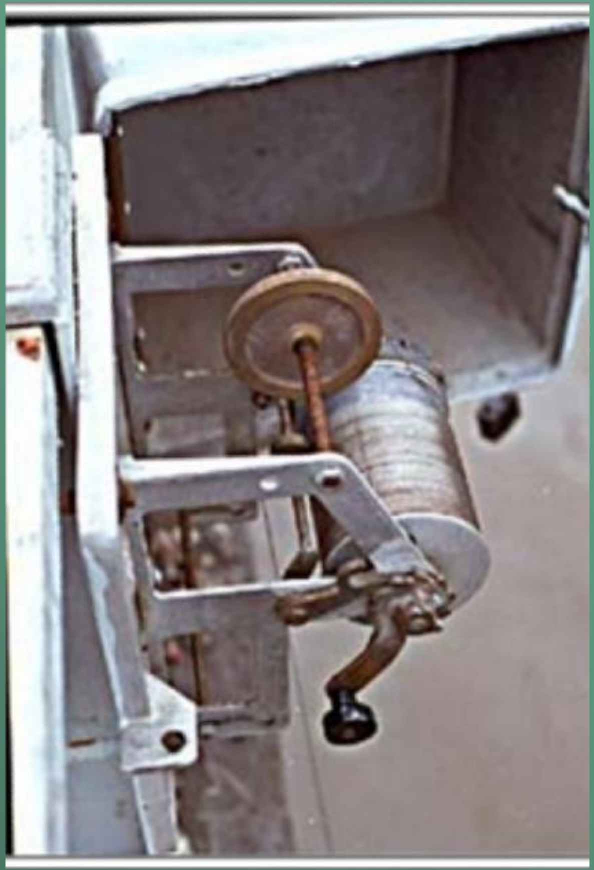
- Measure intensity and depth of accumulation
- Used by NWS for river flood forecasting
- Drought monitoring
- Non-published data only available for 30 days

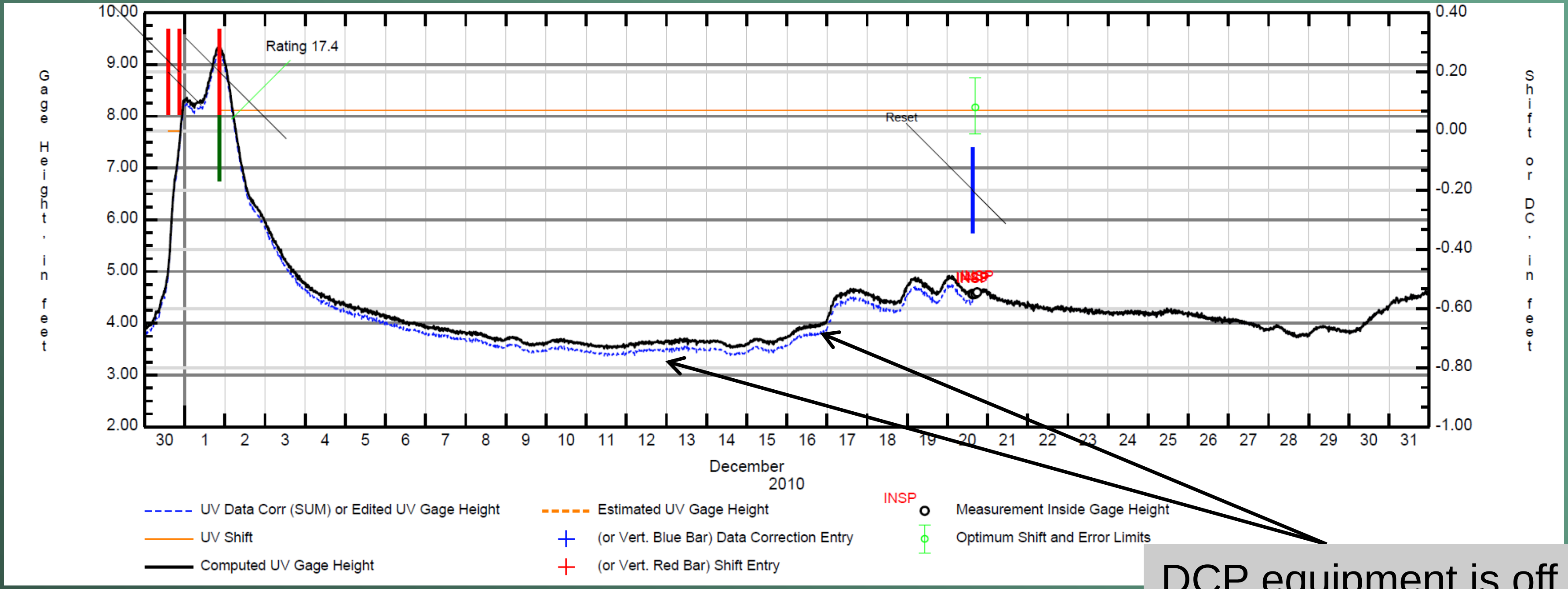
USGS

Computation of Discharge Records


Make Measurement
Input into ART
ART applies GH corr and Shifts
Archives the data in database
Using GRSAT to check ART
Develop ratings and shifts
Work/Check the Record
Review the record
NO
Yes
Publish the Record

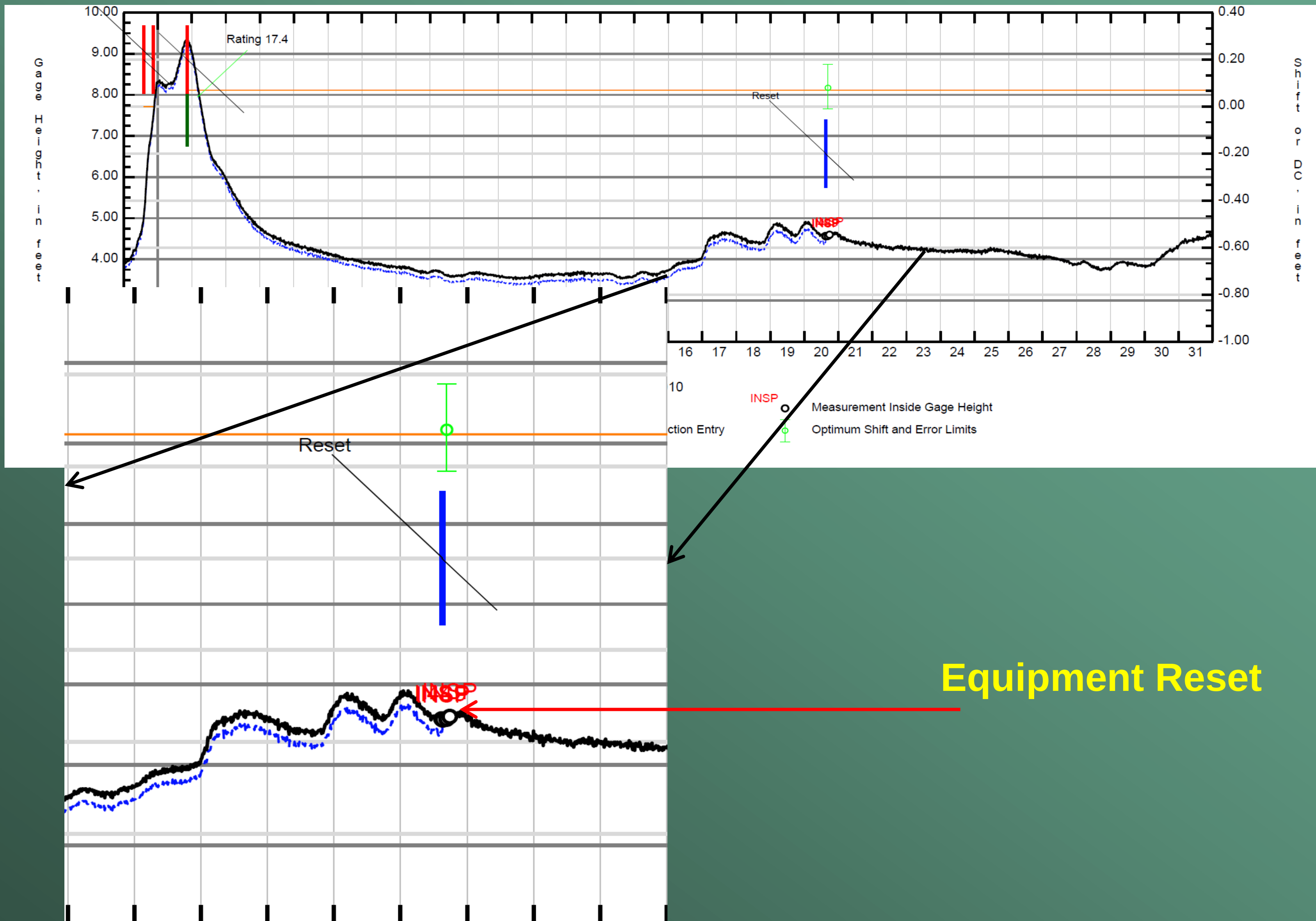
Gage Height Corrections





DCP equipment is off from Reference Gage

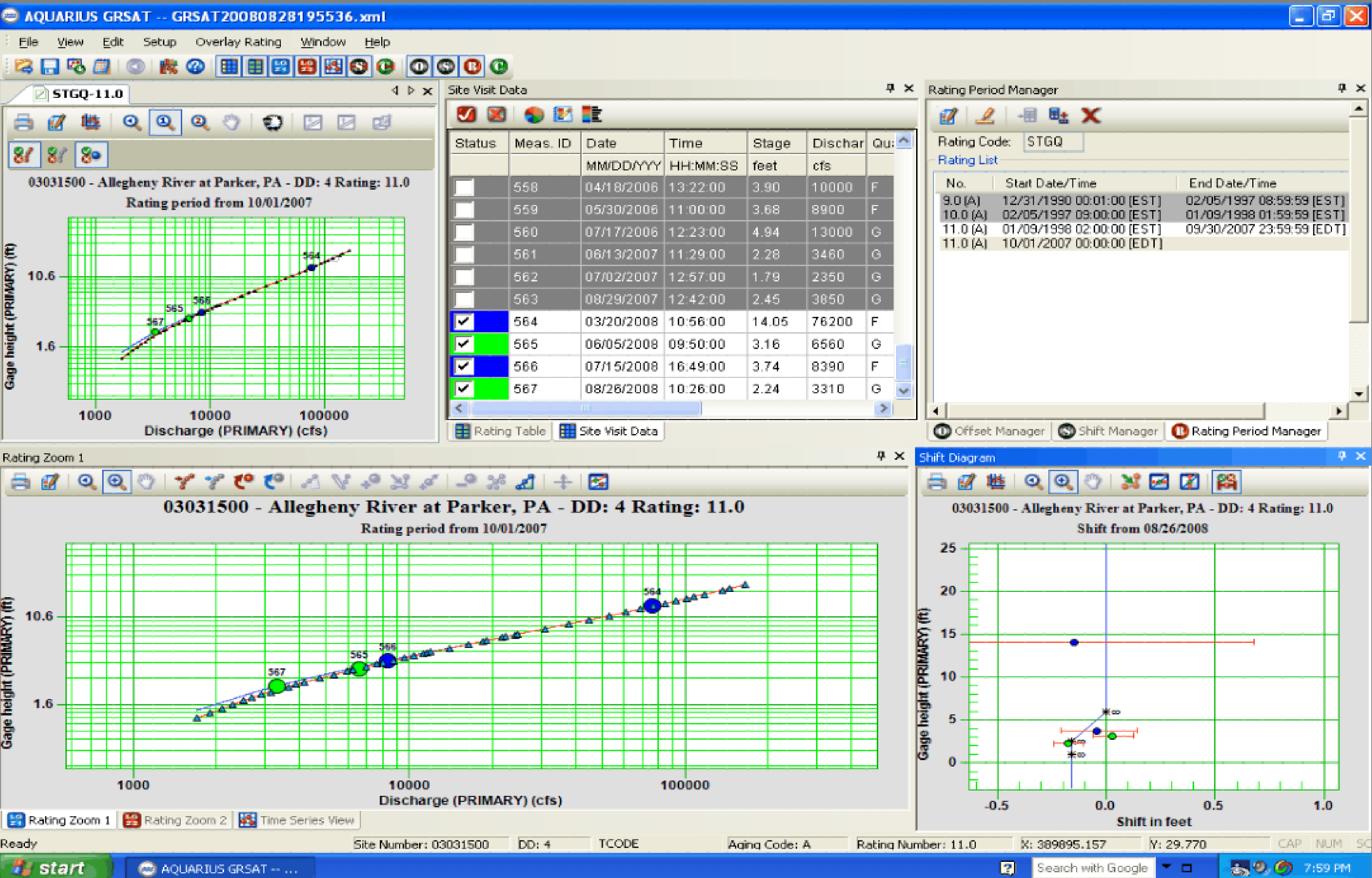
USGS



Equipment Reset

USGS

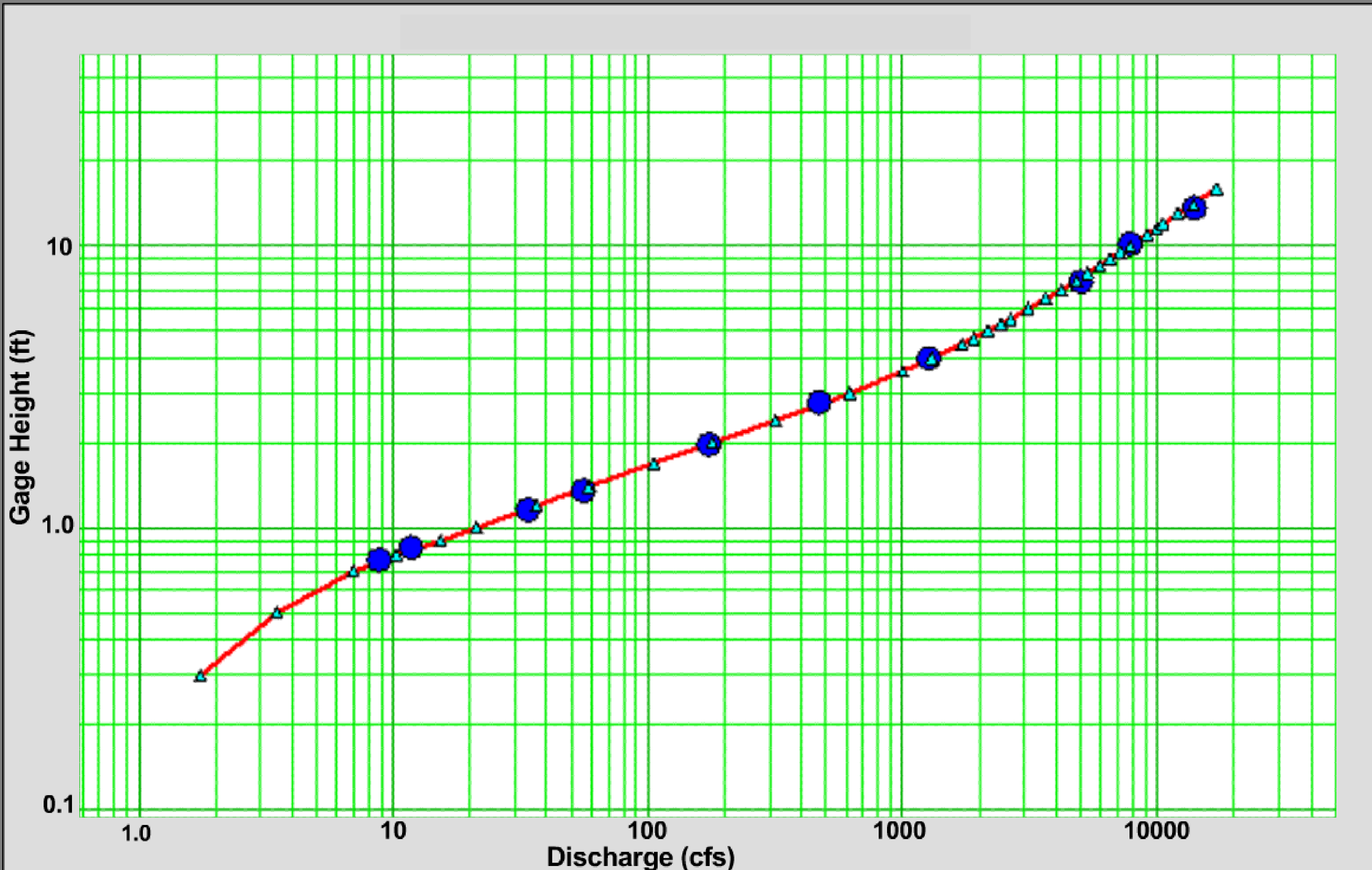
Stage-Discharge Relations



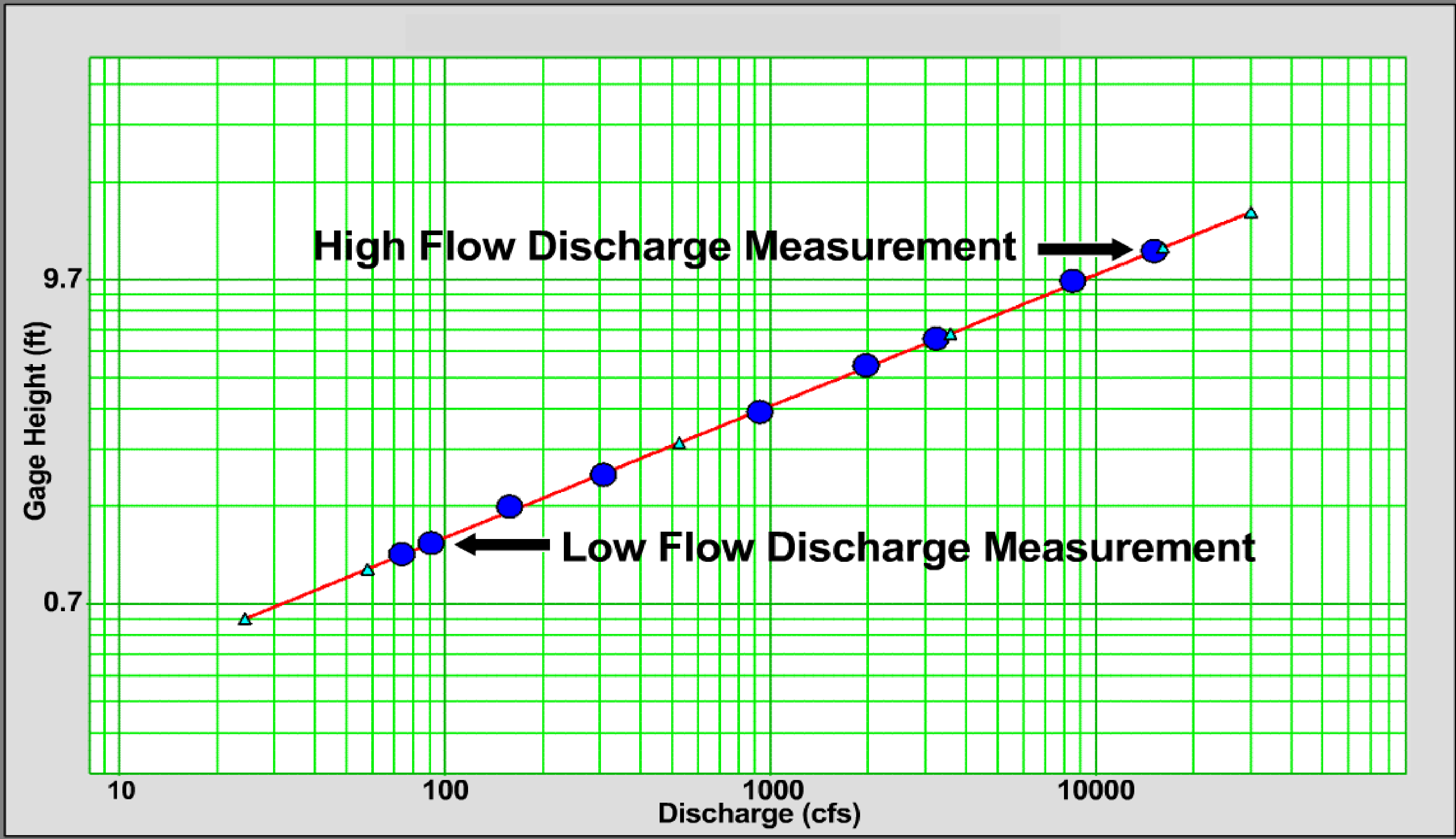
Stage data are needed to develop a rating.

Examples of “staff” gages

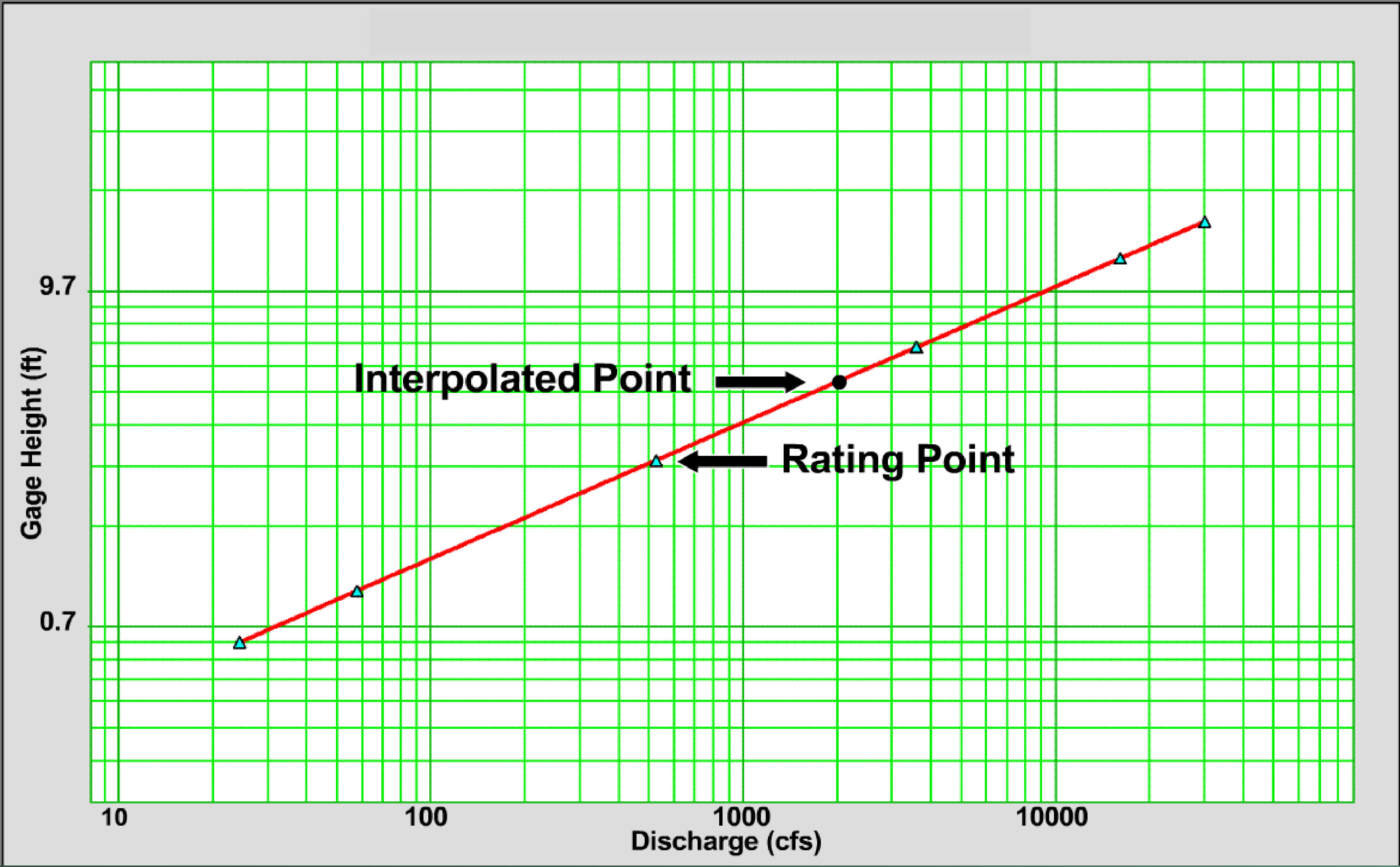
Stage-discharge relations are often referred to as "Ratings".



Discharge measurements must be made throughout the entire range of stage to accurately define a rating.



A computer interpolates the stage discharge values between the defined points on the rating.



Here is how to read a “rating table”.

STATION NUMBER

Rating for Discharge (DCP) (cfs)

RATING ID: 41.0 TYPE: stage-discharge EXPANSION: logarithmic

OFFSET: 0.00

EXPANDED RATING TABLE

Gage height, feet	Discharge (cfs) .00	.01	.02	.03	.04	....	.09	DIFF IN Q PER .1 UNITS
0.30	1.8*	1.8	1.9	2.0	2.1	....	2.5	0.80
0.40	2.6	2.7	2.8	2.9	2.9	....	3.4	0.90
0.50	3.5*	3.6	3.8	3.9	4.1	....	4.9	1.6
0.60	5.1	5.2	5.4	5.6	5.8	....	6.7	1.9
0.70	7.0*	7.2	7.6	7.9	8.2	....	9.9	3.3
0.80	10.3*	10.7	11.2	11.7	12.1	....	14.7	5.0
0.90	15.3*	15.8	16.4	16.9	17.5	....	20.6	5.9

Here is how to read a "rating table".

STATION NUMBER

Rating for Discharge (DCP) (cfs)

RATING ID: 41.0 TYPE: stage-discharge EXPANSION: logarithmic

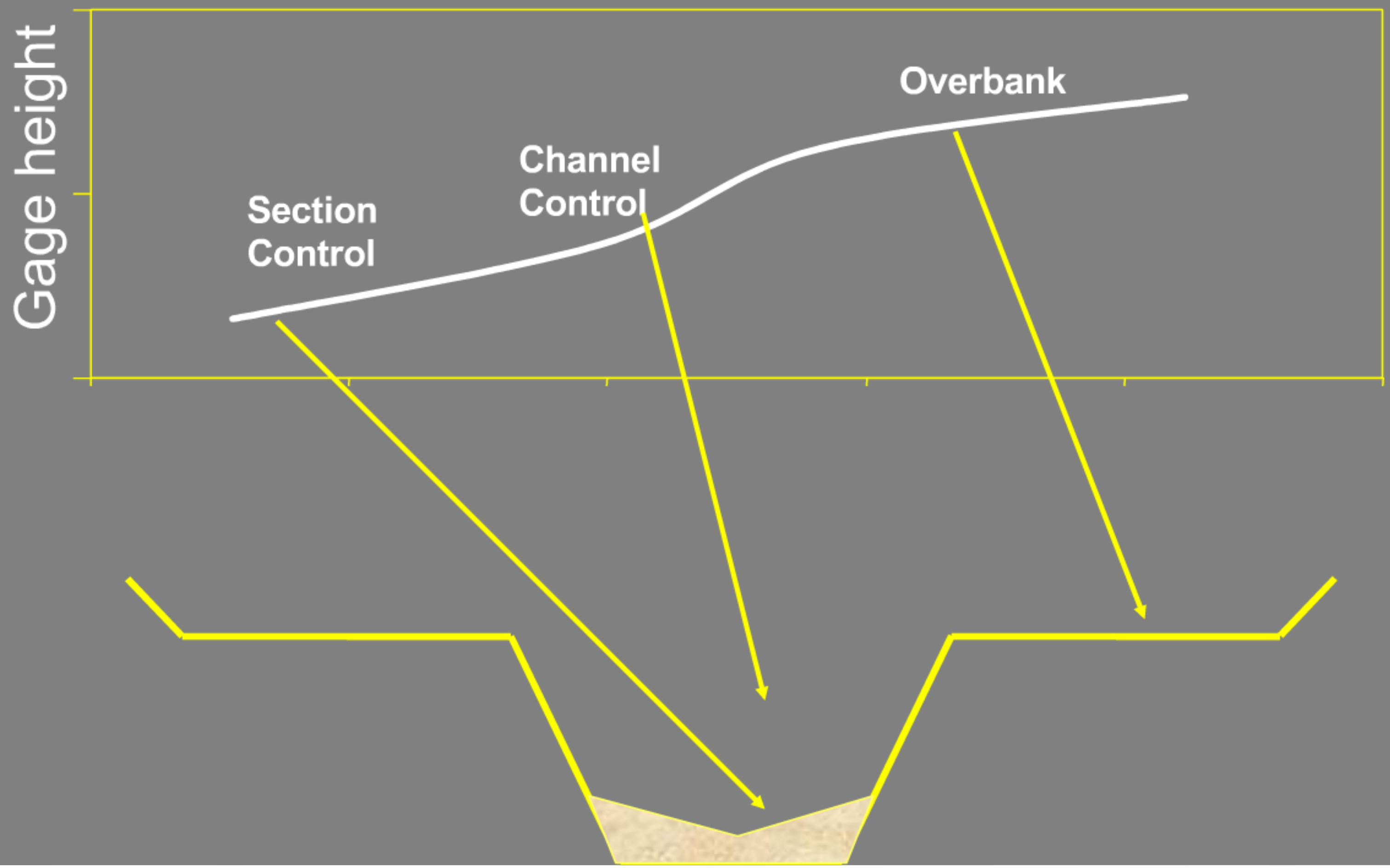
OFFSET: 0.00

EXPANDED RATING TABLE

Gage height, feet	Discharge (cfs) .00	.01	.02	.03	.04	....	.09	DIFF IN Q PER .1 UNITS
0.30	1.8*	1.8	1.9	2.0	2.1	....	2.5	0.80
0.40	2.6	2.7	[illegible]	[illegible]	[illegible]	[illegible]	3.4	0.90
0.50	3.5*	3.6	3.8	3.9	4.1	....	4.9	1.6
0.60	5.1	5.2	5.4	5.6	5.8	....	6.7	1.9
0.70	7.0*	7.2	7.6	7.9	8.2	....	9.9	3.3
0.80	10.3*	10.7	11.2	11.7	12.1	....	14.7	5.0
0.90	15.3*	15.8	16.4	16.9	17.5	....	20.6	5.9

Gage Height = 0.62 ft.

The shape of ratings is controlled by the channel and features in the channel.



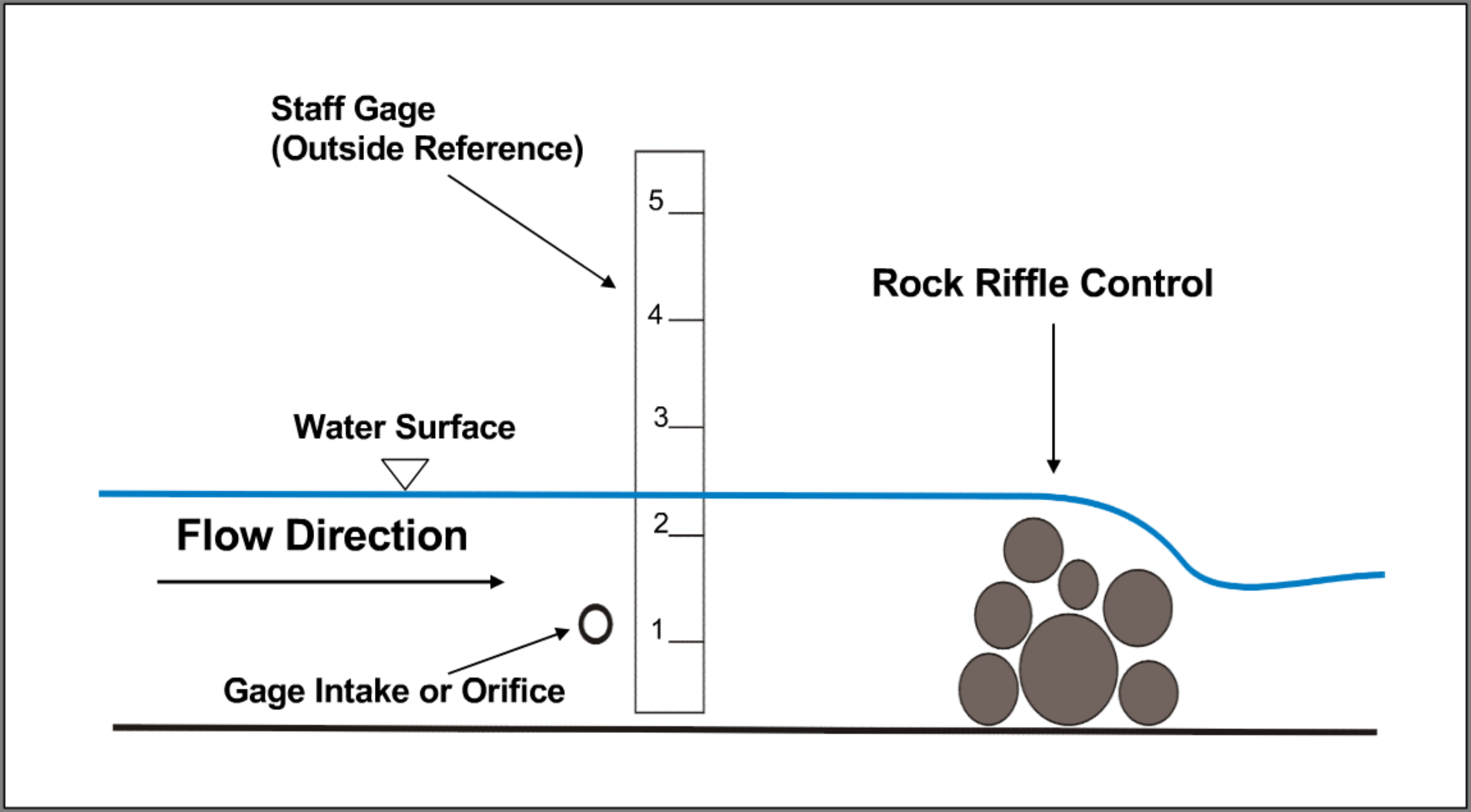
USGS

Ratings, or portions of ratings, can be controlled by a single cross section of the channel.

Such controls are called "Section" controls.

USGS

Section controls can be identified by a break in the water surface downstream from the gage.



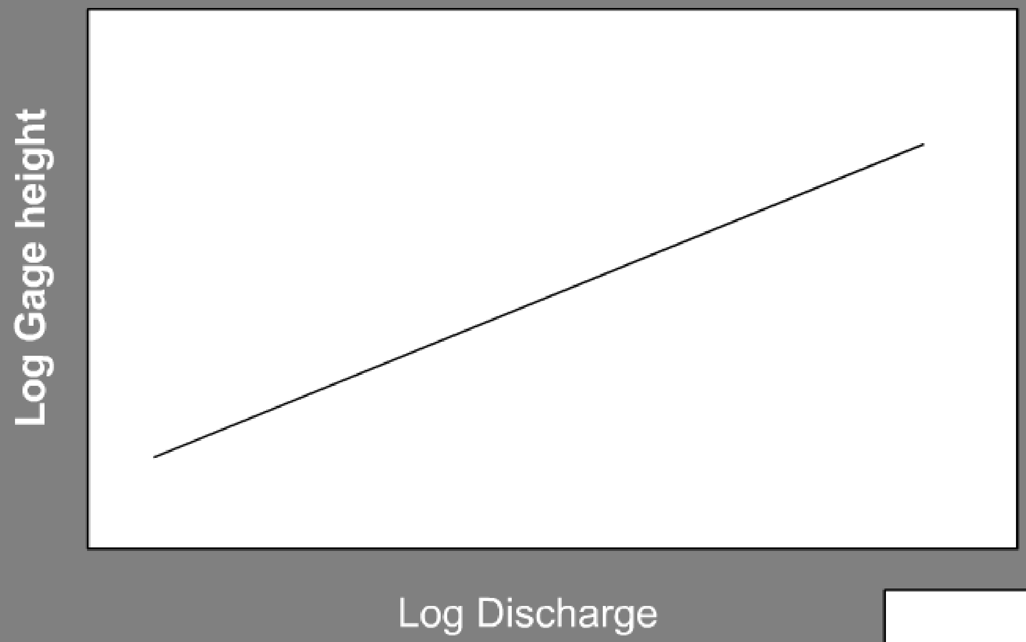
USGS

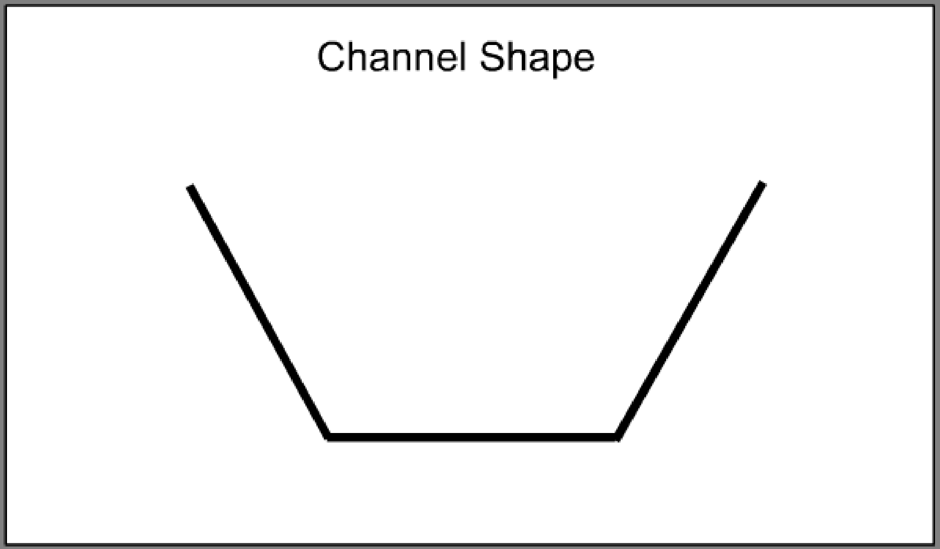
At higher stages, the physical features of the channel downstream from the gage often control the stage-discharge relation.

Such controls are referred to as "Channel" controls.

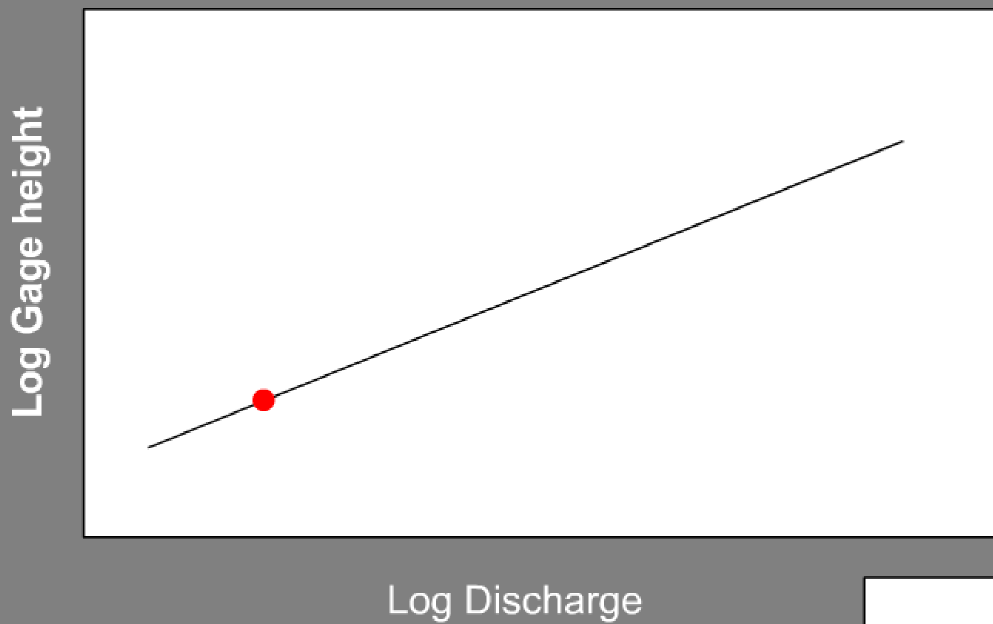
USGS

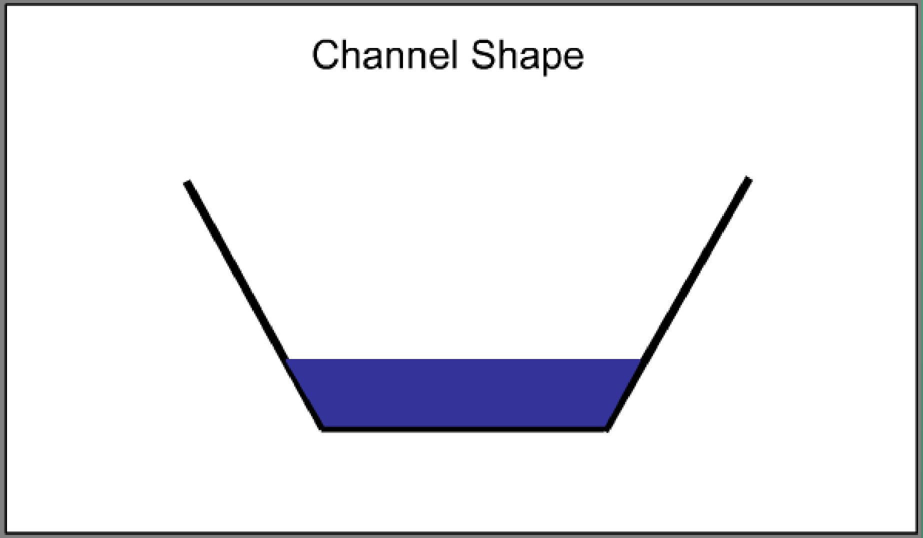
Some ratings can be represented simply as a straight line on a logarithmic scale.





Some ratings can be represented simply as a straight line on a logarithmic scale.





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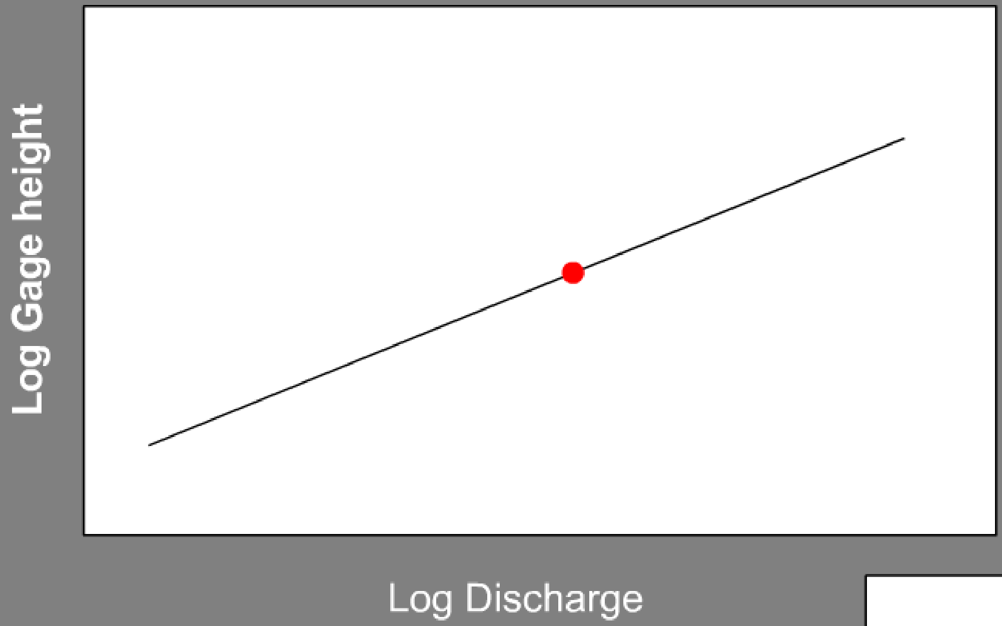

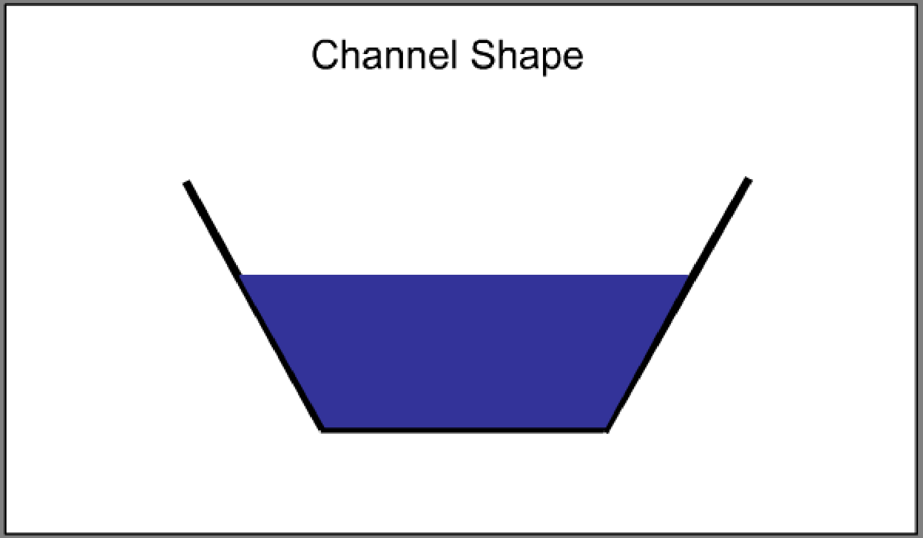

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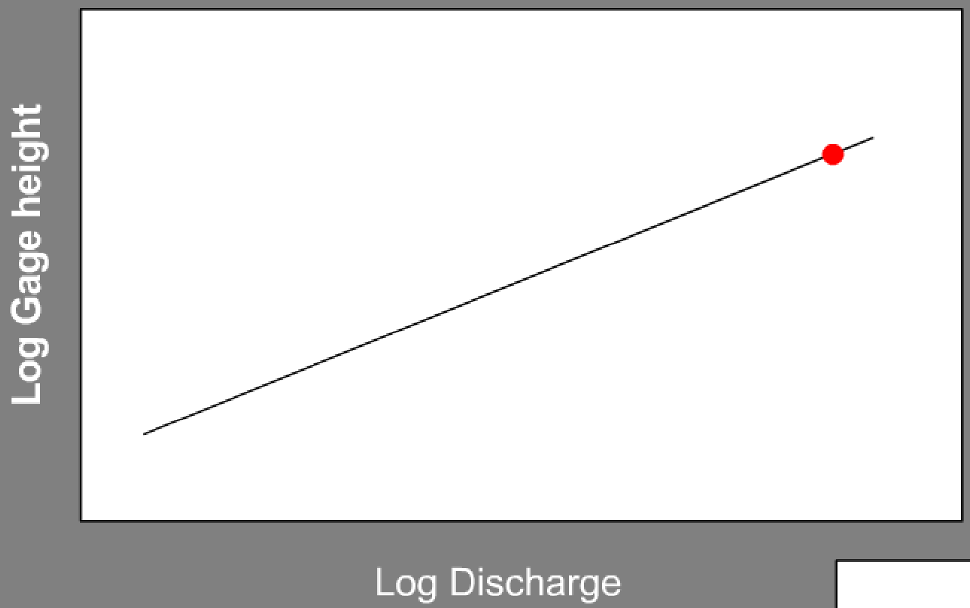
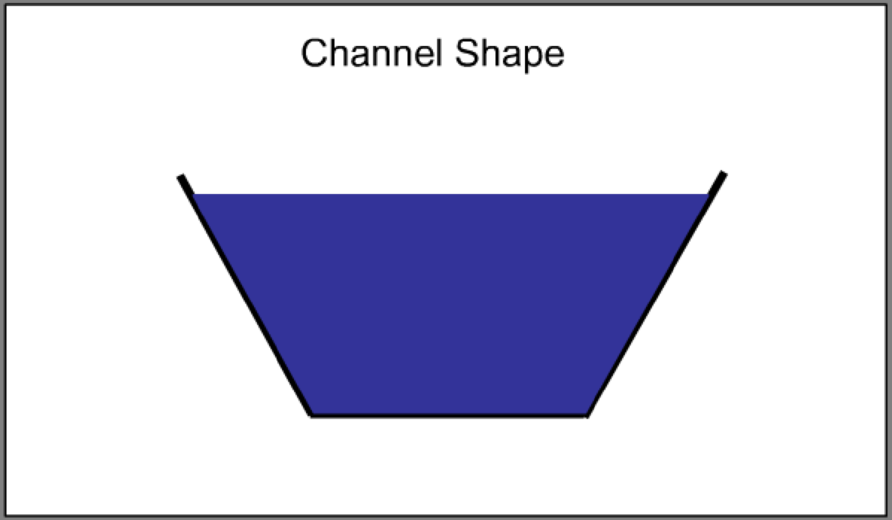
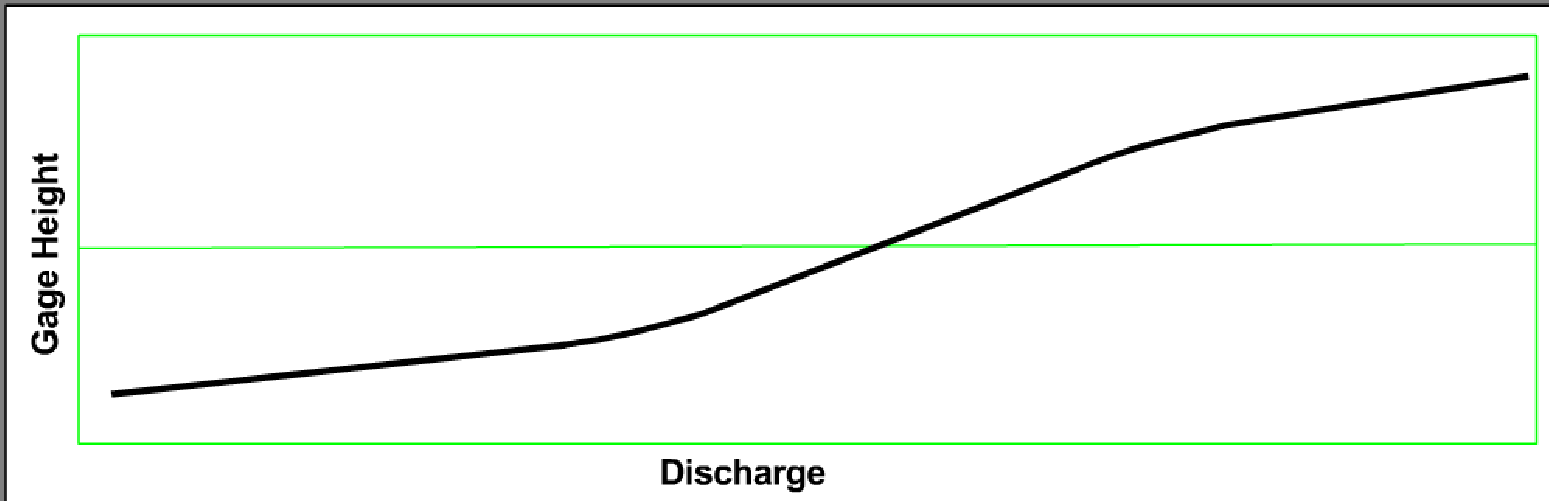
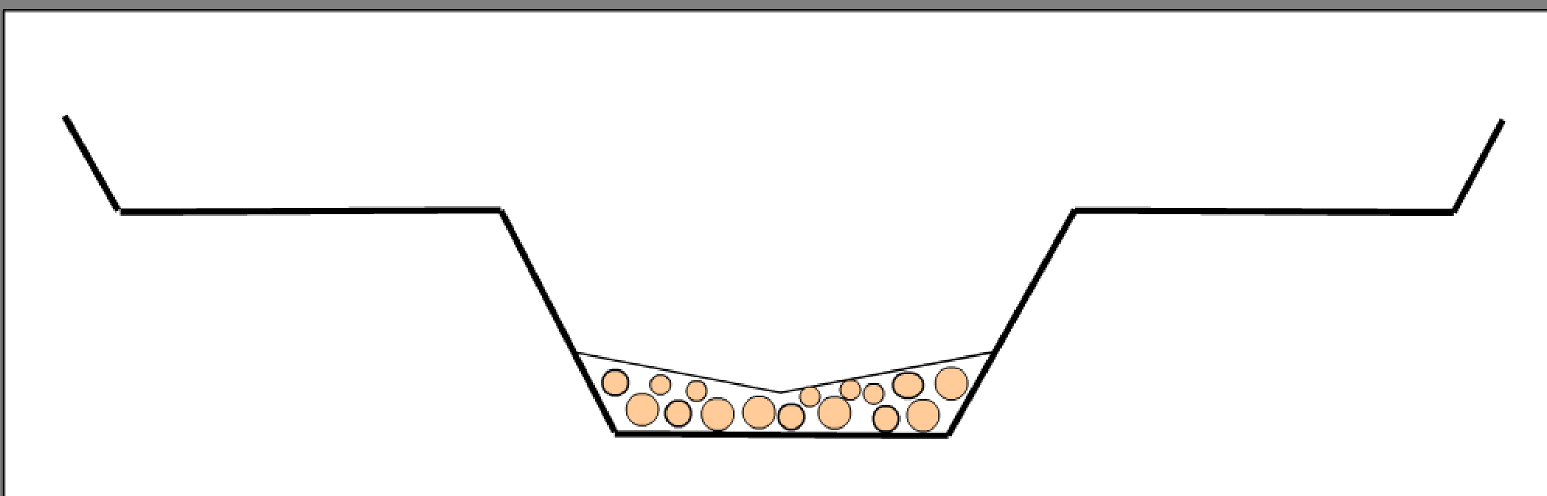




Rating shapes are often complex.





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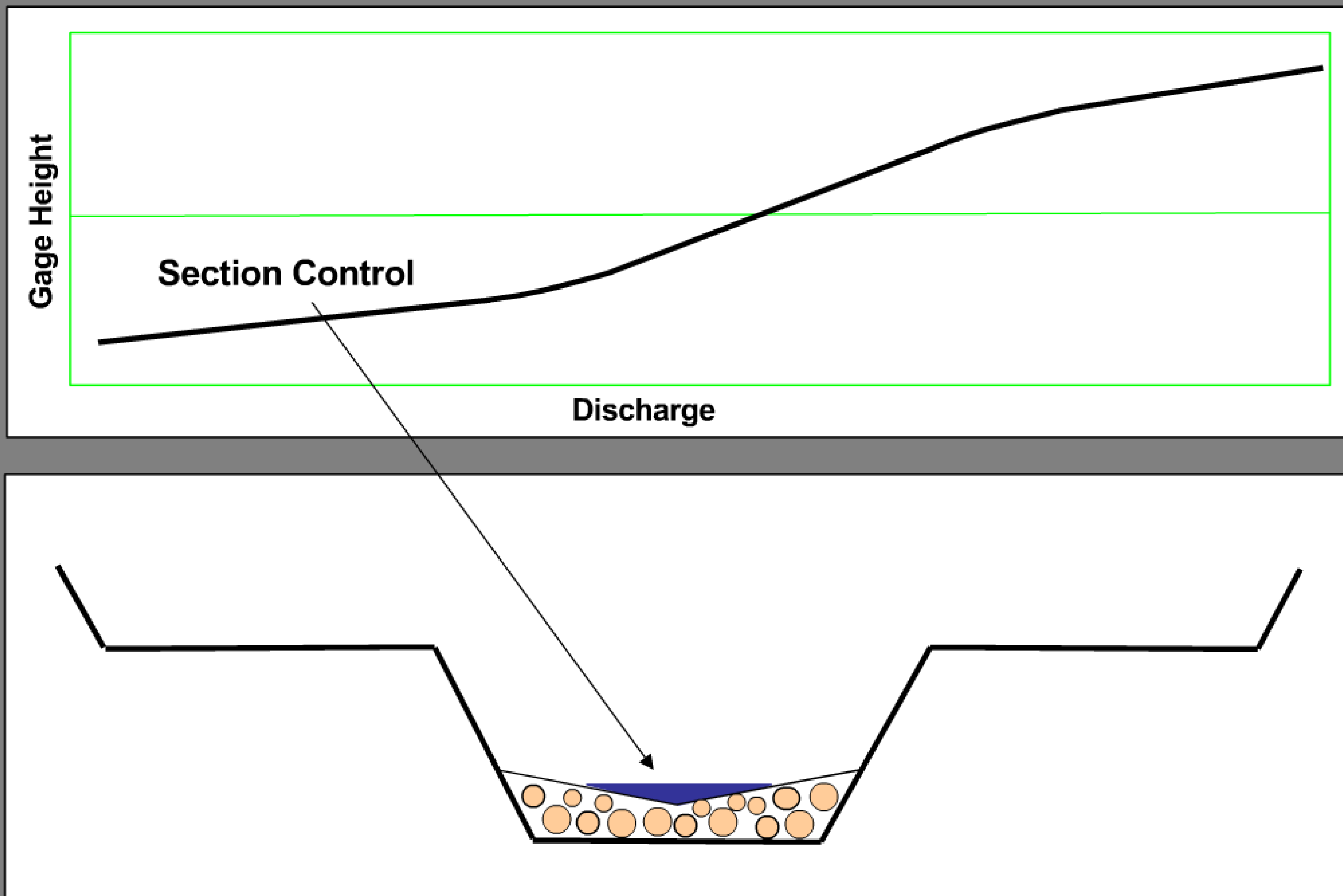

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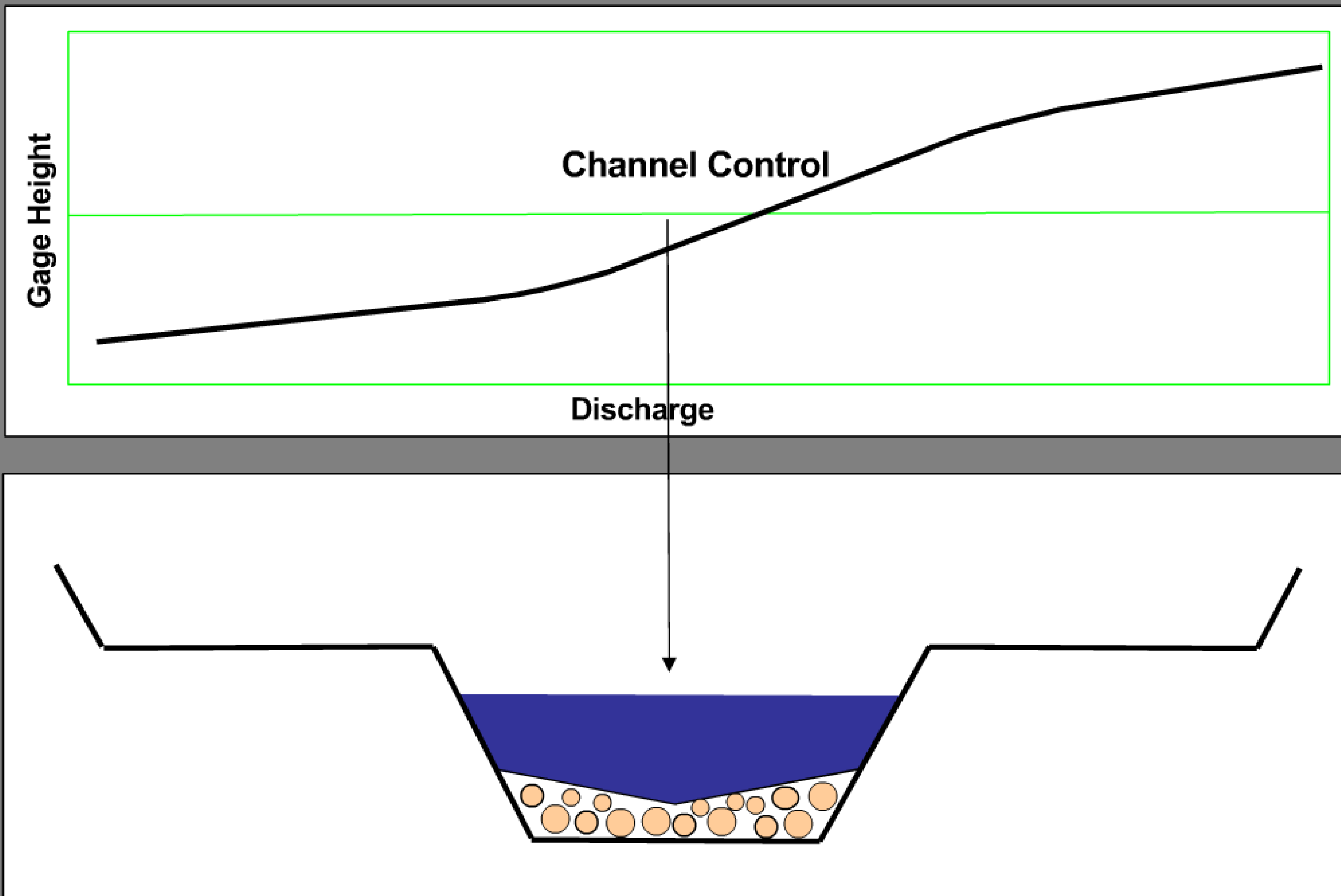
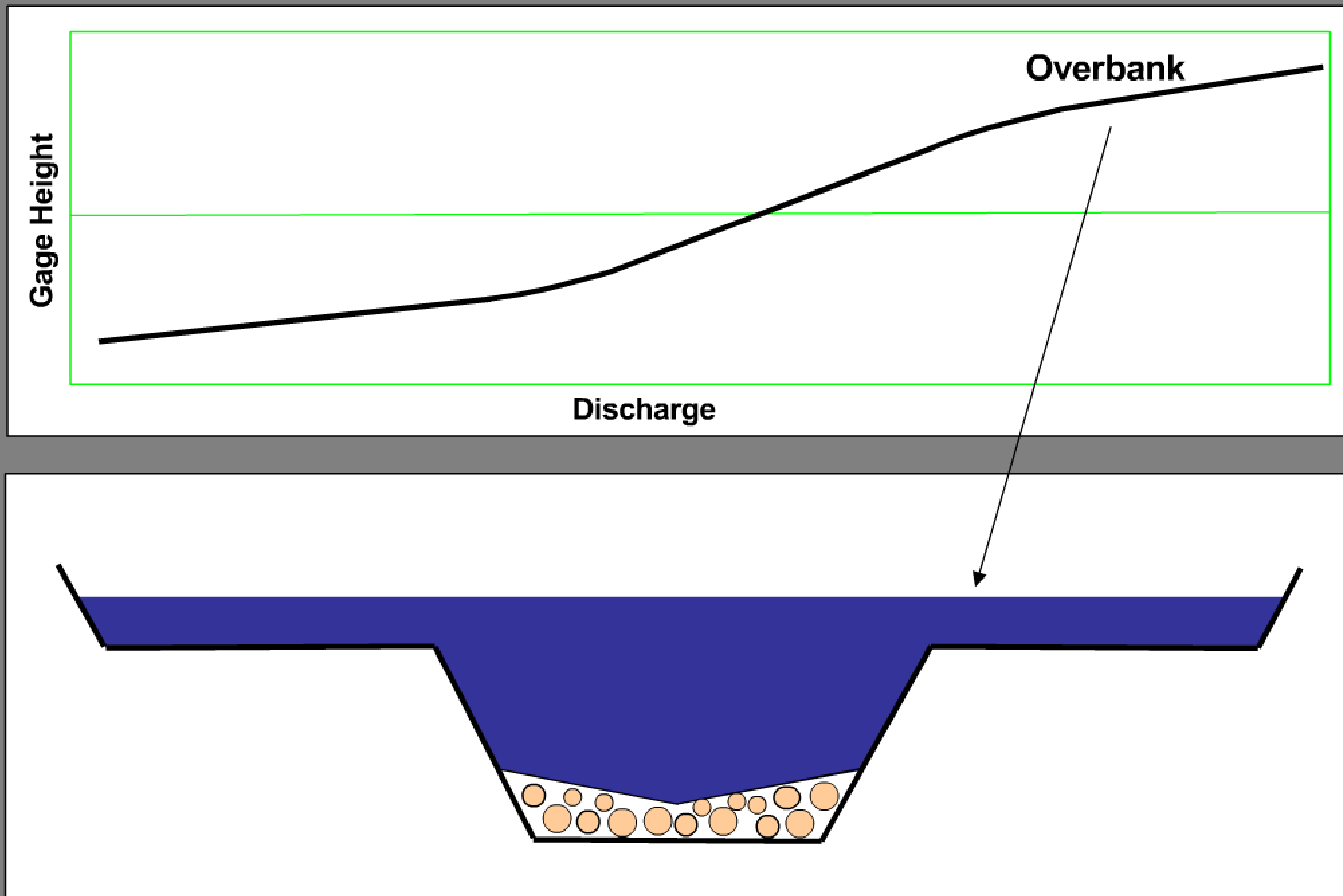
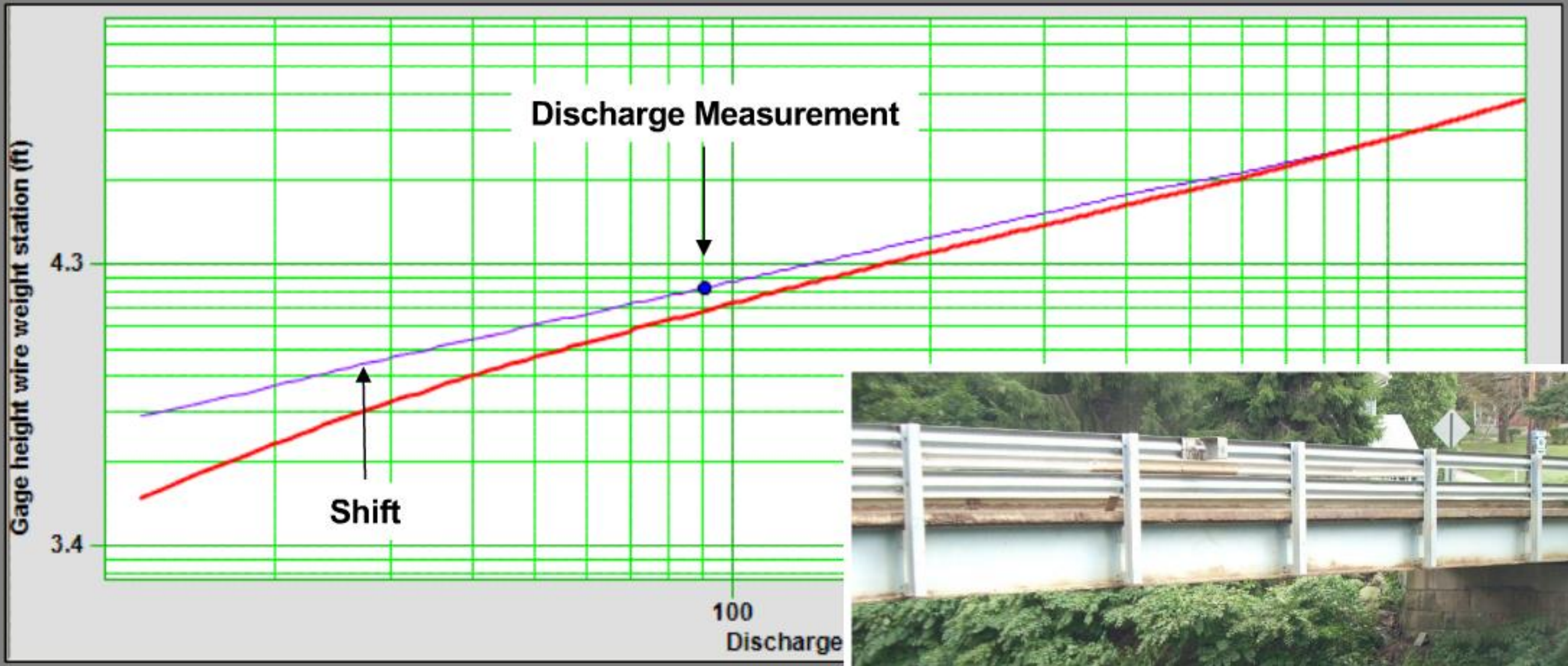


Rating shapes are often complex.

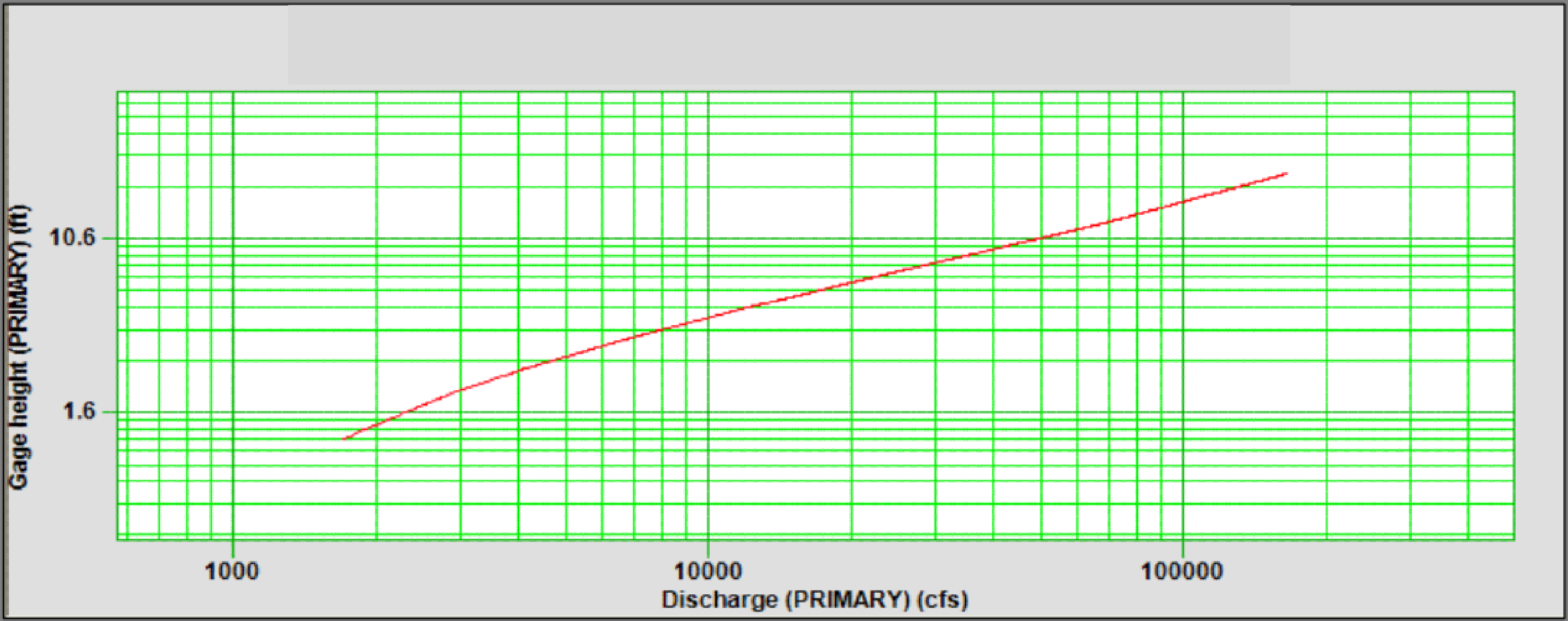


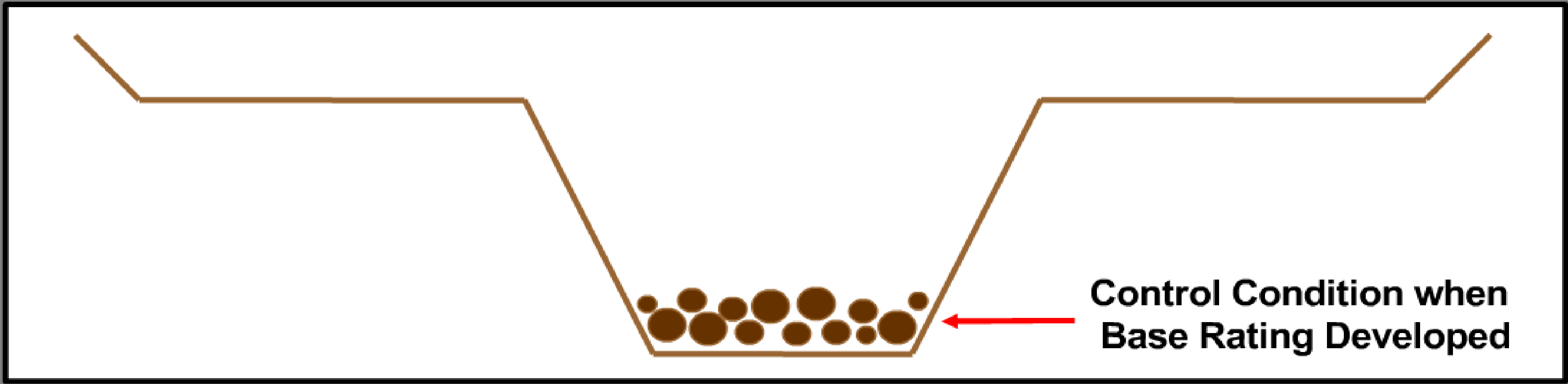
Since gage control conditions change, the stage-discharge relations must be adjusted.



- **Shift adjustments are applied for temporary changes in the stage-discharge relation.**

One reason negative shifts occur is due to fill on the control.





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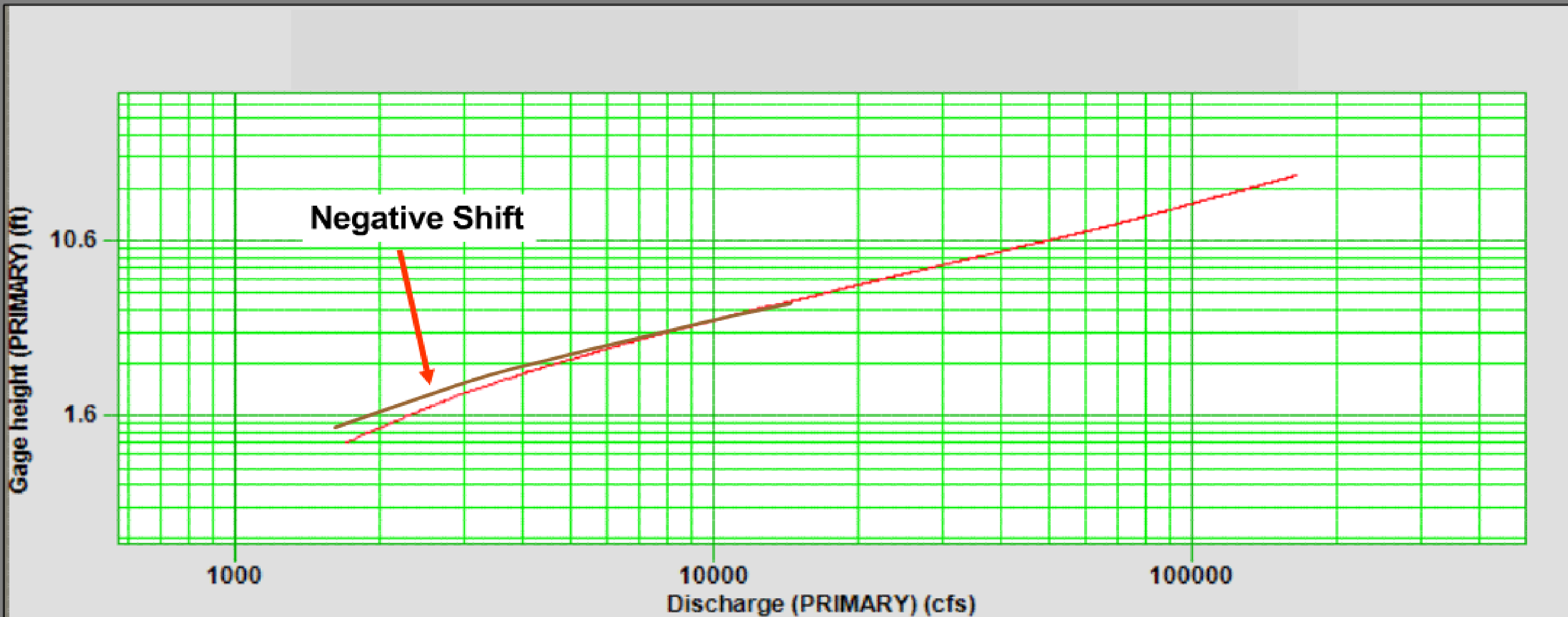

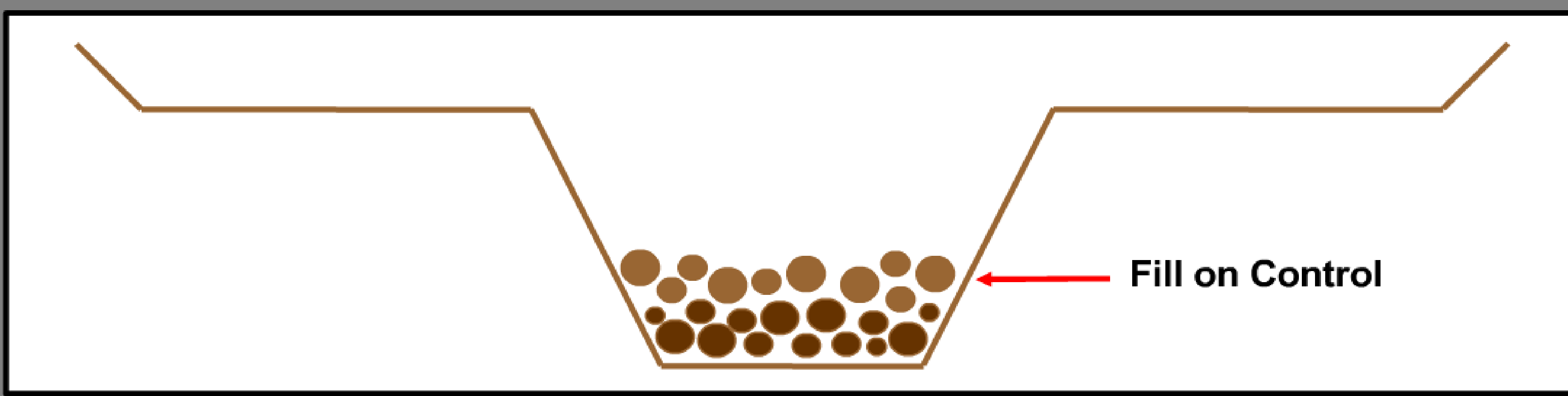

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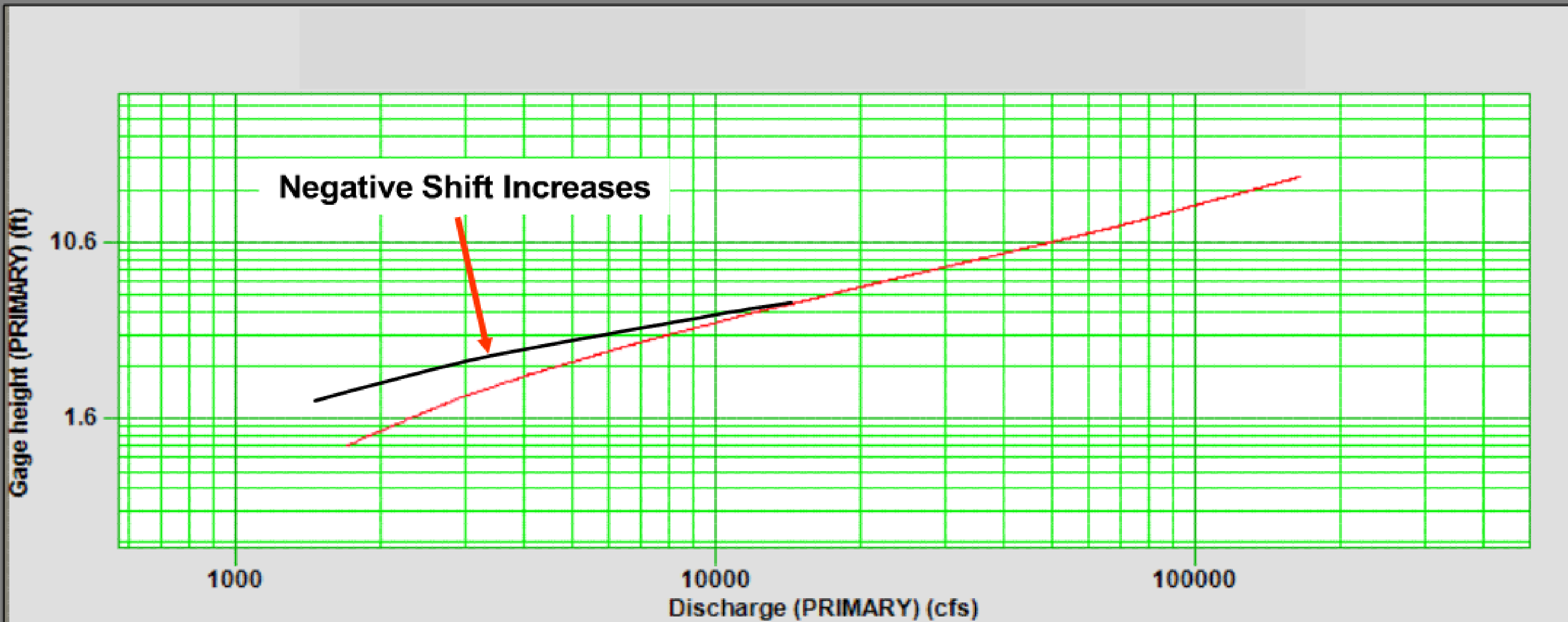
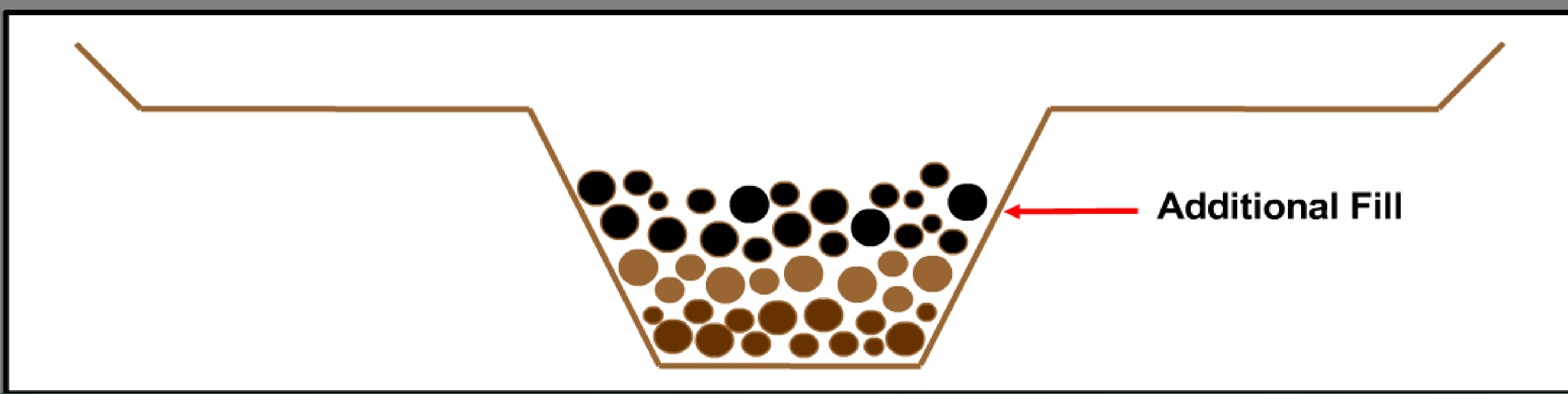
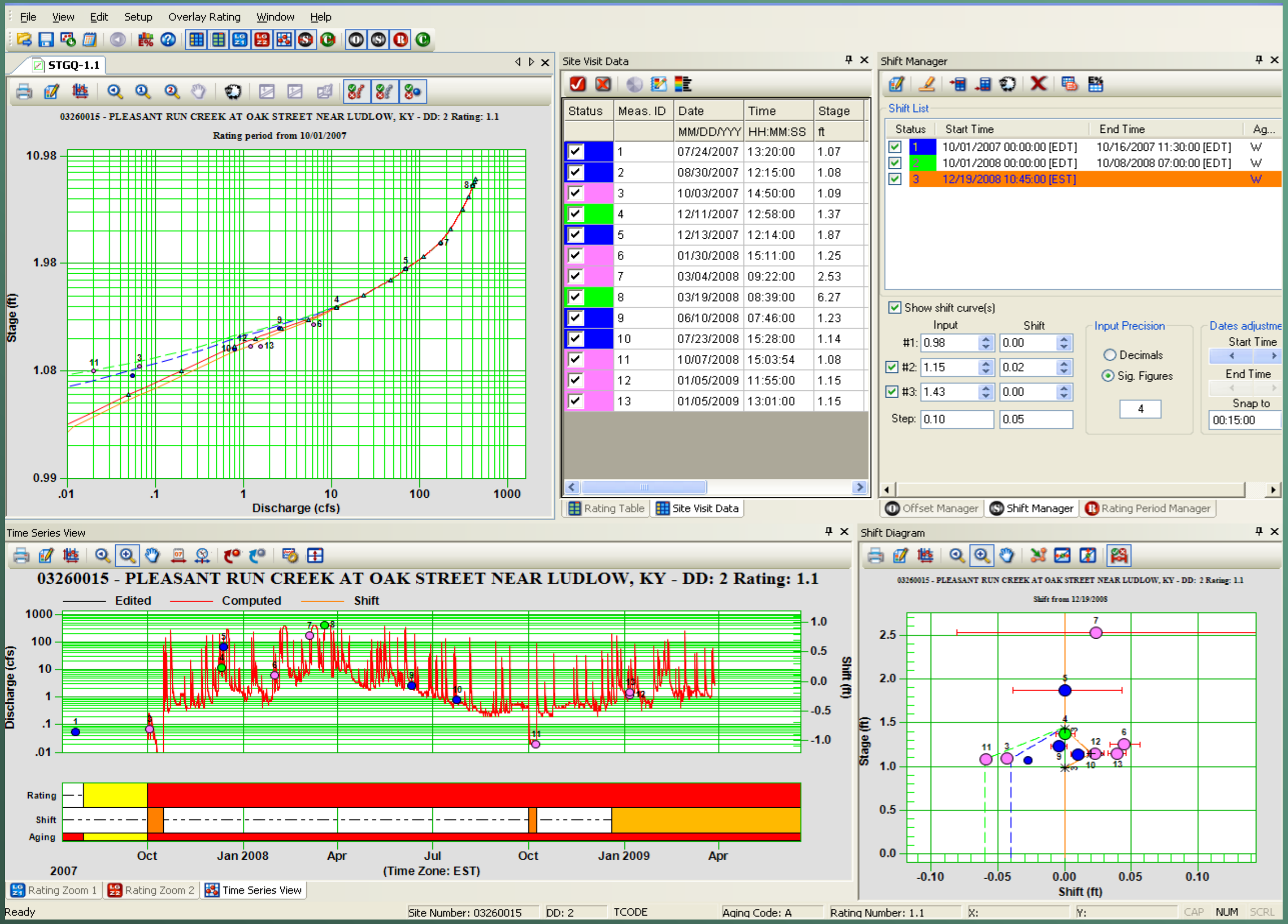




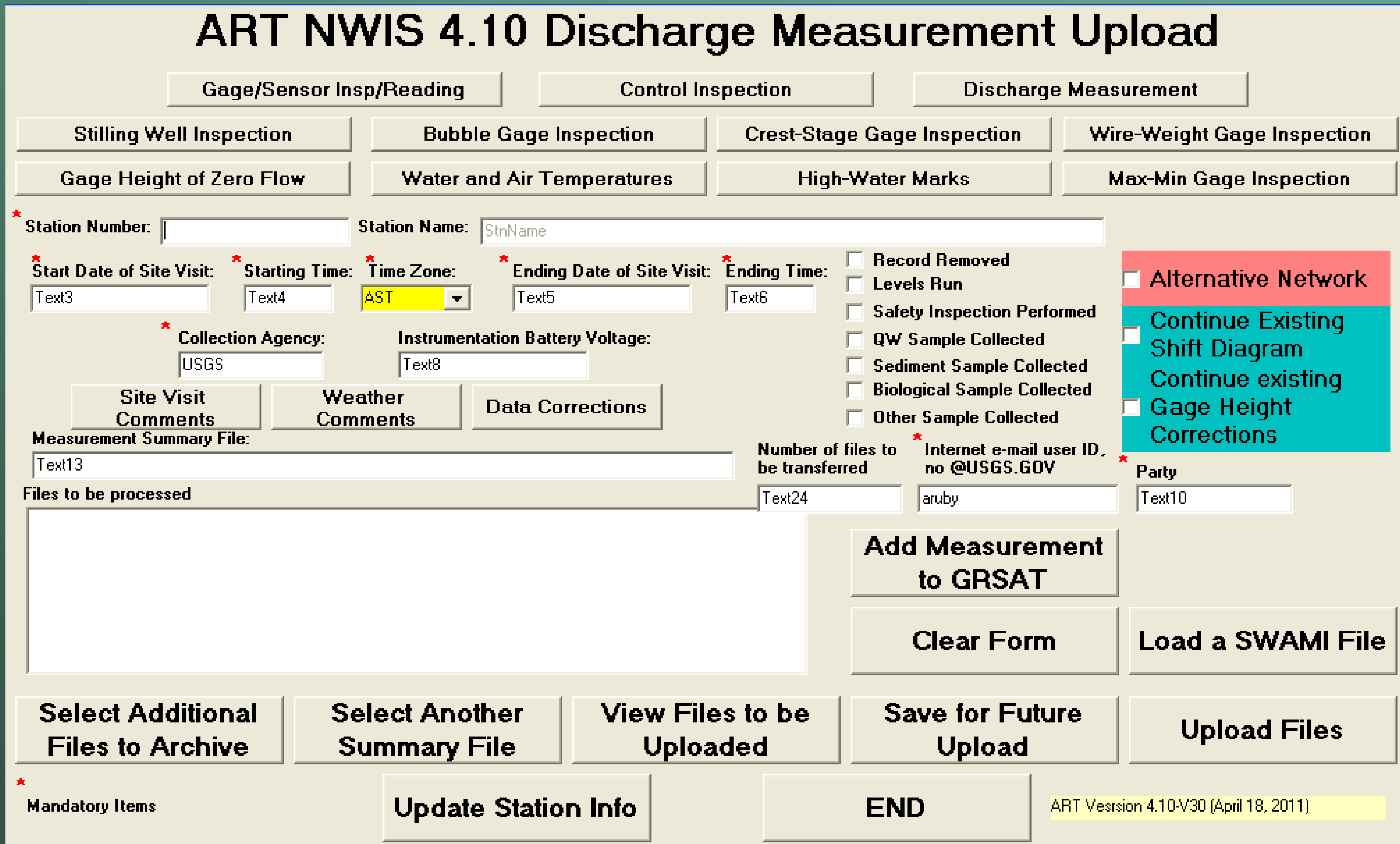
Hydrologic Tools

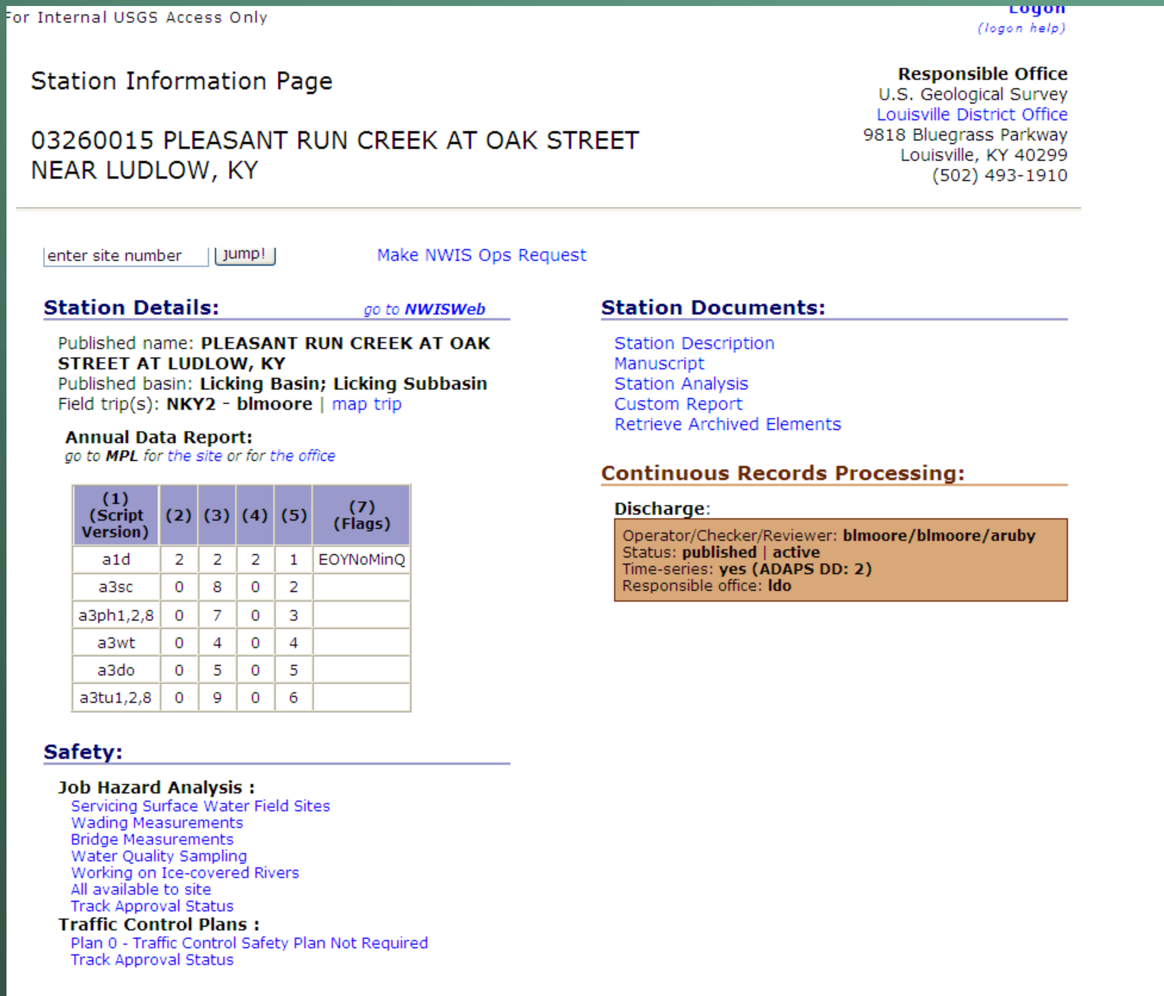
USGS

Surface Water Graphical Rating and Shift Application Tool (GRSAT)



Automatic Records Tool





For Internal USGS Access Only

Logon
(logon help)

Station Information Page

03260015 PLEASANT RUN CREEK AT OAK STREET NEAR LUDLOW, KY

Responsible Office
U.S. Geological Survey
Louisville District Office
9818 Bluegrass Parkway
Louisville, KY 40299
(502) 493-1910

enter site number | Jump!

Make NWIS Ops Request

Station Details: *go to* ***NWISWeb***

Published name: **PLEASANT RUN CREEK AT OAK STREET AT LUDLOW, KY**
Published basin: **Licking Basin; Licking Subbasin**
Field trip(s): **NKY2 - blmoore** | map trip

Annual Data Report:
*go to **MPL** for the site or for the office*

(1) (Script Version)	(2)	(3)	(4)	(5)	(7) (Flags)
a1d	2	2	2	1	EOYNoMinQ
a3sc	0	8	0	2	
a3ph1,2,8	0	7	0	3	
a3wt	0	4	0	4	
a3do	0	5	0	5	
a3tu1,2,8	0	9	0	6	

Safety:

Job Hazard Analysis :
Servicing Surface Water Field Sites
Wading Measurements
Bridge Measurements
Water Quality Sampling
Working on Ice-covered Rivers
All available to site
Track Approval Status

Traffic Control Plans :
Plan 0 - Traffic Control Safety Plan Not Required
Track Approval Status

Station Documents:

Station Description
Manuscript
Station Analysis
Custom Report
Retrieve Archived Elements

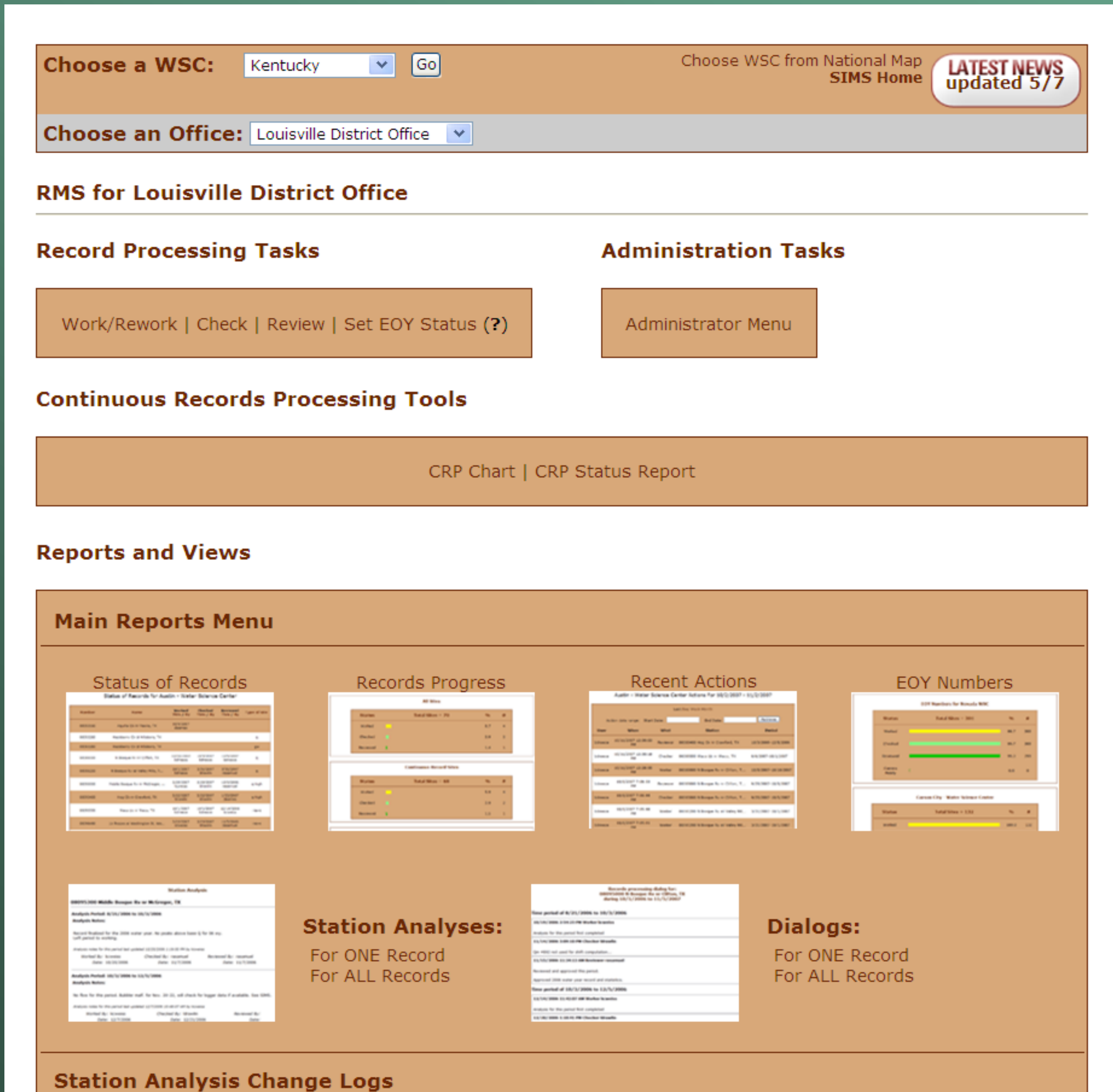
Continuous Records Processing:

Discharge:

Operator/Checker/Reviewer: **blmoore/blmoore/aruby**
Status: **published** | **active**
Time-series: **yes (ADAPS DD: 2)**
Responsible office: **ldo**

SIMS

Site Information Management System

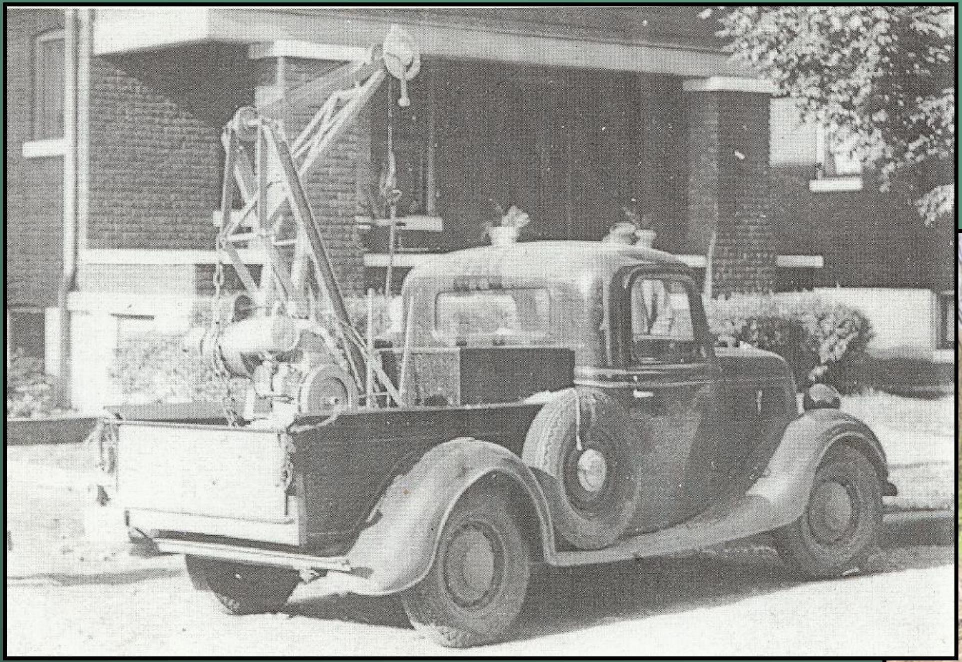


RMS

Records
Management
System

USGS

Questions?



Kentucky Water Science Center - serving Kentucky and the Nation for over 100 years

USGS