Using STORET Data to Characterize Your Watershed

Webcast on June 21, 2007

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Webcast sponsored by EPA's Watershed Academy

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What is this Webcast About?

- What is the STORET Program and the National STORET Data Warehouse?
- Why is data management important for watershed protection?
- How do I get data out of the STORET Data Warehouse?
- How can I use STORET data to help characterize my watershed?

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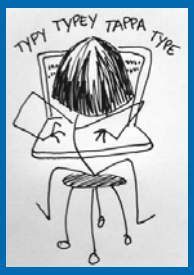
The STORET Program

- STORET: STOrage and RETrieval of water quality monitoring data



- EPA's STORET Program:
  - promotes sound data management practices
  - stores and maintains water quality data submitted by agencies/groups across the nation in the STORET Data Warehouse

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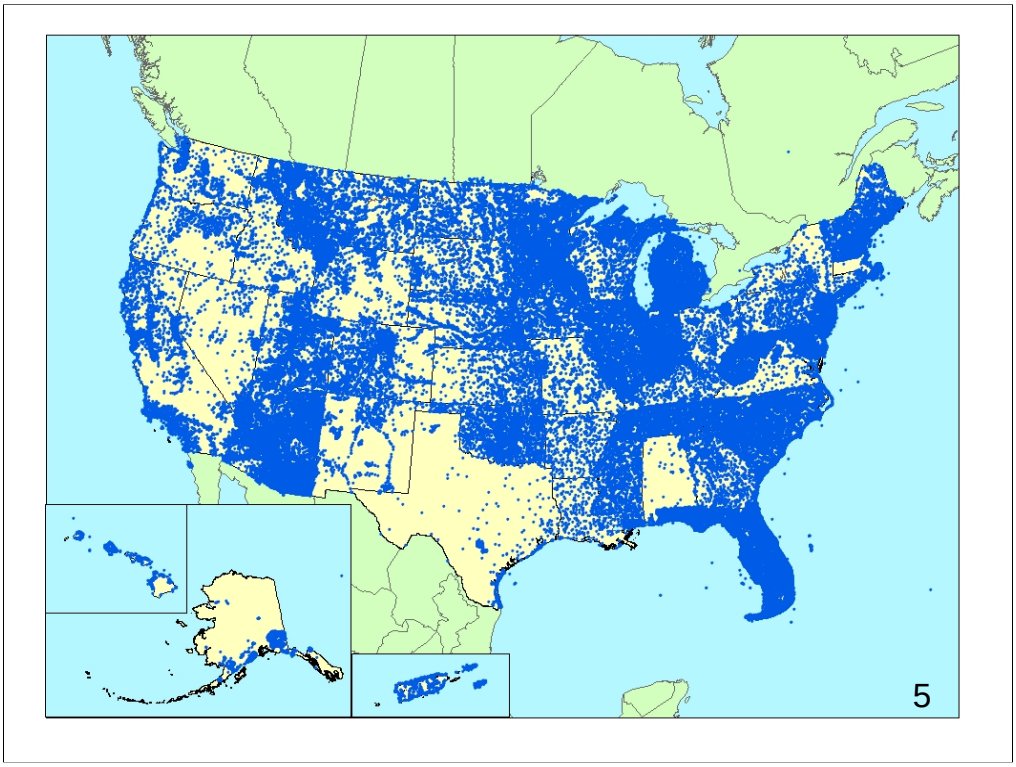
The National STORET Data Warehouse

- A national repository of water quality monitoring data – “Modernized STORET”
- Stores water data of all types (biological, chemical, physical) submitted by states, tribes, watershed groups, other federal agencies, and universities
- Web-enabled: Data are available -- and can be submitted -- using the Web
- Encourages data sharing at a national level

4


5

Legacy and Modern STORET

- The Legacy Data Center contains data supplied to EPA prior to 1999
  - LDC contains data of undocumented quality
- Modernized STORET (a.k.a. the National STORET Data Warehouse) contains data supplied to EPA after 1999
  - Data in Modernized STORET are of documented quality

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USGS National Water Information System (NWIS)

- USGS also provides water quality monitoring data via the web through NWISWeb
- USGS manages around 1.5 million sites where water quality monitoring data are collected
- Daily streamflow conditions as well as chemical and physical water quality data are available: http://waterdata.usgs.gov/nwis

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Water Quality Monitoring Data

- Raw monitoring results along with information about
  - Where sample/measurement was collected
  - When it was collected
  - What was collected
  - How it was collected
  - Why it was collected
  - Who collected it

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STORET Terms

- Projects (Why data were collected)
  - Brief summary of monitoring plan
- Stations (Where data were collected)
  - Describe where monitoring takes place
- Results (When, How and What data were collected)
  - Measurements of what was monitored

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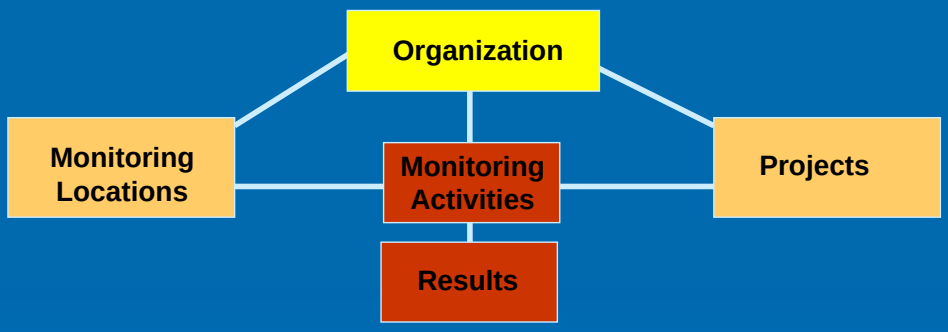
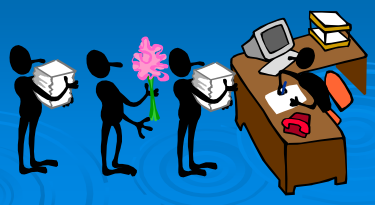
STORET Warehouse Overview



10

Who Puts Data in?

- State environmental agencies
- Tribal environmental agencies and groups
- Volunteer groups and watershed organizations
- Universities



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Volunteer and Watershed Groups Using STORET Include:

- Mystic River Watershed Association (Massachusetts)
- Big Thompson Watershed Forum (Colorado)
- Montana Volunteer Water Quality Monitoring
- Potomac Appalachian Trail Club Monitoring (Virginia and Maryland)
- Water Sentinels Sierra Club (Missouri)
- Iowater (Iowa)

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Sharing Data at a National Level

- Organizations from around the country put data into the STORET Warehouse
- Distributed STORET Database

- Web tools for data submission to the STORET Warehouse

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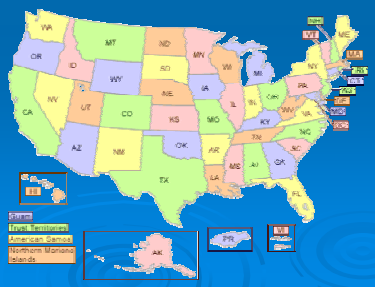
Managing Data Locally

- Data sharing at a national level benefits from:
  - Well documented data at a local level
  - Well managed data at a local level



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What is Data Management?

- The process of converting your monitoring results into a set of useful data that you can use in order to make decisions about your program
- Data re-use is possible if data is current and accurate and in one central place

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Well Managed Data

- Placing data and metadata in a manageable electronic format provides many benefits:
  - **Electronic input forms can help ensure data are in the correct range or format**
  - **Metadata helps you make comparisons between samples or over time by capturing context of the sampling event**
  - **Quality assurance results can be compared to expected results**
  - **Your data can be used by others and safely stored for future use**

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Who Manages Data?

- Field staff (those who collect samples)
- Lab staff (those who analyze samples)
- Data entry staff (those who enter data in the computer)
- Data assessment and analysis staff (those who make sense of the data)
- IT staff (those who develop the tools to enter and analyze the data)

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EVERYONE manages data!

Finding the Story of Your Watershed

- The set of water quality indicators your organization chooses to monitor will help you characterize your watershed
- Finding the story of your watershed means moving the results from your sampling efforts from *data* to *information*
- Data assessment and analysis provide a picture into the condition of a water body
- Data management is key to this process

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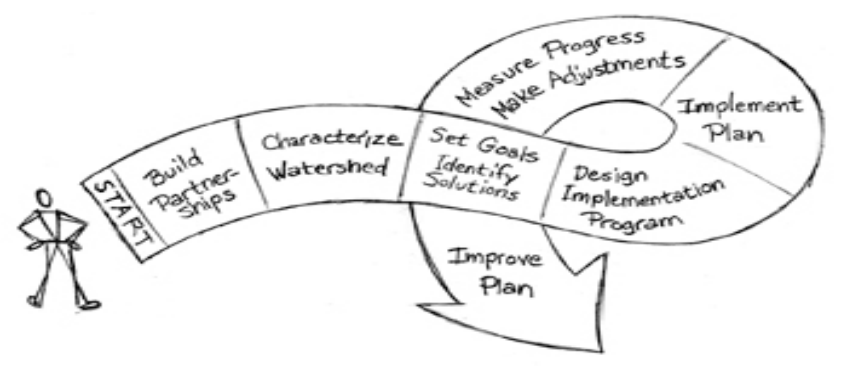
Six Steps for Watershed Planning



Characterizing Your Watershed

- Five broad categories of data used to fully characterize a watershed:
  - Physical and Natural features
  - Land use and population characteristics
  - Waterbody conditions
  - Pollutant sources
  - **Water quality monitoring data (STORET Data!)**

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Types of monitoring results that help characterize your watershed

- Regular results – metals, nutrients, microbiological and physical characteristics of the water
- Biological monitoring results
- Habitat assessment results

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Questions?

Dwane Young, IT Specialist, US EPA Monitoring Branch

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Ways to Get Data from the STORET Warehouse

- EPA Mapping tools
  - Enviromapper for Water **epa.gov/waters/enviromapper**
  - Window to My Environment **epa.gov/enviro//wme/**
- STORET Web site **epa.gov/storet**
  - Direct data download
  - Watershed Summary tool

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Let's Look at a Watershed Around Denver, Colorado

- Using Window to My Environment
  - **Window to My Environment provides comprehensive environmental information about your area of interest**
  - **You can choose to show data near your town**

- Using Enviromapper
  - **Enviromapper for Water shows EPA water program information in the specific area of your choosing**
  - **You can choose to show data by 8 digit HUC**

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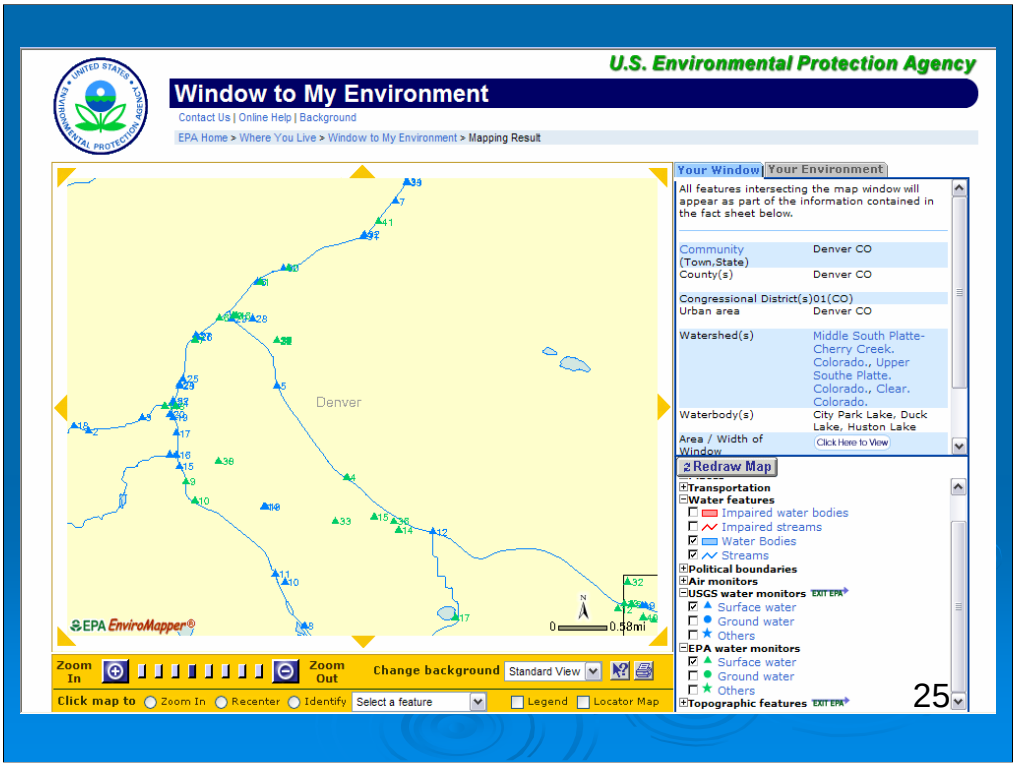
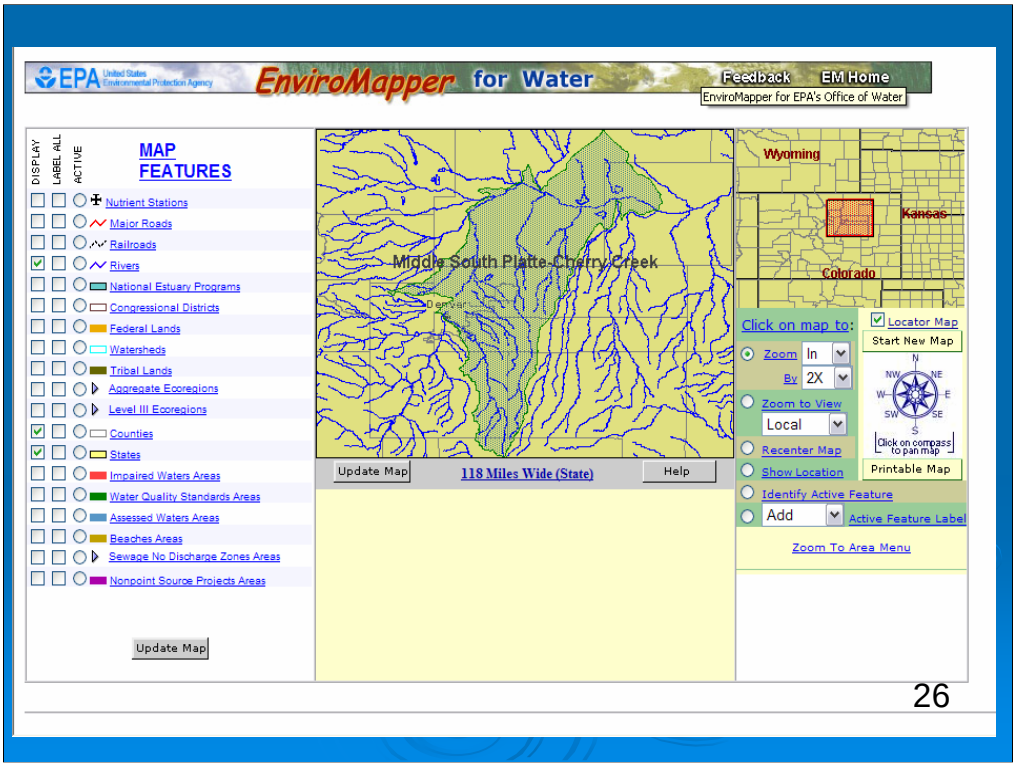

U.S. Environmental Protection Agency
Window to My Environment
Contact Us | Online Help | Background
EPA Home > Where You Live > Window to My Environment > Mapping Result
Denver
EPA EnviroMapper®
0 0.58mi
Your Window
Your Environment
All features intersecting the map window will appear as part of the information contained in the fact sheet below.
Community (Town,State) Denver CO
County(s) Denver CO
Congressional District(s) 01(CO)
Urban area Denver CO
Watershed(s) Middle South Platte-Cherry Creek. Colorado., Upper Southe Platte. Colorado., Clear. Colorado.
Waterbody(s) City Park Lake, Duck Lake, Huston Lake
Area / Width of Window Click Here to View
Redraw Map
Transportation
Water features
Impaired water bodies
Impaired streams
Water Bodies
Streams
Political boundaries
Air monitors
USGS water monitors
Surface water
Ground water
Others
EPA water monitors
Surface water
Ground water
Others
Topographic features
Zoom In
Zoom Out
Change background
Standard View
Click map to
Zoom In
Recenter
Identify
Select a feature
Legend
Locator Map
25


EPA United States Environmental Protection Agency
EnviroMapper for Water
Feedback
EM Home
EnviroMapper for EPA's Office of Water
DISPLAY
LABEL ALL
ACTIVE
MAP FEATURES
Nutrient Stations
Major Roads
Railroads
Rivers
National Estuary Programs
Congressional Districts
Federal Lands
Watersheds
Tribal Lands
Aggregate Ecoregions
Level III Ecoregions
Counties
States
Impaired Waters Areas
Water Quality Standards Areas
Assessed Waters Areas
Beaches Areas
Sewage No Discharge Zones Areas
Nonpoint Source Projects Areas
Update Map
Middle South Platte-Cherry Creek
Denver
Update Map
118 Miles Wide (State)
Help
Wyoming
Kansas
Colorado
Click on map to:
Zoom In
By 2X
Zoom to View
Local
Recenter Map
Show Location
Identify Active Feature
Add
Active Feature Label
Zoom To Area Menu
Locator Map
Start New Map
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Click on compass to pan map
Printable Map

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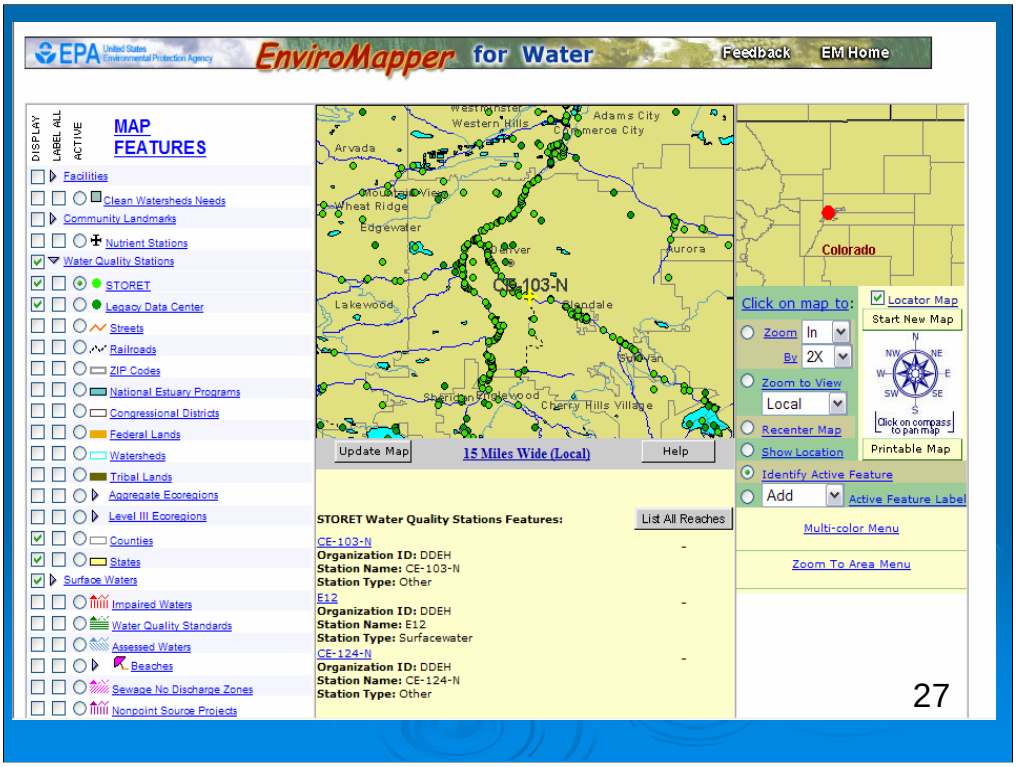
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Feedback
EM Home
DISPLAY
LABEL ALL
ACTIVE
MAP FEATURES
Facilities
Clean Watersheds Needs
Community Landmarks
Nutrient Stations
Water Quality Stations
STORET
Legacy Data Center
Streets
Railroads
ZIP Codes
National Estuary Programs
Congressional Districts
Federal Lands
Watersheds
Tribal Lands
Aggregate Ecoregions
Level III Ecoregions
Counties
States
Surface Waters
Impaired Waters
Water Quality Standards
Assessed Waters
Beaches
Sewage No Discharge Zones
Nonpoint Source Projects
Westminster
Western Hills
Adams City
Commerce City
Arvada
Mountain View
Wheat Ridge
Edgewater
Denver
Aurora
CE-103-N
Lakewood
Glendale
Sheridan
Englewood
Cherry Hills Village
Colorado
Update Map
15 Miles Wide (Local)
Help
Click on map to:
Zoom In
By 2X
Zoom to View
Local
Recenter Map
Show Location
Identify Active Feature
Add
Active Feature Label
Locator Map
Start New Map
Printable Map
Click on compass to pan map
Multi-color Menu
Zoom To Area Menu
STORET Water Quality Stations Features:
List All Reaches
CE-103-N
Organization ID: DDEH
Station Name: CE-103-N
Station Type: Other
E12
Organization ID: DDEH
Station Name: E12
Station Type: Surfacewater
CE-124-N
Organization ID: DDEH
Station Name: CE-124-N
Station Type: Other
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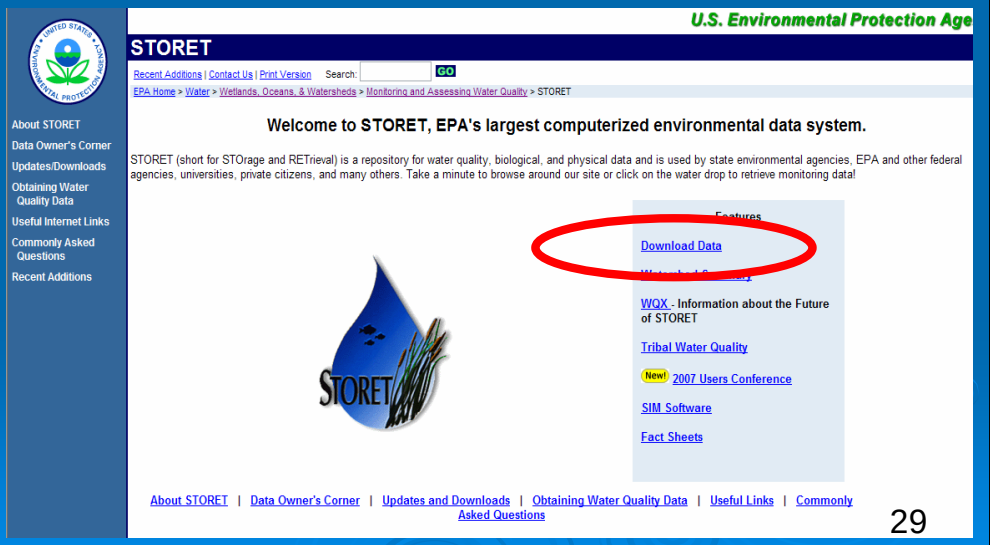
Seeing What's in the Warehouse

- Now that we know where we'd like to look for data, let's go to the STORET Watershed Summary tool to see what kinds of data are there

www.epa.gov/storet



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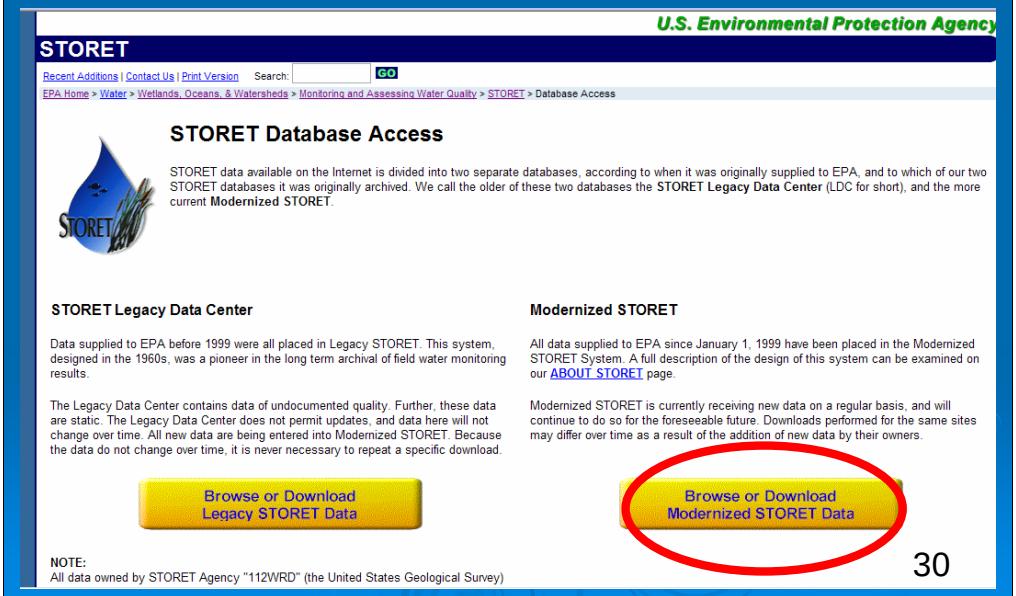
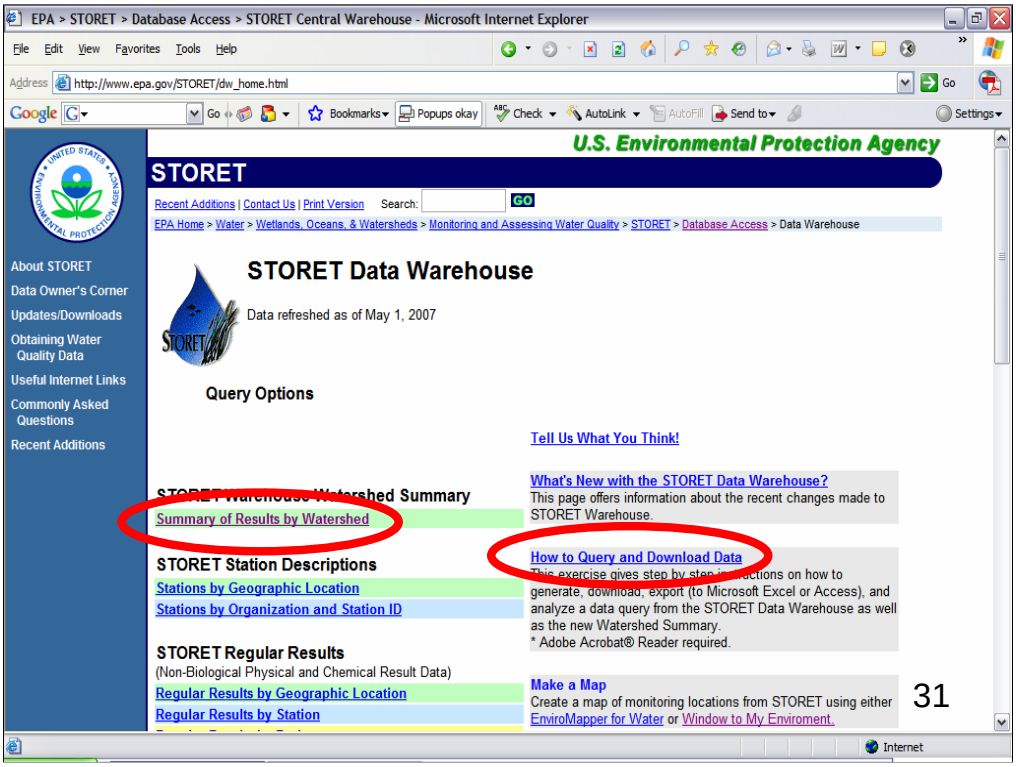
Data Warehouse Access



30


EPA > STORET > Database Access > STORET Central Warehouse - Microsoft Internet Explorer
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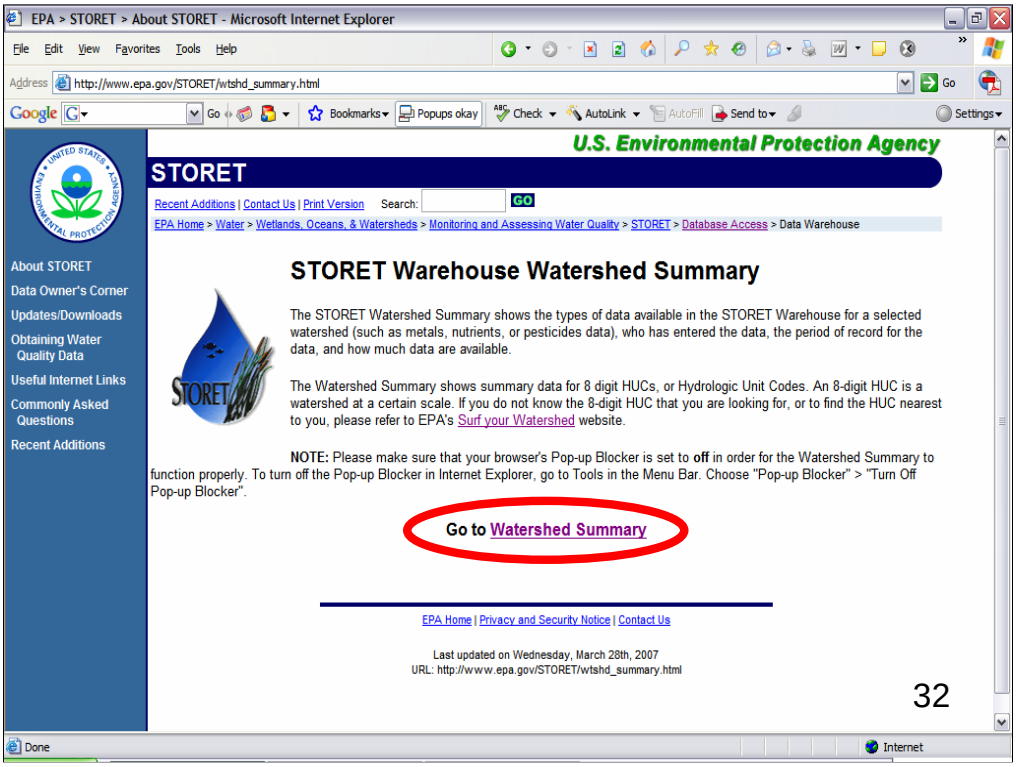
EPA > STORET > About STORET - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.epa.gov/STORET/wtshd_summary.html
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Useful Internet Links
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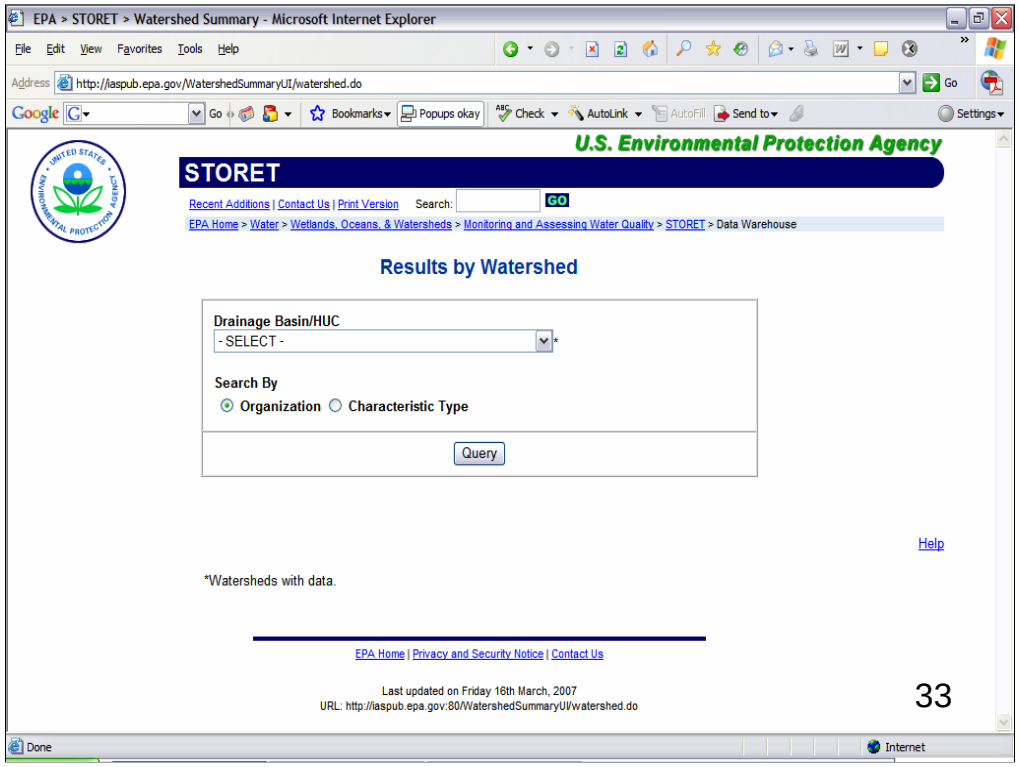
STORET Warehouse Watershed Summary
The STORET Watershed Summary shows the types of data available in the STORET Warehouse for a selected watershed (such as metals, nutrients, or pesticides data), who has entered the data, the period of record for the data, and how much data are available.
The Watershed Summary shows summary data for 8 digit HUCs, or Hydrologic Unit Codes. An 8-digit HUC is a watershed at a certain scale. If you do not know the 8-digit HUC that you are looking for, or to find the HUC nearest to you, please refer to EPA's Surf your Watershed website.
NOTE: Please make sure that your browser's Pop-up Blocker is set to off in order for the Watershed Summary to function properly. To turn off the Pop-up Blocker in Internet Explorer, go to Tools in the Menu Bar. Choose "Pop-up Blocker" > "Turn Off Pop-up Blocker".
Go to Watershed Summary
EPA Home | Privacy and Security Notice | Contact Us
Last updated on Wednesday, March 28th, 2007
URL: http://www.epa.gov/STORET/wtshd_summary.html
32
Done
Internet


EPA > STORET > Watershed Summary - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://iaspub.epa.gov/WatershedSummaryUI/watershed.do
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Results by Watershed
Drainage Basin/HUC
- SELECT -
Search By
Organization Characteristic Type
Query
Help
*Watersheds with data.
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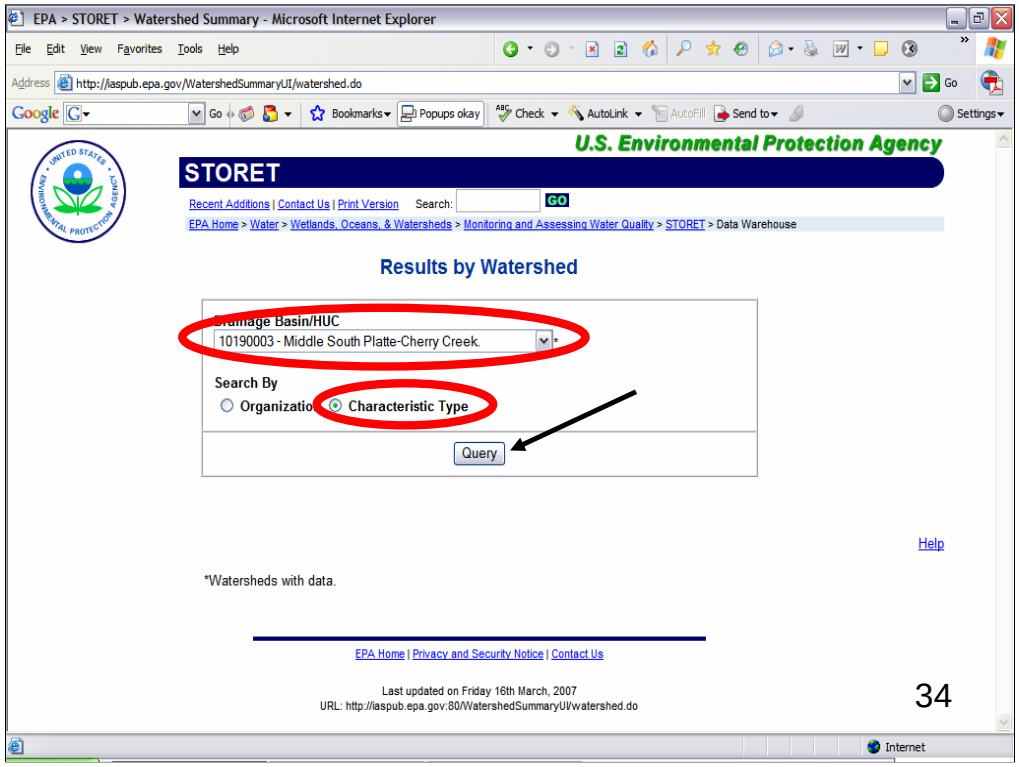
Last updated on Friday 16th March, 2007
URL: http://iaspub.epa.gov:80/WatershedSummaryUI/watershed.do
33
Done
Internet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Results by Watershed
Drainage Basin/HUC
10190003 - Middle South Platte-Cherry Creek.*
Search By
Organizatio
Characteristic Type
Query
Help
*Watersheds with data.
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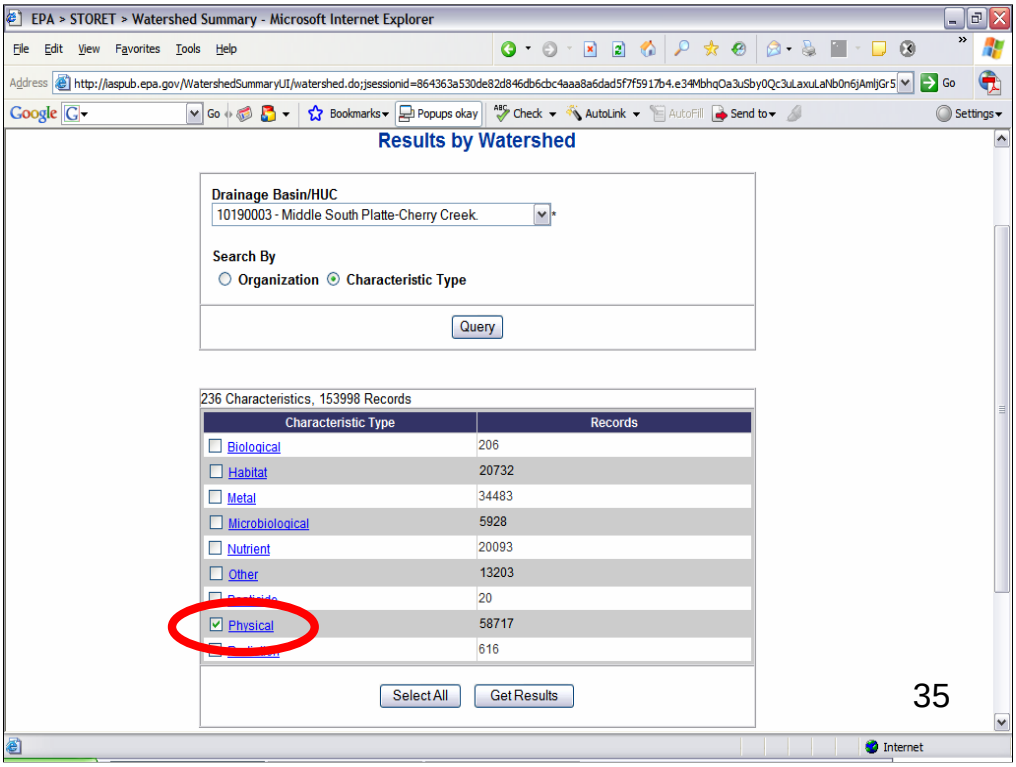
34
Internet


EPA > STORET > Watershed Summary - Microsoft Internet Explorer
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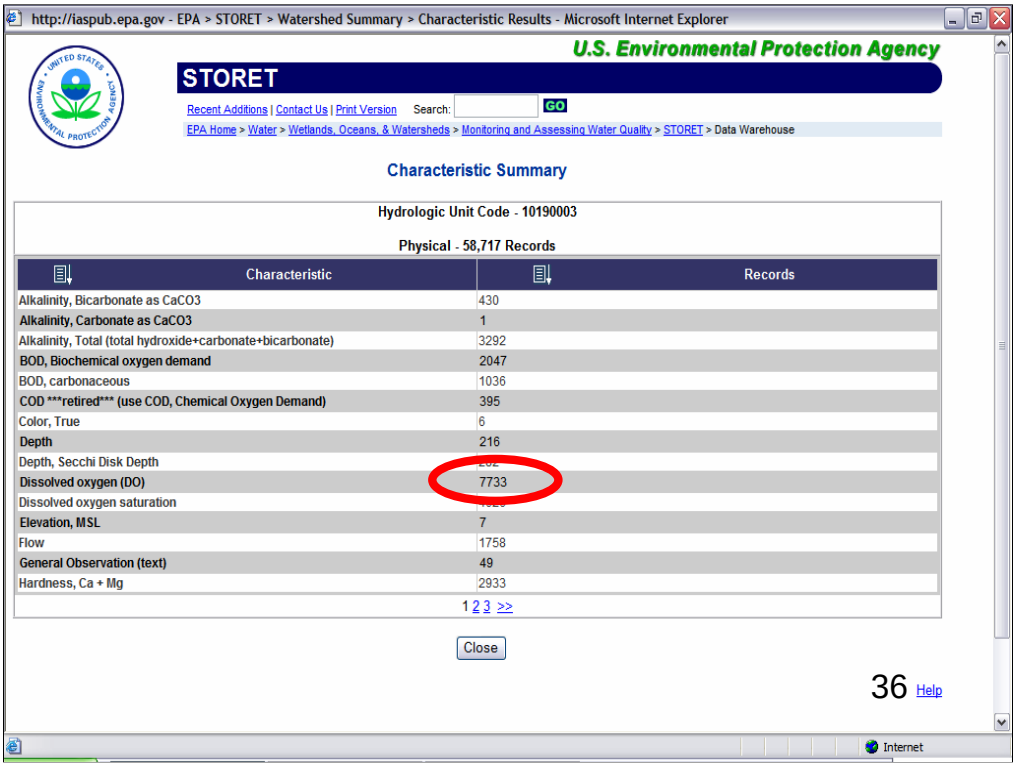
Results by Watershed
Drainage Basin/HUC
10190003 - Middle South Platte-Cherry Creek.
Search By
Organization
Characteristic Type
Query
236 Characteristics, 153998 Records
Characteristic Type
Records
Biological 206
Habitat 20732
Metal 34483
Microbiological 5928
Nutrient 20093
Other 13203
20
Physical 58717
616
Select All
Get Results
35
Internet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Characteristic Summary
Hydrologic Unit Code - 10190003
Physical - 58,717 Records
Characteristic
Records
Alkalinity, Bicarbonate as CaCO3 430
Alkalinity, Carbonate as CaCO3 1
Alkalinity, Total (total hydroxide+carbonate+bicarbonate) 3292
BOD, Biochemical oxygen demand 2047
BOD, carbonaceous 1036
COD ***retired*** (use COD, Chemical Oxygen Demand) 395
Color, True 6
Depth 216
Depth, Secchi Disk Depth
Dissolved oxygen (DO) 7733
Dissolved oxygen saturation
Elevation, MSL 7
Flow 1758
General Observation (text) 49
Hardness, Ca + Mg 2933
1 2 3 >>
Close
36 Help
Internet

Going directly to the Warehouse

- It looks like there are a lot of Dissolved Oxygen readings that were taken in this watershed
- Let's go directly into the Warehouse to pull out some of that data

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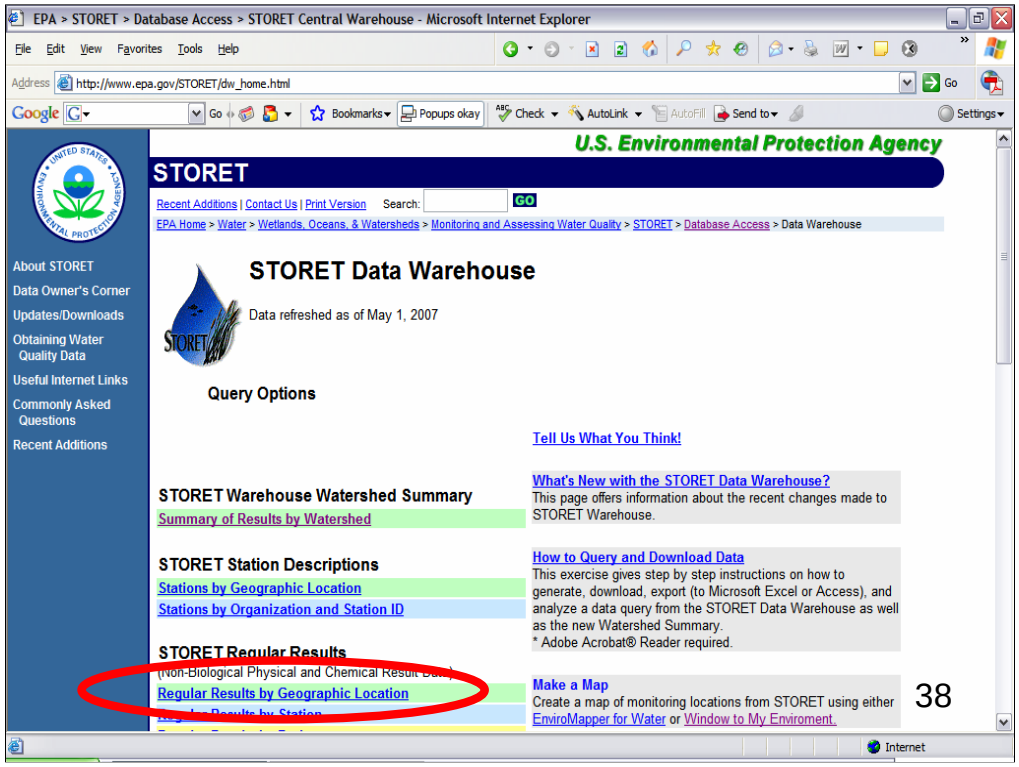
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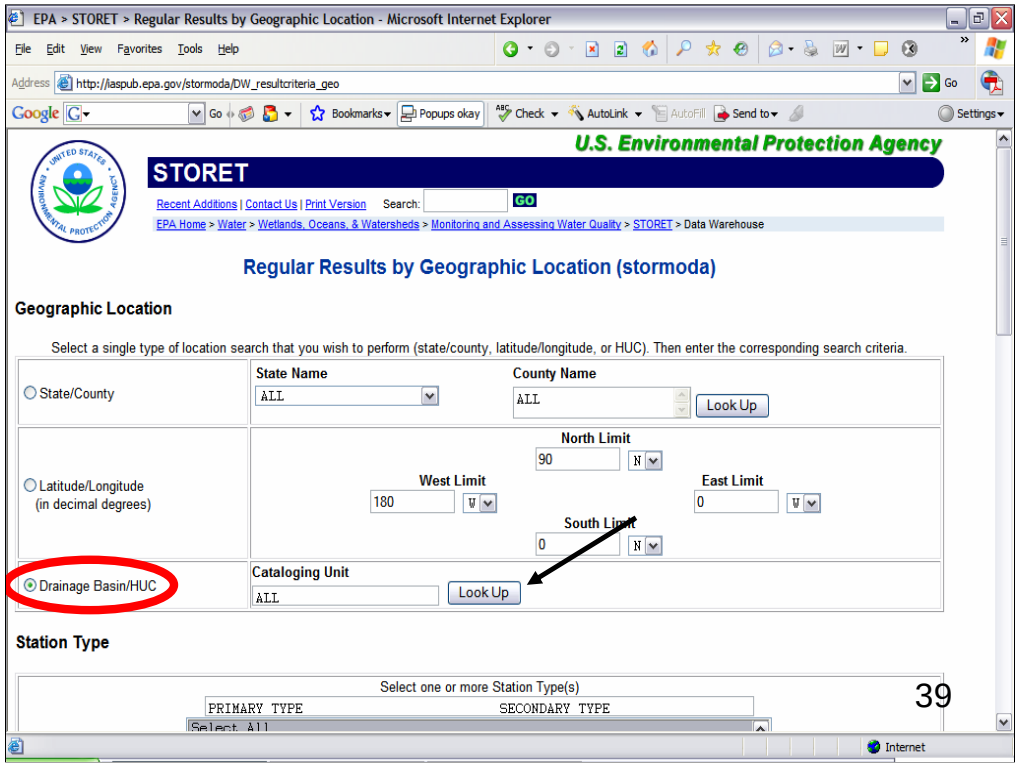
EPA > STORET > Regular Results by Geographic Location - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_resultcriteria_geo
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STORET
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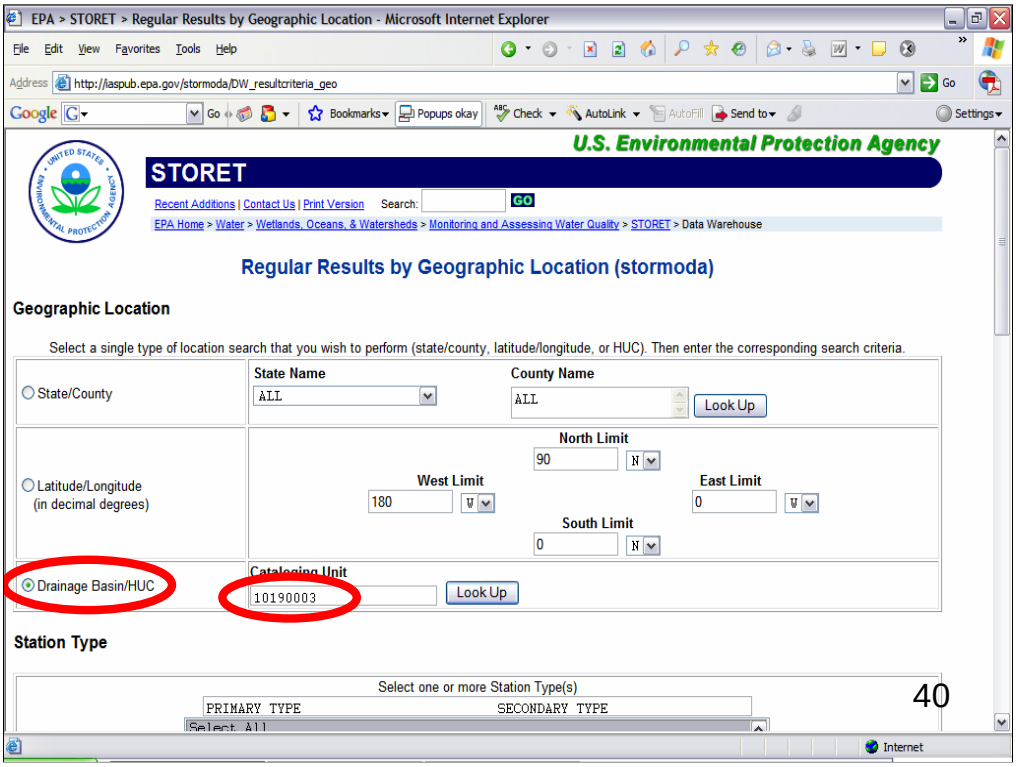
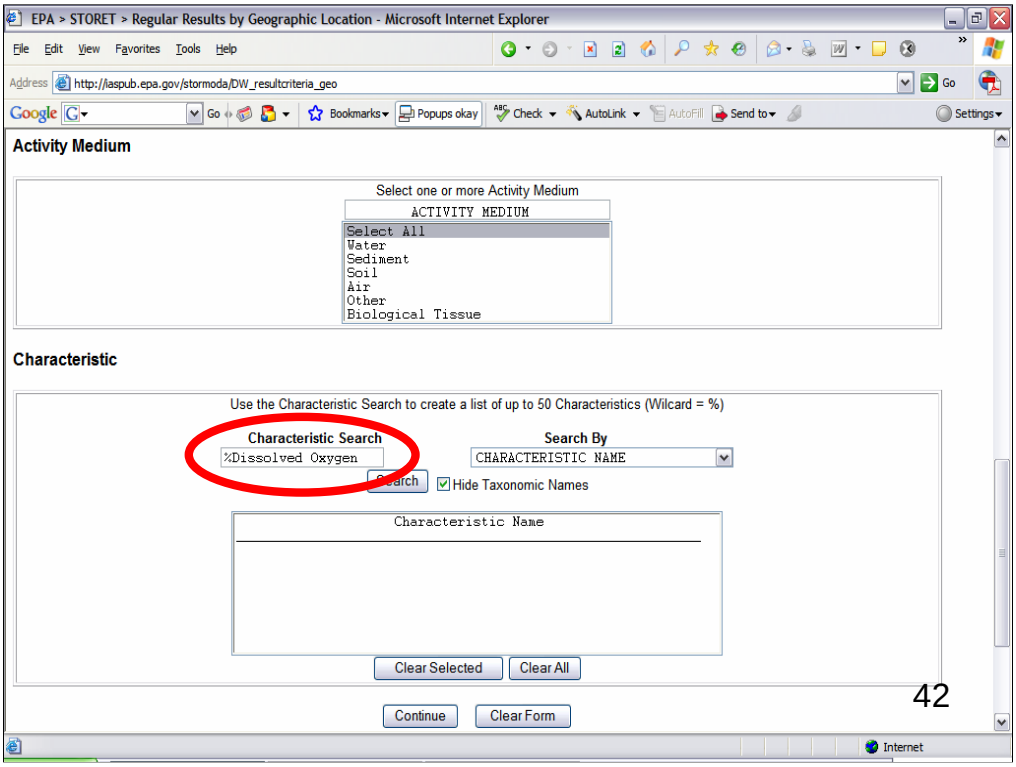
Regular Results by Geographic Location (stormoda)
Geographic Location
Select a single type of location search that you wish to perform (state/county, latitude/longitude, or HUC). Then enter the corresponding search criteria.
State/County
State Name
ALL
County Name
ALL
Look Up
Latitude/Longitude (in decimal degrees)
North Limit
90
N
West Limit
180
W
East Limit
0
W
South Limit
0
N
Drainage Basin/HUC
Cataloging Unit
ALL
Look Up
Station Type
Select one or more Station Type(s)
PRIMARY TYPE
SECONDARY TYPE
Select All
Internet

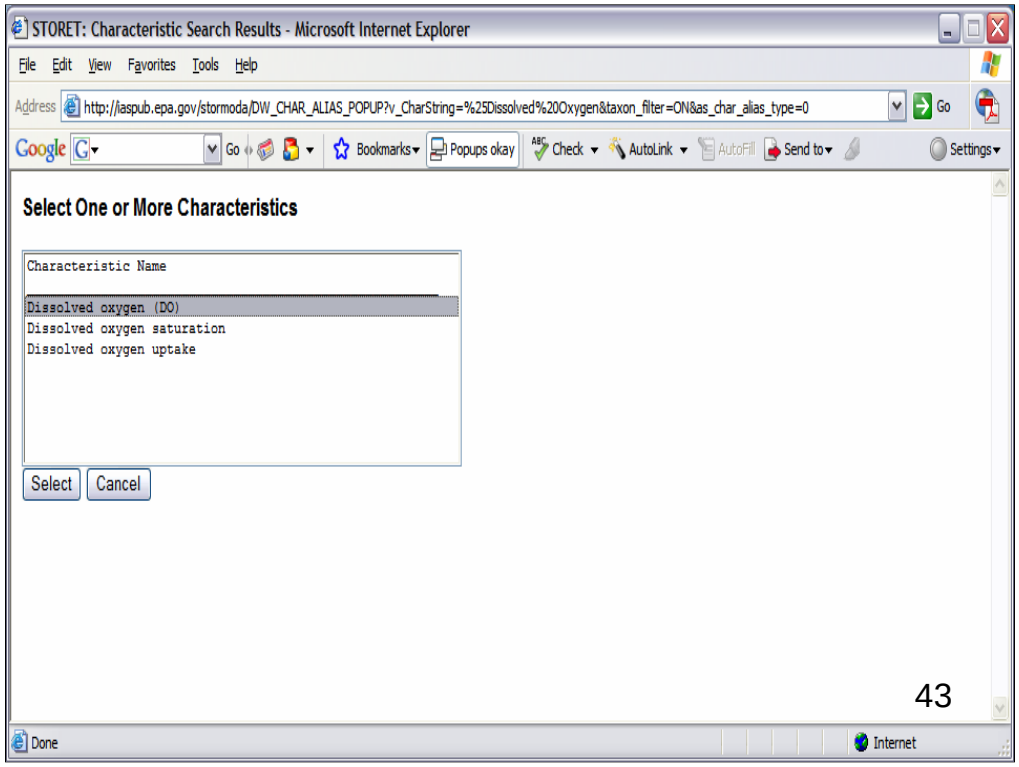

EPA > STORET > Regular Results by Geographic Location - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_resultcriteria_geo
U.S. Environmental Protection Agency
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Regular Results by Geographic Location (stormoda)
Geographic Location
Select a single type of location search that you wish to perform (state/county, latitude/longitude, or HUC). Then enter the corresponding search criteria.
State/County
State Name
ALL
County Name
ALL
Look Up
Latitude/Longitude (in decimal degrees)
North Limit
90
N
West Limit
180
W
East Limit
0
W
South Limit
0
N
Drainage Basin/HUC
Cataloging Unit
10190003
Look Up
Station Type
Select one or more Station Type(s)
PRIMARY TYPE
SECONDARY TYPE
Select All
Internet

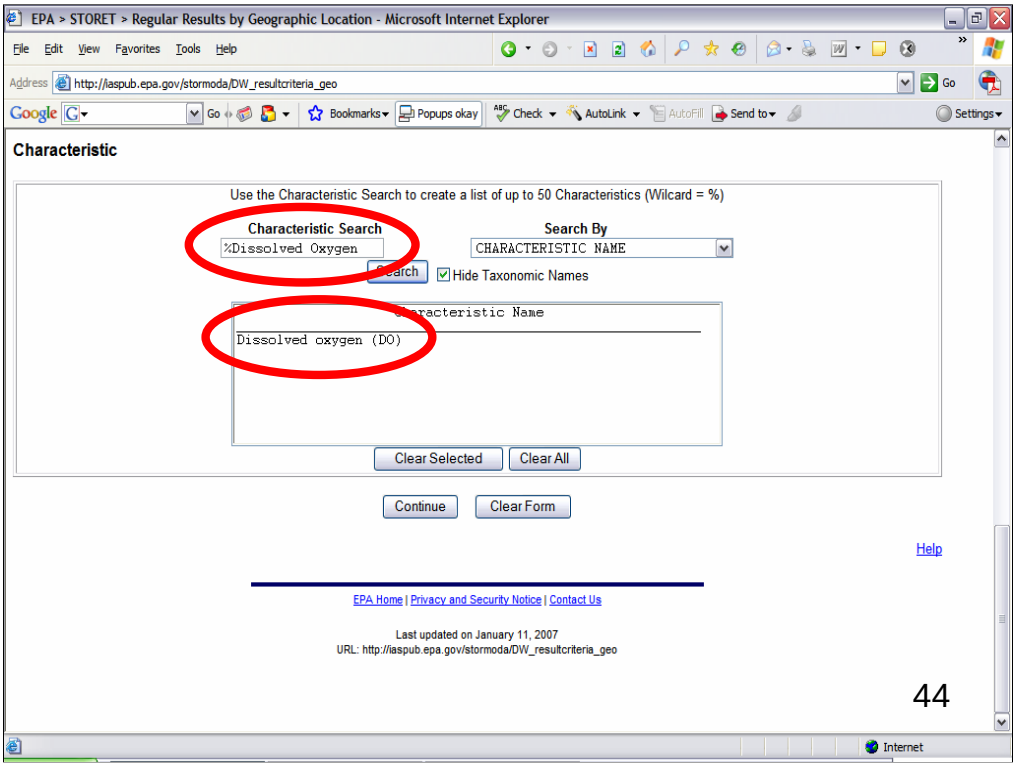
- When you go directly to the Warehouse, you can specify what data you want
  - At what type of station the data were collected
  - When the data were collected
- Since we want dissolved oxygen data, we'll choose that

41


EPA > STORET > Regular Results by Geographic Location - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_resultcriteria_geo
Activity Medium
Select one or more Activity Medium
ACTIVITY MEDIUM
Select All
Water
Sediment
Soil
Air
Other
Biological Tissue
Characteristic
Use the Characteristic Search to create a list of up to 50 Characteristics (Wilcard = %)
Characteristic Search
%Dissolved Oxygen
Search By
CHARACTERISTIC NAME
Search
Hide Taxonomic Names
Characteristic Name
Clear Selected
Clear All
Continue
Clear Form
Internet

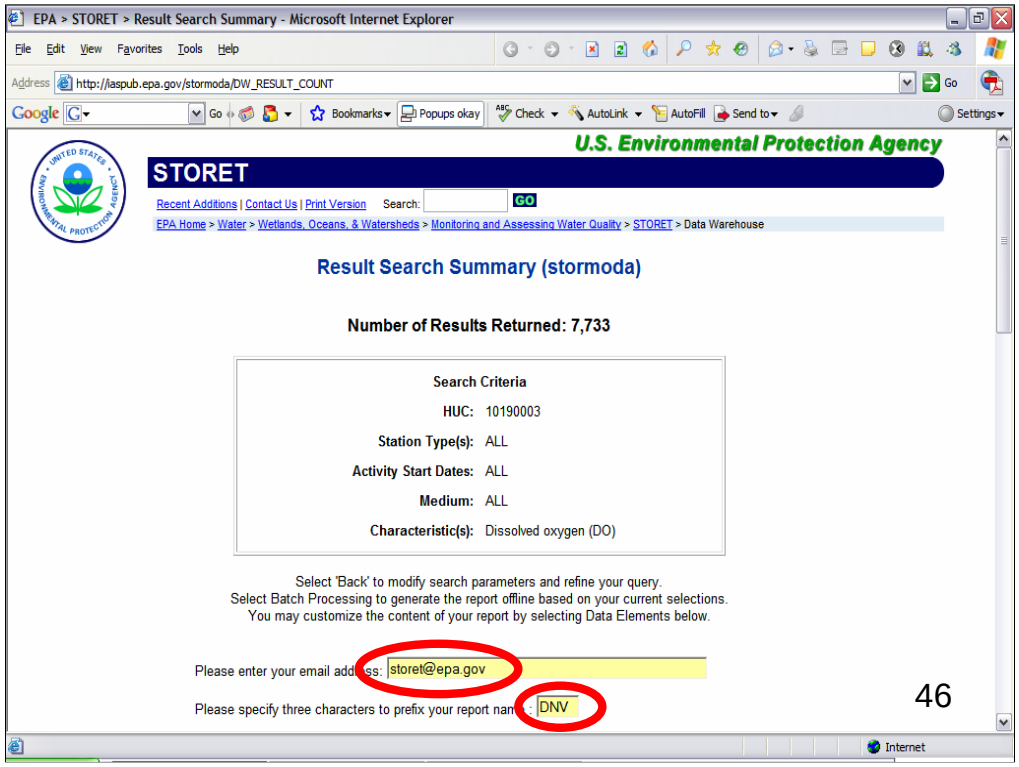
42


STORET: Characteristic Search Results - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://iaspub.epa.gov/stormoda/DW_CHAR_ALIAS_POPUP?v_CharString=%25Dissolved%20Oxygen&taxon_filter=ON&as_char_alias_type=0
Go
Google
Bookmarks
Popups okay
Check
AutoLink
AutoFill
Send to
Settings
Select One or More Characteristics
Characteristic Name
Dissolved oxygen (DO)
Dissolved oxygen saturation
Dissolved oxygen uptake
Select
Cancel
43
Done
Internet

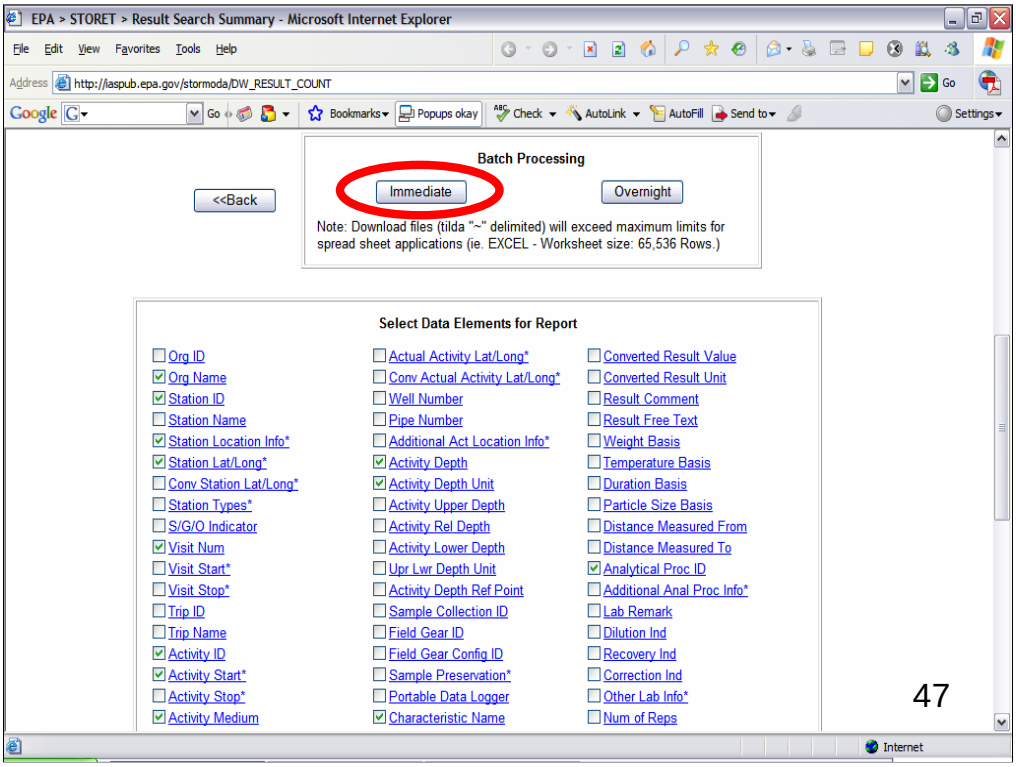

EPA > STORET > Regular Results by Geographic Location - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://iaspub.epa.gov/stormoda/DW_resultcriteria_geo
Characteristic
Use the Characteristic Search to create a list of up to 50 Characteristics (Wilcard = %)
Characteristic Search
%Dissolved Oxygen
Search By
CHARACTERISTIC NAME
Search
Hide Taxonomic Names
Characteristic Name
Dissolved oxygen (DO)
Clear Selected
Clear All
Continue
Clear Form
Help
EPA Home | Privacy and Security Notice | Contact Us
Last updated on January 11, 2007
URL: http://iaspub.epa.gov/stormoda/DW_resultcriteria_geo
44
Internet

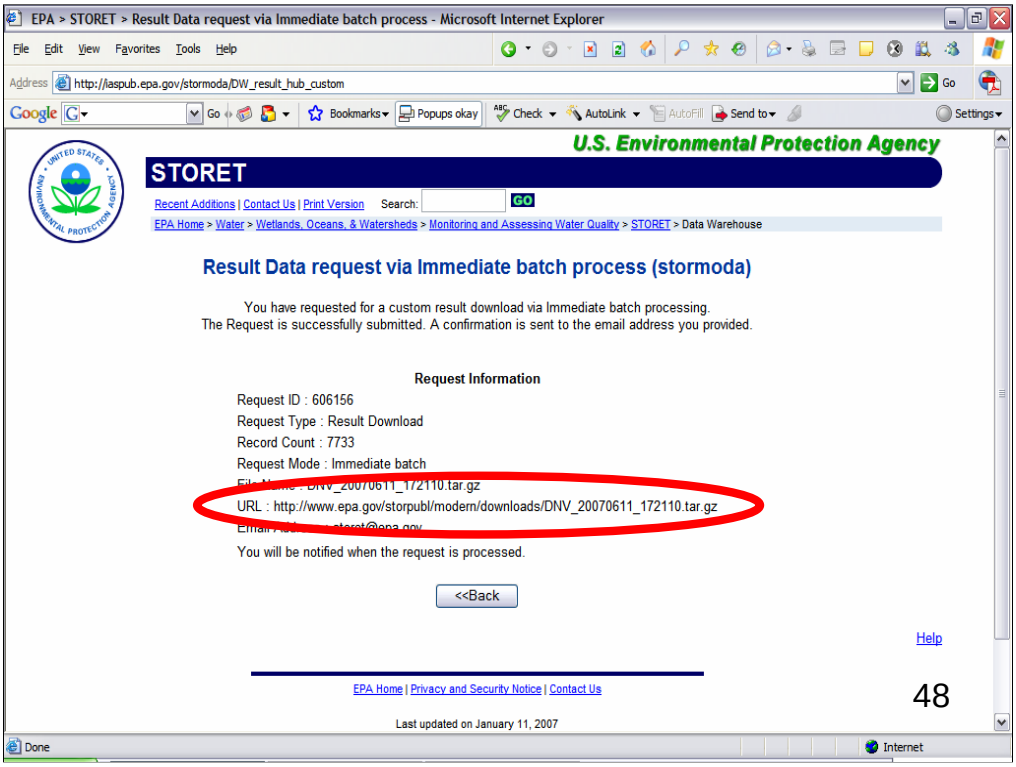
- Now that we've chosen dissolved oxygen, we're going to go download the data
- We'll continue on the next screen…

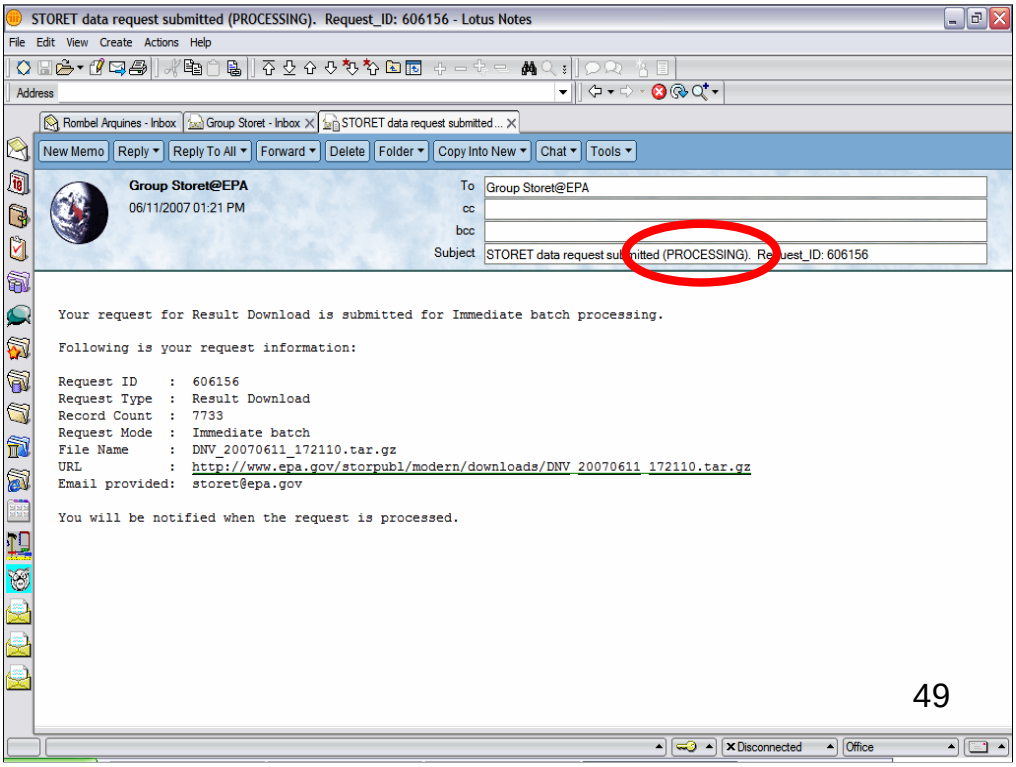
45

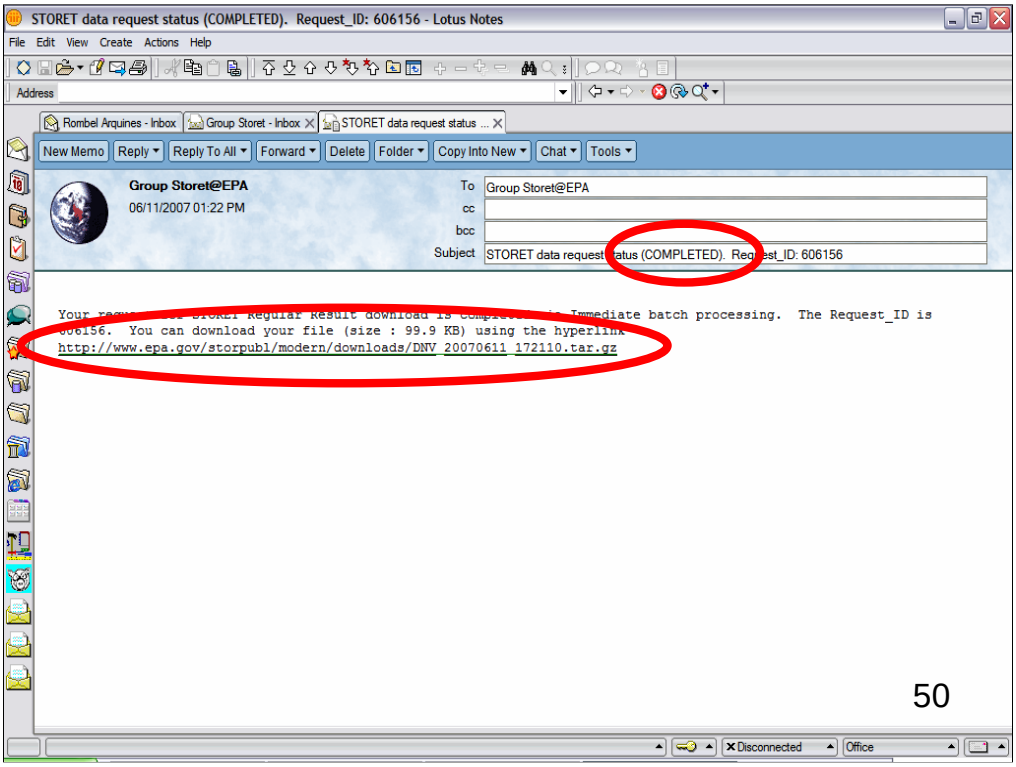

EPA > STORET > Result Search Summary - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_RESULT_COUNT
U.S. Environmental Protection Agency
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Result Search Summary (stormoda)
Number of Results Returned: 7,733
Search Criteria
HUC: 10190003
Station Type(s): ALL
Activity Start Dates: ALL
Medium: ALL
Characteristic(s): Dissolved oxygen (DO)
Select 'Back' to modify search parameters and refine your query.
Select Batch Processing to generate the report offline based on your current selections.
You may customize the content of your report by selecting Data Elements below.
Please enter your email address: storet@epa.gov
Please specify three characters to prefix your report name: DNV
Internet

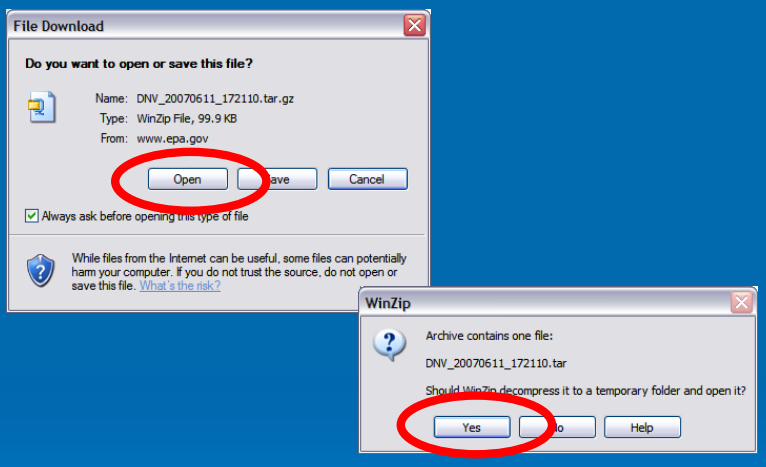
46


EPA > STORET > Result Search Summary - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_RESULT_COUNT
Batch Processing
<<Back
Immediate
Overnight
Note: Download files (tilda "~" delimited) will exceed maximum limits for spread sheet applications (ie. EXCEL - Worksheet size: 65,536 Rows.)
Select Data Elements for Report
Org ID
Org Name
Station ID
Station Name
Station Location Info*
Station Lat/Long*
Conv Station Lat/Long*
Station Types*
S/G/O Indicator
Visit Num
Visit Start*
Visit Stop*
Trip ID
Trip Name
Activity ID
Activity Start*
Activity Stop*
Activity Medium
Actual Activity Lat/Long*
Conv Actual Activity Lat/Long*
Well Number
Pipe Number
Additional Act Location Info*
Activity Depth
Activity Depth Unit
Activity Upper Depth
Activity Rel Depth
Activity Lower Depth
Upr Lwr Depth Unit
Activity Depth Ref Point
Sample Collection ID
Field Gear ID
Field Gear Config ID
Sample Preservation*
Portable Data Logger
Characteristic Name
Converted Result Value
Converted Result Unit
Result Comment
Result Free Text
Weight Basis
Temperature Basis
Duration Basis
Particle Size Basis
Distance Measured From
Distance Measured To
Analytical Proc ID
Additional Anal Proc Info*
Lab Remark
Dilution Ind
Recovery Ind
Correction Ind
Other Lab Info*
Num of Reps
47
Internet

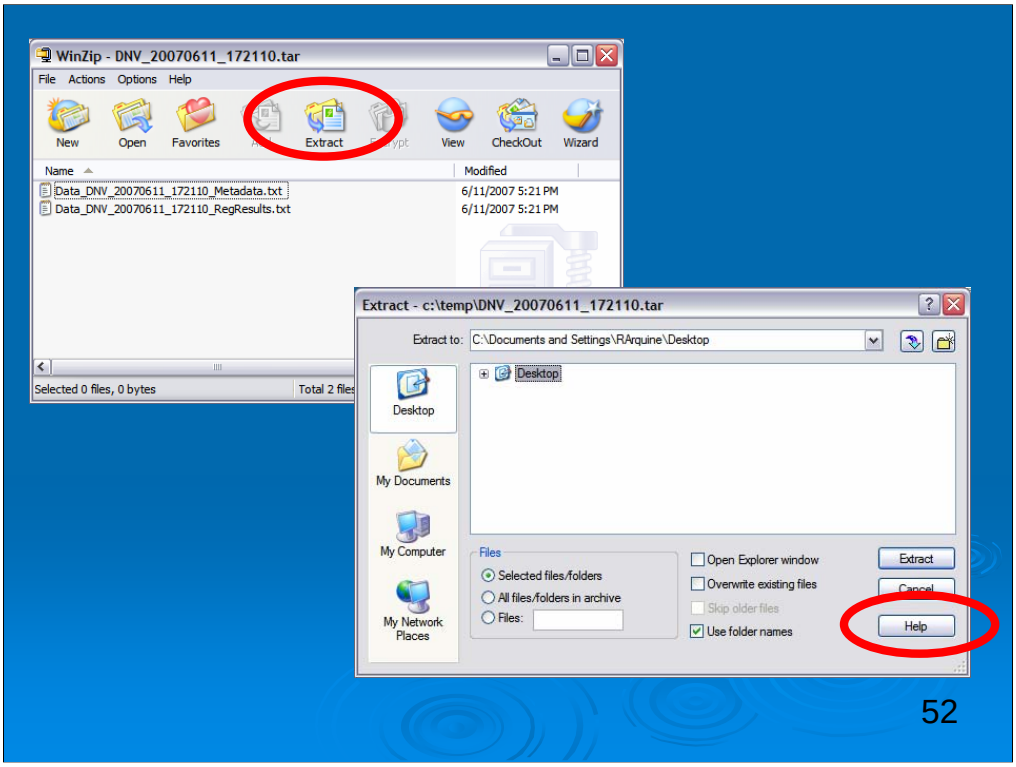

EPA > STORET > Result Data request via Immediate batch process - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://laspub.epa.gov/stormoda/DW_result_hub_custom
U.S. Environmental Protection Agency
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Result Data request via Immediate batch process (stormoda)
You have requested for a custom result download via Immediate batch processing.
The Request is successfully submitted. A confirmation is sent to the email address you provided.
Request Information
Request ID : 606156
Request Type : Result Download
Record Count : 7733
Request Mode : Immediate batch
URL : http://www.epa.gov/storpubl/modern/downloads/DNV_20070611_172110.tar.gz
You will be notified when the request is processed.
<<Back
Help
EPA Home | Privacy and Security Notice | Contact Us
Last updated on January 11, 2007
Done
Internet


STORET data request submitted (PROCESSING). Request_ID: 606156 - Lotus Notes
File Edit View Create Actions Help
Address
Rombel Arquines - Inbox
Group Storet - Inbox
STORET data request submitted ...
New Memo
Reply
Reply To All
Forward
Delete
Folder
Copy Into New
Chat
Tools
Group Storet@EPA
06/11/2007 01:21 PM
To Group Storet@EPA
cc
bcc
Subject STORET data request submitted (PROCESSING). Request_ID: 606156
Your request for Result Download is submitted for Immediate batch processing.
Following is your request information:
Request ID : 606156
Request Type : Result Download
Record Count : 7733
Request Mode : Immediate batch
File Name : DNV_20070611_172110.tar.gz
URL : http://www.epa.gov/storpubl/modern/downloads/DNV_20070611_172110.tar.gz
Email provided: storet@epa.gov
You will be notified when the request is processed.
49
Disconnected
Office


STORET data request status (COMPLETED). Request_ID: 606156 - Lotus Notes
File Edit View Create Actions Help
Address
Rombel Arquines - Inbox
Group Storet - Inbox
STORET data request status ...
New Memo
Reply
Reply To All
Forward
Delete
Folder
Copy Into New
Chat
Tools
Group Storet@EPA
06/11/2007 01:22 PM
To Group Storet@EPA
cc
bcc
Subject STORET data request status (COMPLETED). Request_ID: 606156
Immediate batch processing. The Request_ID is
606156. You can download your file (size : 99.9 KB) using the hyperlink
http://www.epa.gov/storpubl/modern/downloads/DNV_20070611_172110.tar.gz
50
Disconnected
Office


File Download
Do you want to open or save this file?
Name: DNV_20070611_172110.tar.gz
Type: WinZip File, 99.9 KB
From: www.epa.gov
Open
Cancel
Always ask before opening this type of file
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?
WinZip
Archive contains one file:
DNV_20070611_172110.tar
Yes
Help

51


WinZip - DNV_20070611_172110.tar
File Actions Options Help
New Open Favorites Extract View CheckOut Wizard
Name
Modified
Data_DNV_20070611_172110_Metadata.txt
Data_DNV_20070611_172110_RegResults.txt
6/11/2007 5:21 PM
6/11/2007 5:21 PM
Selected 0 files, 0 bytes
Total 2 files
Extract - c:\temp\DNV_20070611_172110.tar
Extract to: C:\Documents and Settings\RArquine\Desktop
Desktop
My Documents
My Computer
My Network Places
Files
Selected files/folders
All files/folders in archive
Files:
Open Explorer window
Overwrite existing files
Skip older files
Use folder names
Extract
Cancel
Help
52

Questions?

Kristen Gunthardt, IT Specialist, US EPA Monitoring Branch

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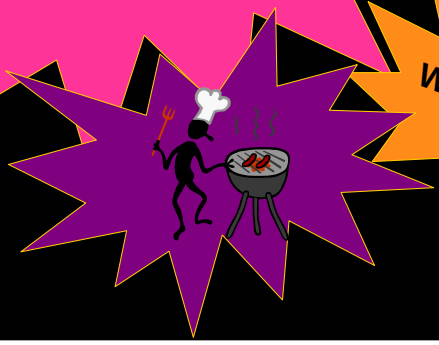
Celebrate July by Participating in the Watershed Academy's 23rd Webcast:

AMD&ART, an award-winning watershed partnership project combining science and art

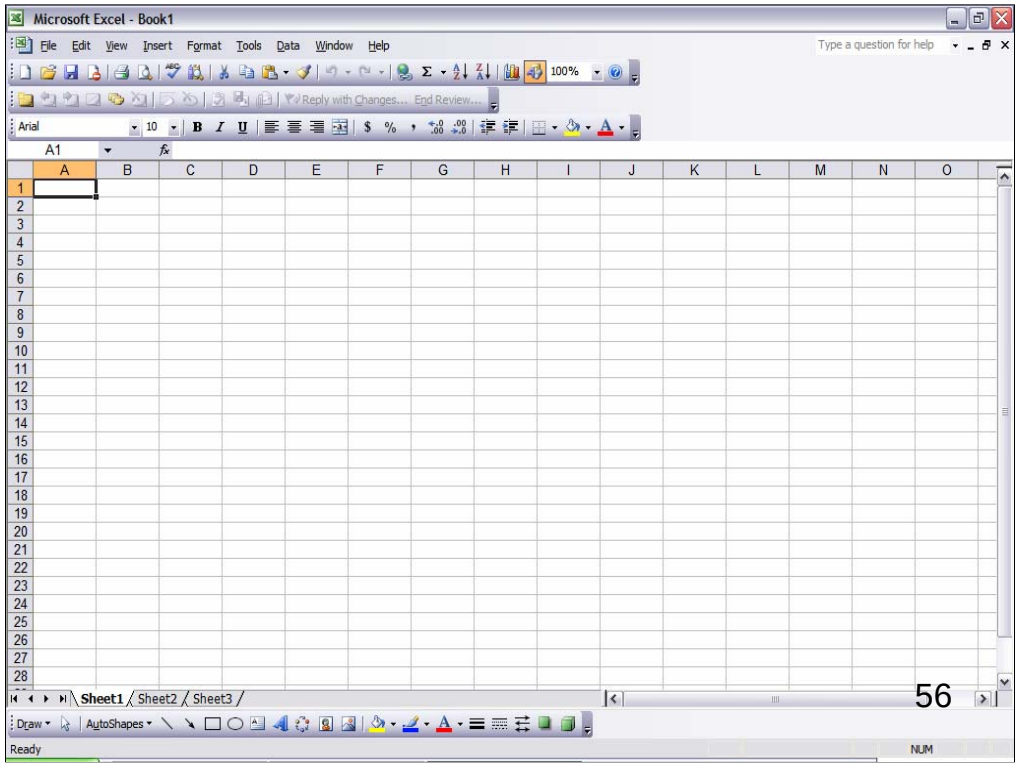


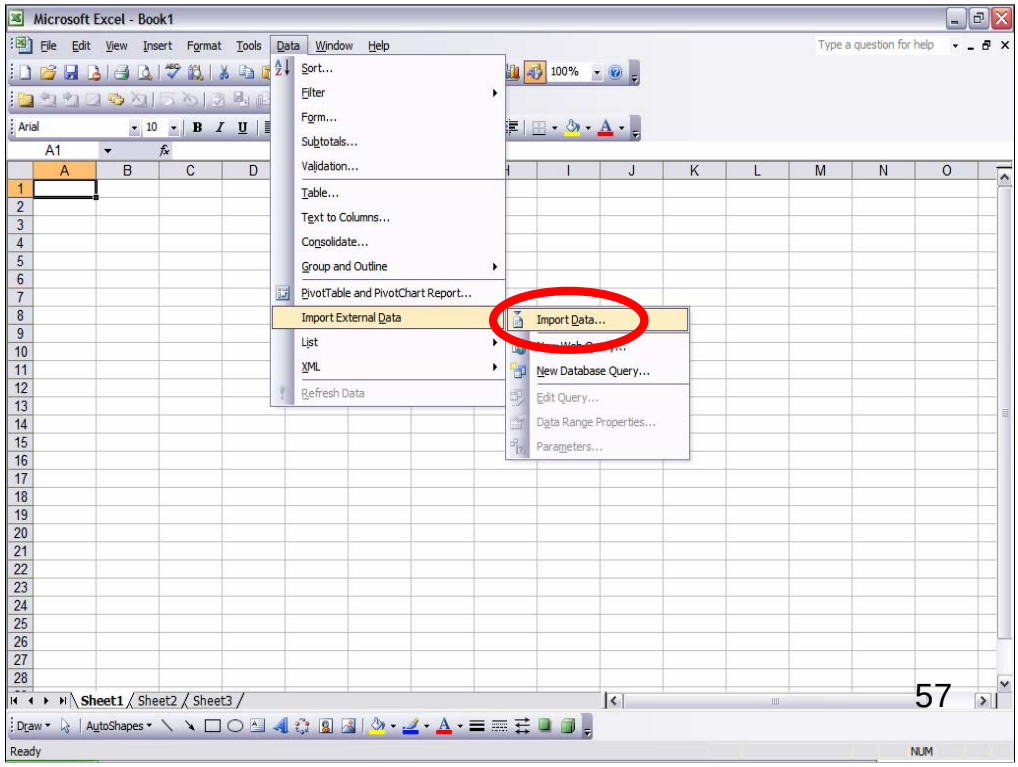
When: July 18th

54

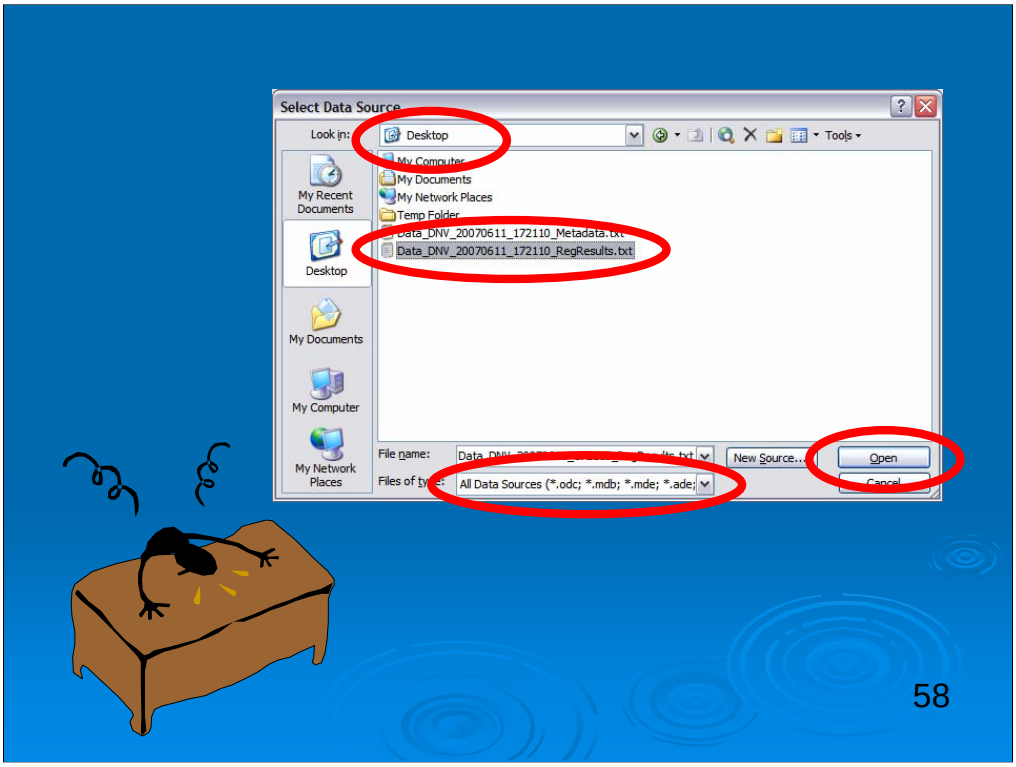
Now that we have saved the data to our computer, let's move the data into Excel so we can analyze it

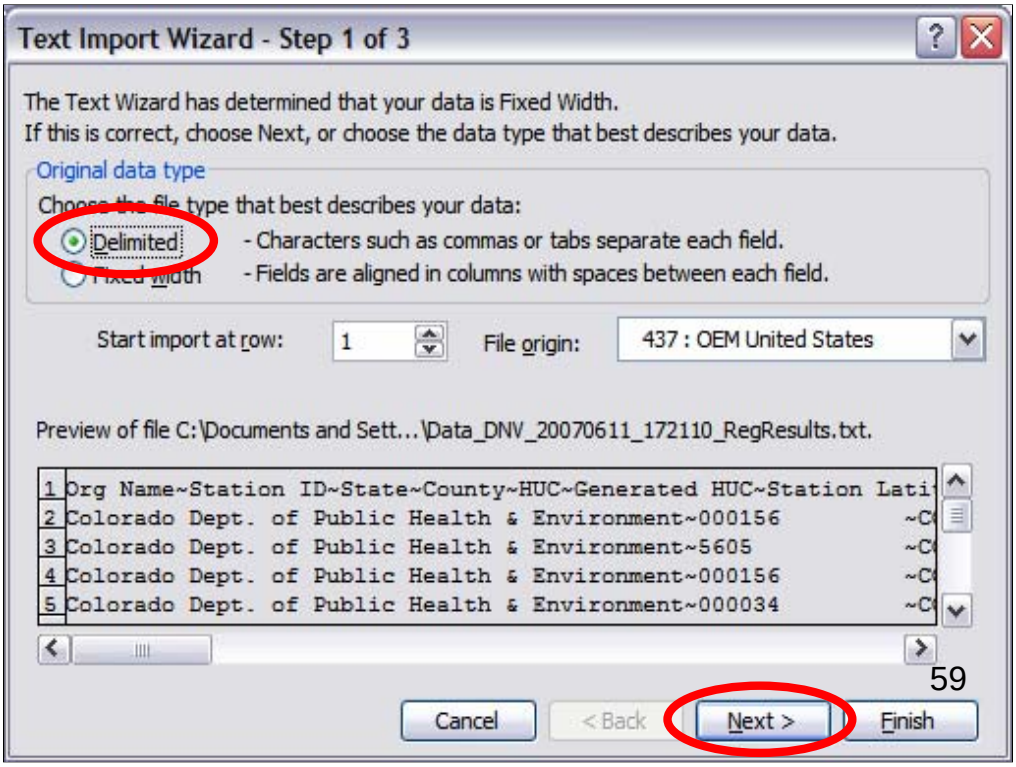
55


Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Type a question for help
Reply with Changes... End Review...
Arial 10
A1
Sheet1 Sheet2 Sheet3
Draw AutoShapes
Ready
NUM
56

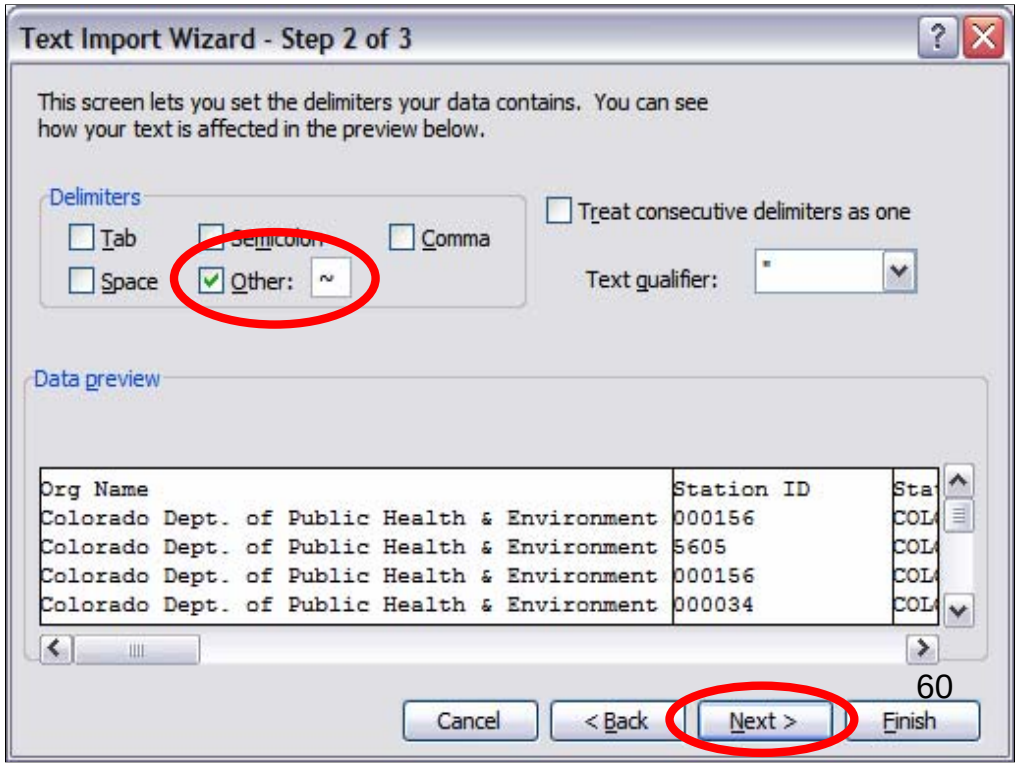

Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Type a question for help
Sort...
Filter
Form...
Subtotals...
Validation...
Table...
Text to Columns...
Consolidate...
Group and Outline
PivotTable and PivotChart Report...
Import External Data
List
XML
Refresh Data
Import Data...
New Database Query...
Edit Query...
Data Range Properties...
Parameters...
Sheet1 Sheet2 Sheet3
Draw AutoShapes
Ready
NUM

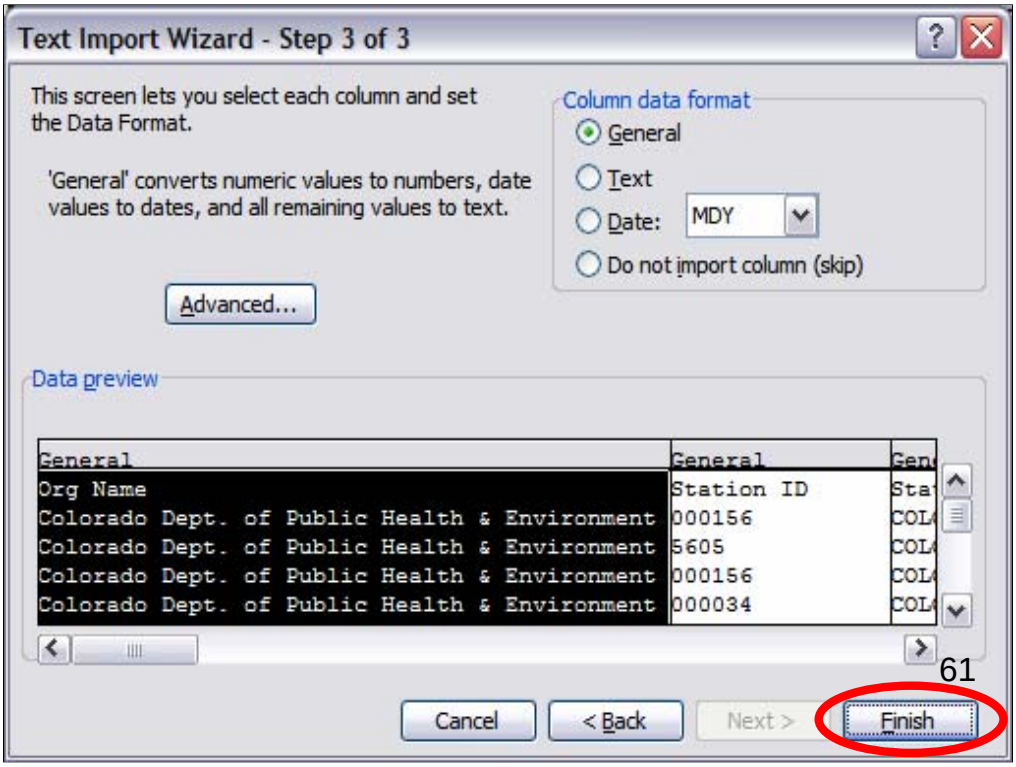
57

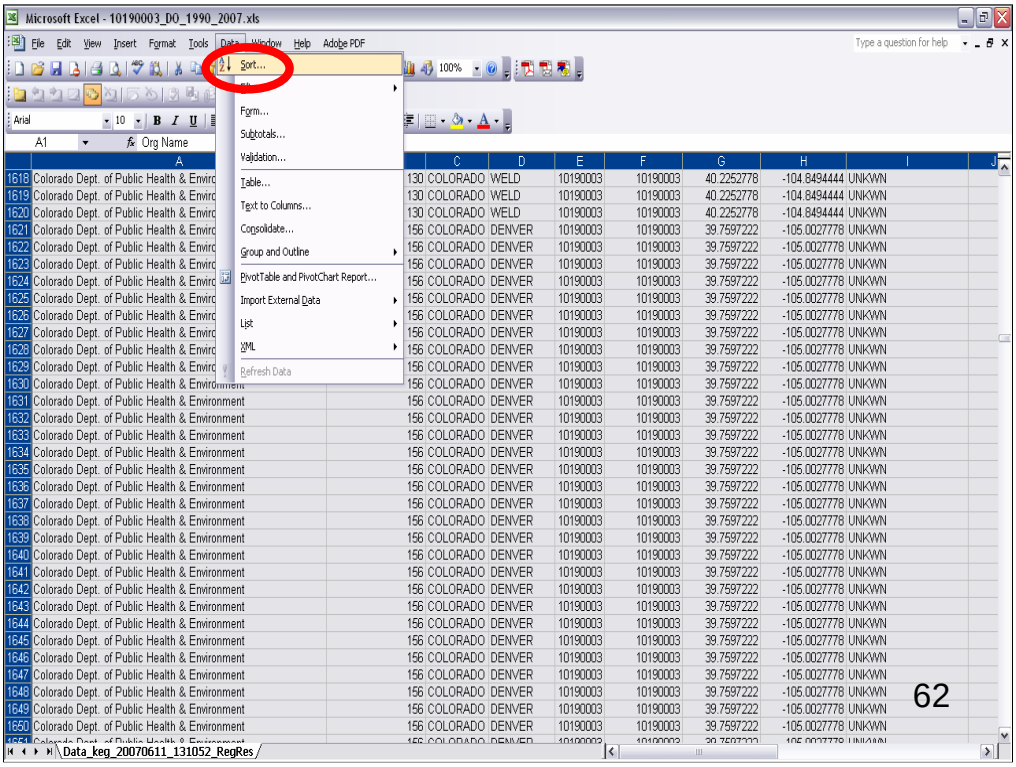

Select Data Source
Look in:
Desktop
Tools
My Computer
My Documents
My Network Places
Temp Folder
Data_DNV_20070611_172110_Metadata.txt
Data_DNV_20070611_172110_RegResults.txt
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
File name:
New Source...
Open
Cancel
All Data Sources (*.odc; *.mdb; *.mde; *.ade;
58

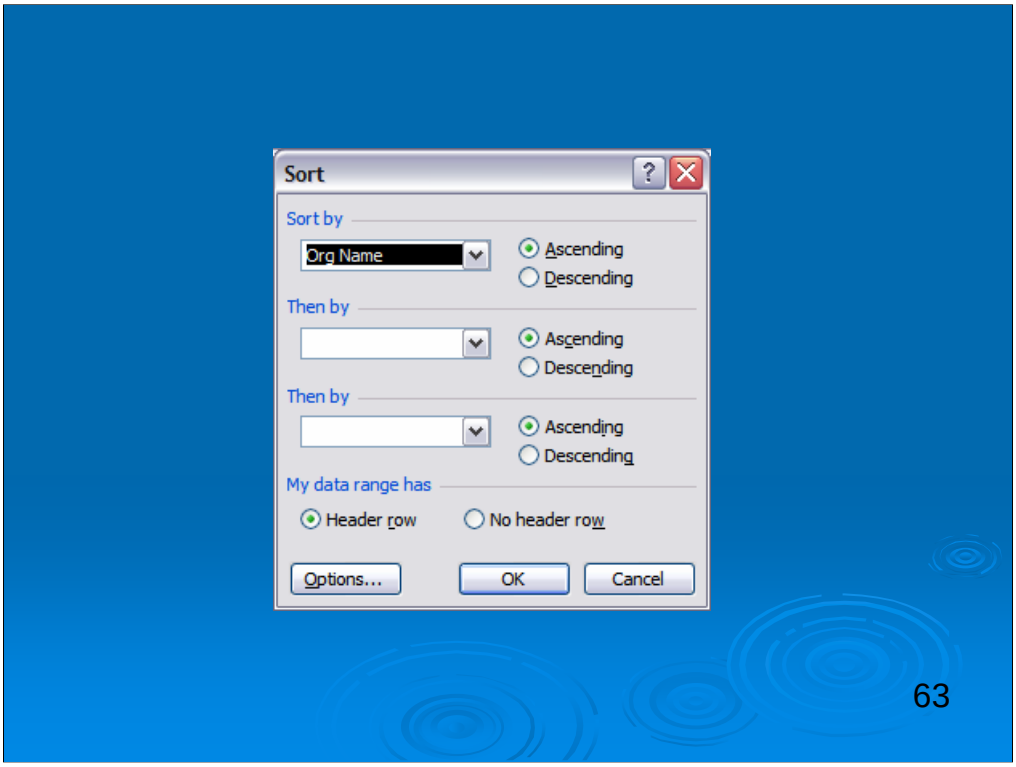

Text Import Wizard - Step 1 of 3
The Text Wizard has determined that your data is Fixed Width.
If this is correct, choose Next, or choose the data type that best describes your data.
Original data type
Choose the file type that best describes your data:
Delimited - Characters such as commas or tabs separate each field.
Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row: 1
File origin: 437 : OEM United States
Preview of file C:\Documents and Sett...\Data_DNV_20070611_172110_RegResults.txt.
1 Org Name~Station ID~State~County~HUC~Generated HUC~Station Lati
2 Colorado Dept. of Public Health & Environment~000156 ~C
3 Colorado Dept. of Public Health & Environment~5605 ~C
4 Colorado Dept. of Public Health & Environment~000156 ~C
5 Colorado Dept. of Public Health & Environment~000034 ~C
Cancel
< Back
Next >
Finish

59

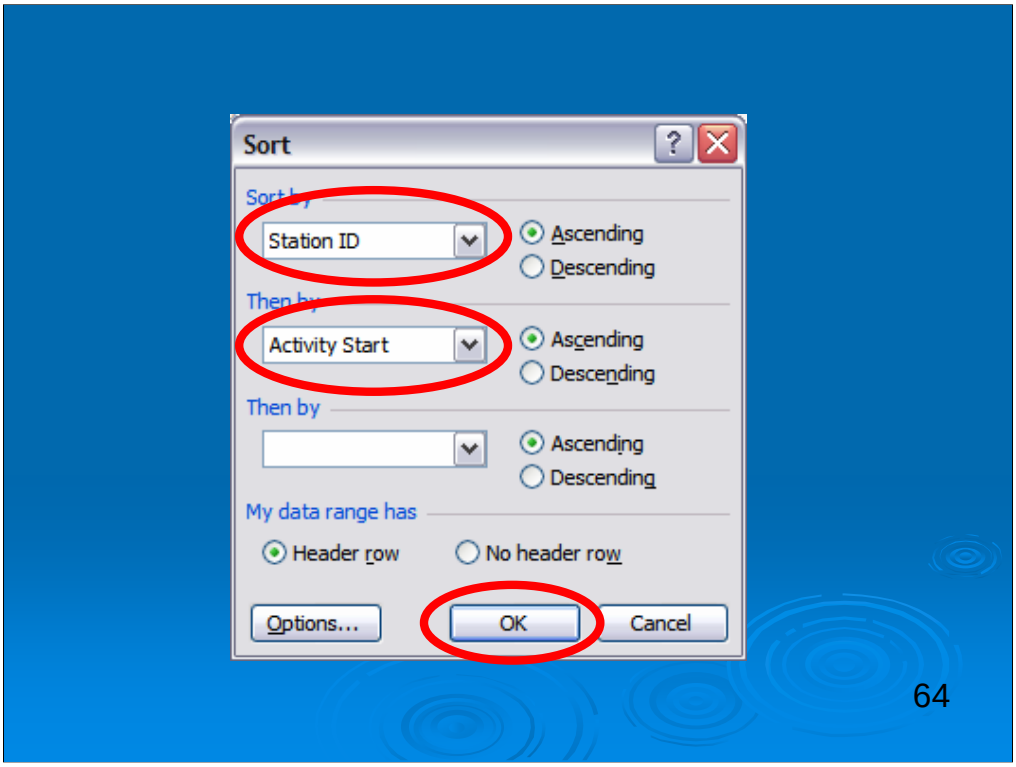

Text Import Wizard - Step 2 of 3
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.
Delimiters
Tab
Semicolon
Comma
Space
Other: ~
Treat consecutive delimiters as one
Text qualifier: "
Data preview
Org Name
Station ID
Colorado Dept. of Public Health & Environment 000156
Colorado Dept. of Public Health & Environment 5605
Colorado Dept. of Public Health & Environment 000156
Colorado Dept. of Public Health & Environment 000034
60
Cancel
< Back
Next >
Finish


Text Import Wizard - Step 3 of 3
This screen lets you select each column and set the Data Format.
'General' converts numeric values to numbers, date values to dates, and all remaining values to text.
Advanced...
Column data format
General
Text
Date: MDY
Do not import column (skip)
Data preview
General
Org Name
Colorado Dept. of Public Health & Environment
Colorado Dept. of Public Health & Environment
Colorado Dept. of Public Health & Environment
Colorado Dept. of Public Health & Environment
General
Station ID
000156
5605
000156
000034
61
Cancel
< Back
Next >
Finish


Microsoft Excel - 10190003_DO_1990_2007.xls
File Edit View Insert Format Tools Data Window Help Adobe PDF
Type a question for help
Sort...
Form...
Subtotals...
Validation...
Table...
Text to Columns...
Consolidate...
Group and Outline
PivotTable and PivotChart Report...
Import External Data
List
XML
Refresh Data
Data_keg_20070611_131052_RegRes
62

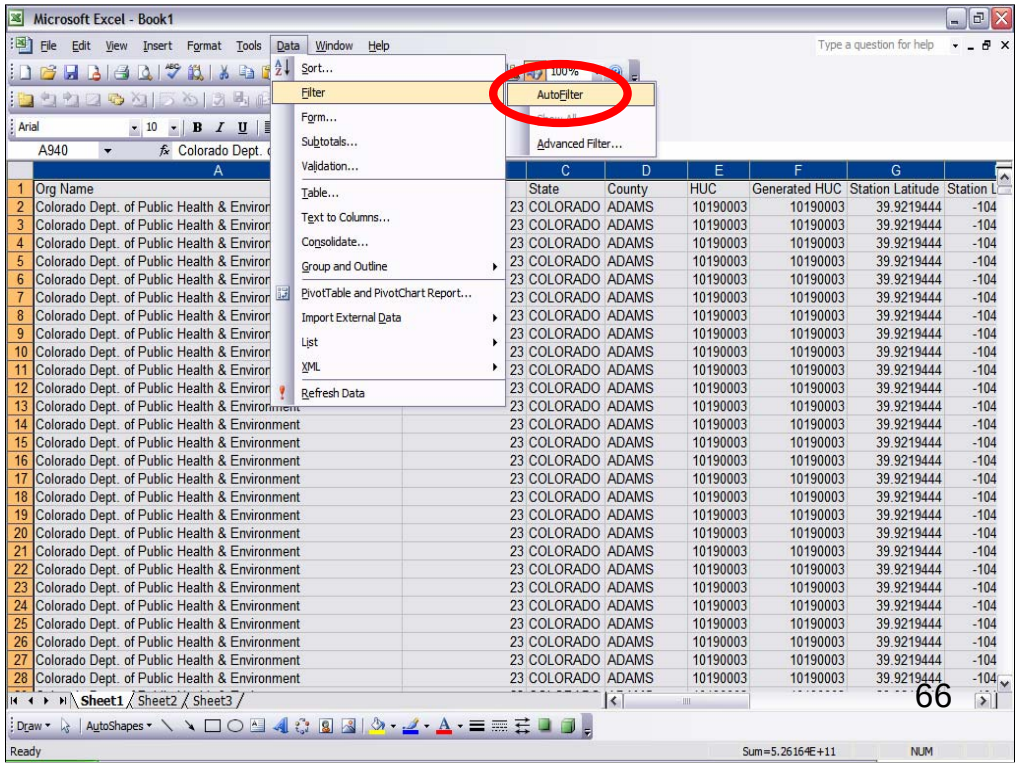

Sort
Sort by
Org Name
Ascending
Descending
Then by
Ascending
Descending
Then by
Ascending
Descending
My data range has
Header row
No header row
Options...
OK
Cancel

63

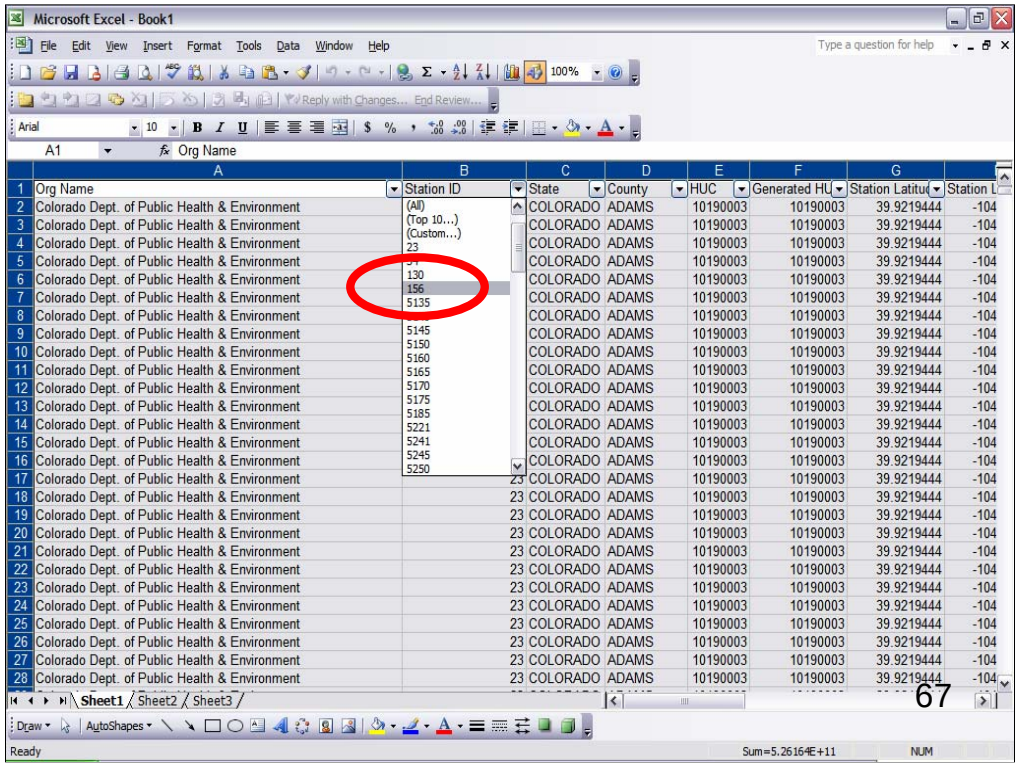

Sort
Sort by
Station ID
Ascending
Descending
Then by
Activity Start
Ascending
Descending
Then by
Ascending
Descending
My data range has
Header row
No header row
Options...
OK
Cancel
64

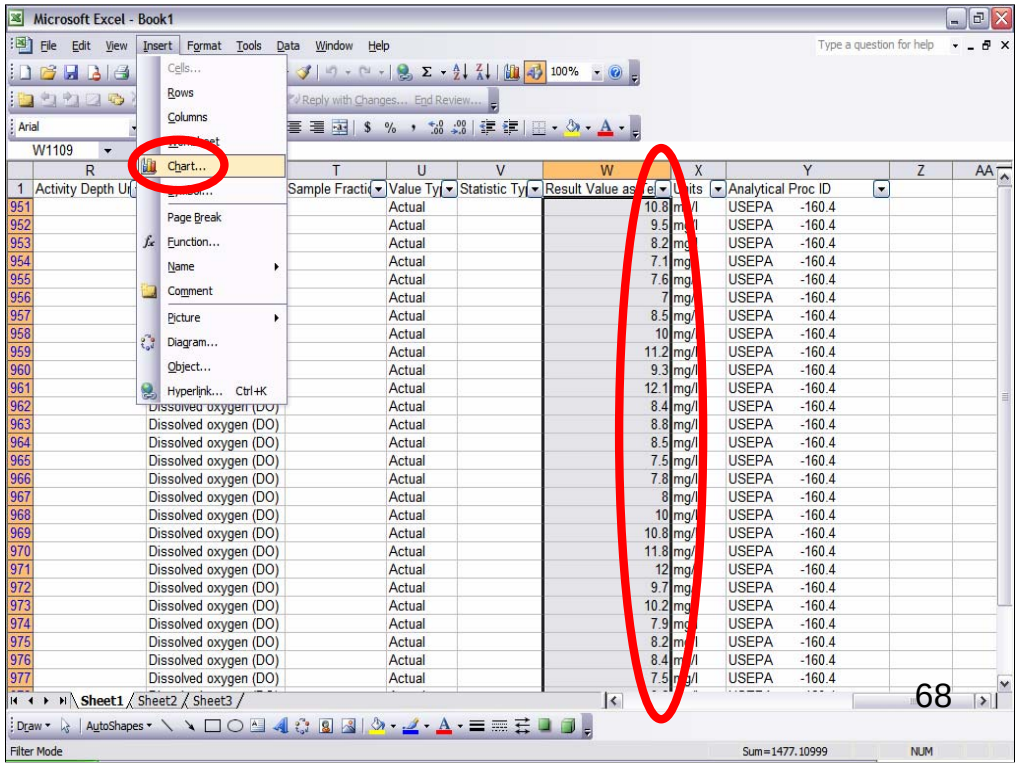
- Now that our data is sorted, let's go in and look at an individual station

65


Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Sort...
Filter
Form...
Subtotals...
Validation...
Table...
Text to Columns...
Consolidate...
Group and Outline
PivotTable and PivotChart Report...
Import External Data
List
XML
Refresh Data
AutoFilter
Advanced Filter...
Org Name
State
County
HUC
Generated HUC
Station Latitude
Colorado Dept. of Public Health & Environment
COLORADO
ADAMS
10190003
39.9219444
Sheet1
Sheet2
Sheet3
Draw
AutoShapes
Ready
Sum=5.26164E+11
NUM

66


Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Type a question for help
Arial 10
A1 Org Name
Org Name
Station ID
State
County
HUC
Generated HU
Station Latitu
Station L
(All)
(Top 10...)
(Custom...)
23
130
156
5135
5145
5150
5160
5165
5170
5175
5185
5221
5241
5245
5250
Colorado Dept. of Public Health & Environment
COLORADO
ADAMS
10190003
39.9219444
-104
Sheet1 Sheet2 Sheet3
Draw AutoShapes
Ready
Sum=5.26164E+11
NUM
67


Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Cells...
Rows
Columns
Chart...
Page Break
Function...
Name
Comment
Picture
Diagram...
Object...
Hyperlink... Ctrl+K
W1109
Activity Depth U
Sample Fracti
Value Ty
Statistic Ty
Result Value as
Units
Analytical Proc ID
Actual
Dissolved oxygen (DO)
USEPA -160.4
Sheet1 Sheet2 Sheet3
Draw AutoShapes
Filter Mode
Sum=1477.10999
NUM

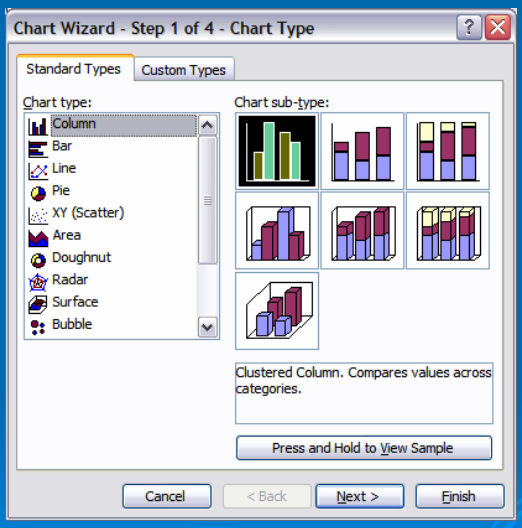


Chart Wizard - Step 1 of 4 - Chart Type
Standard Types
Custom Types
Chart type:
Column
Bar
Line
Pie
XY (Scatter)
Area
Doughnut
Radar
Surface
Bubble
Chart sub-type:
Clustered Column. Compares values across categories.
Press and Hold to View Sample
Cancel
< Back
Next >
Finish

69

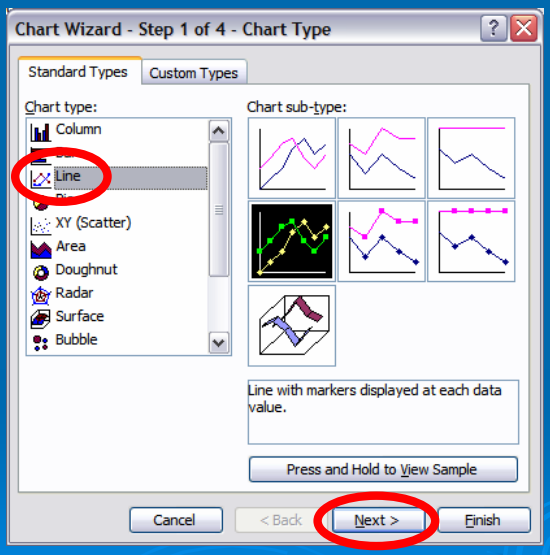


Chart Wizard - Step 1 of 4 - Chart Type
Standard Types
Custom Types
Chart type:
Column
Line
XY (Scatter)
Area
Doughnut
Radar
Surface
Bubble
Chart sub-type:
Line with markers displayed at each data value.
Press and Hold to View Sample
Cancel
< Back
Next >
Finish

70

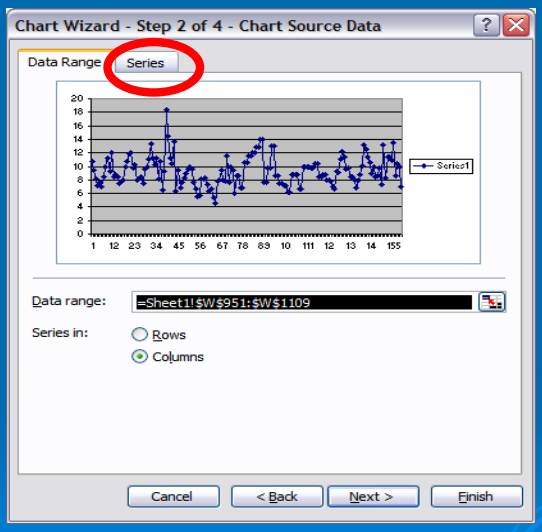


Chart Wizard - Step 2 of 4 - Chart Source Data
Data Range
Series
20
18
16
14
12
10
8
6
4
2
0
1 12 23 34 45 56 67 78 89 10 111 12 13 14 155
Series1
Data range:
=Sheet1!$W$951:$W$1109
Series in:
Rows
Columns
Cancel
< Back
Next >
Finish

71

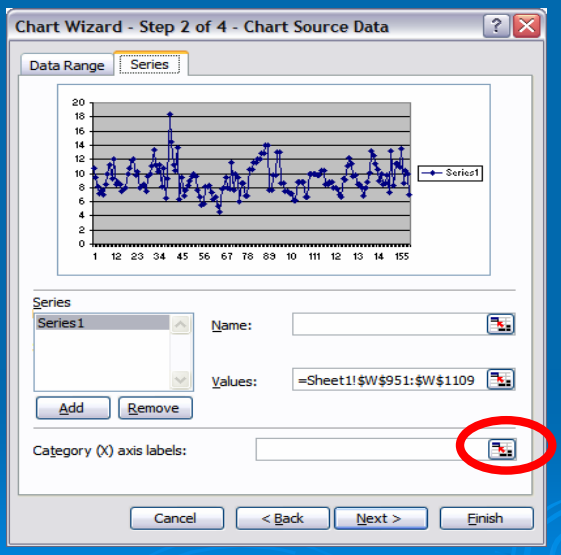
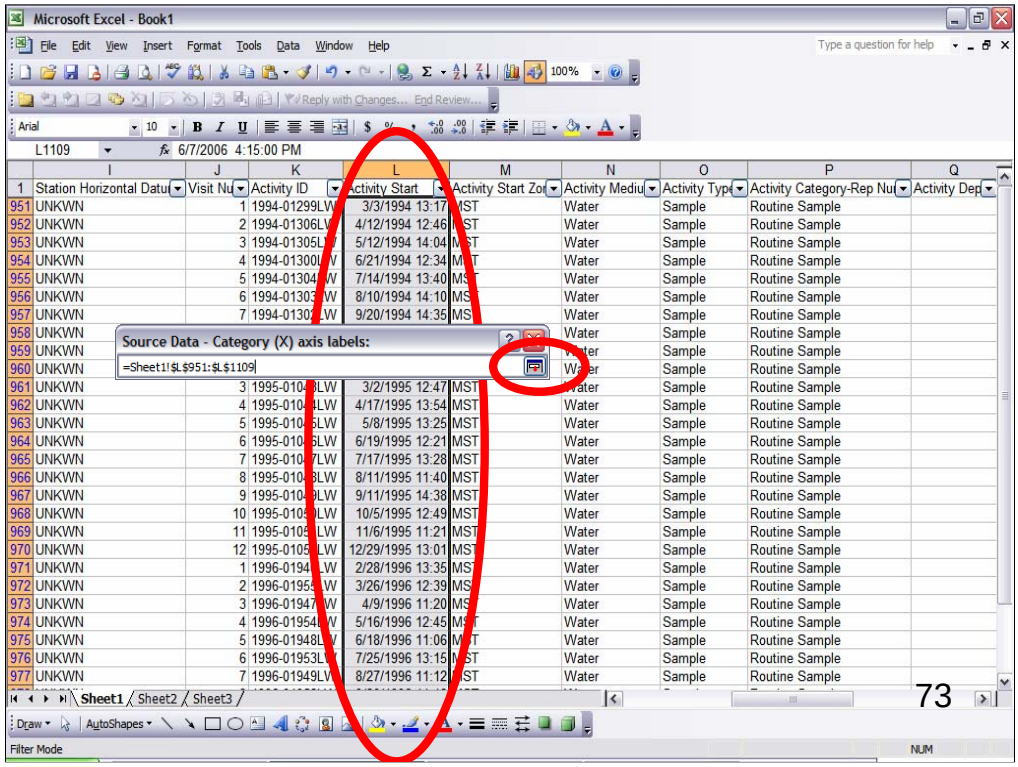
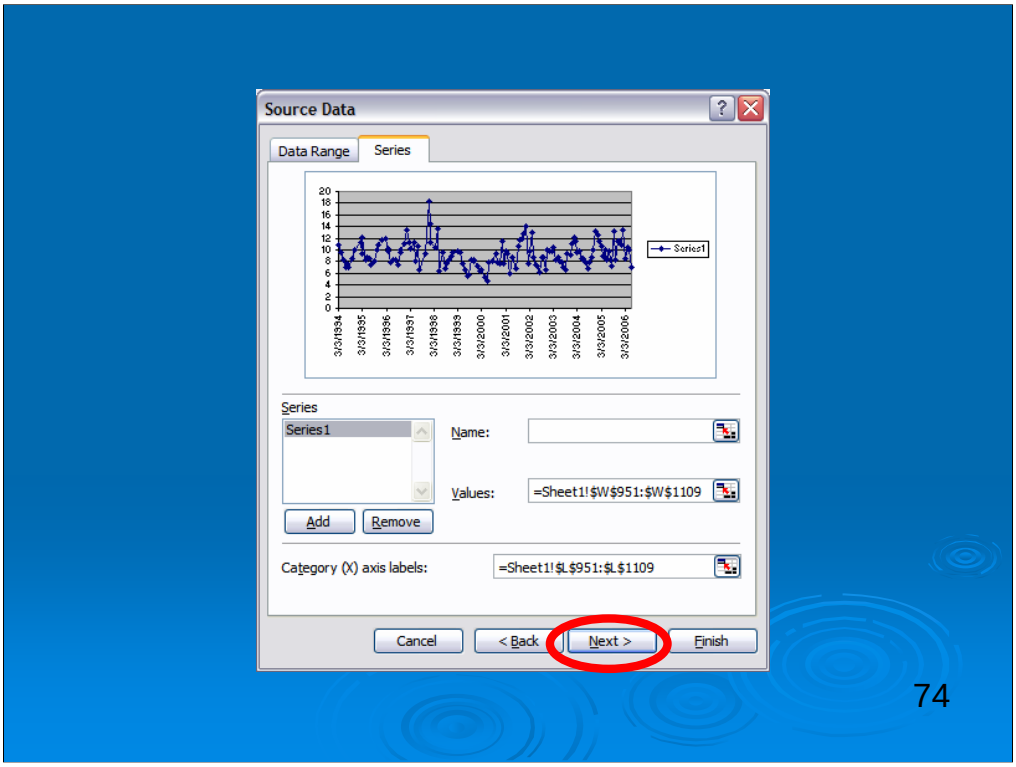


Chart Wizard - Step 2 of 4 - Chart Source Data
Data Range
Series
20
18
16
14
12
10
8
6
4
2
0
1 12 23 34 45 56 67 78 89 10 111 12 13 14 155
Series1
Series
Series1
Name:
Values:
=Sheet1!$W$951:$W$1109
Add
Remove
Category (X) axis labels:
Cancel
< Back
Next >
Finish

72


Microsoft Excel - Book1
Source Data - Category (X) axis labels:
=Sheet1!$L$951:$L$1109
73


Source Data
Data Range
Series
20
18
16
14
12
10
8
6
4
2
0
3/3/1934
3/3/1935
3/3/1936
3/3/1937
3/3/1938
3/3/1939
3/3/2000
3/3/2001
3/3/2002
3/3/2003
3/3/2004
3/3/2005
3/3/2006
Series1
Series
Series1
Name:
Values:
=Sheet1!$W$951:$W$1109
Add
Remove
Category (X) axis labels:
=Sheet1!$L$951:$L$1109
Cancel
< Back
Next >
Finish

74

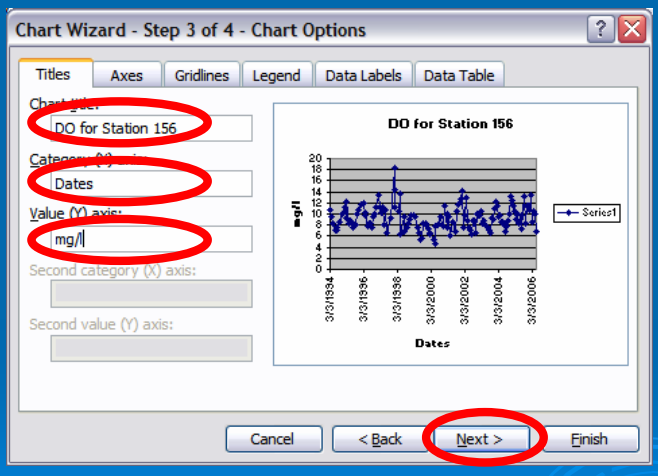


Chart Wizard - Step 3 of 4 - Chart Options
Titles
Axes
Gridlines
Legend
Data Labels
Data Table
DO for Station 156
Dates
mg/l
Second category (X) axis:
Second value (Y) axis:
DO for Station 156
mg/l
Series1
Dates
Cancel
< Back
Next >
Finish

75

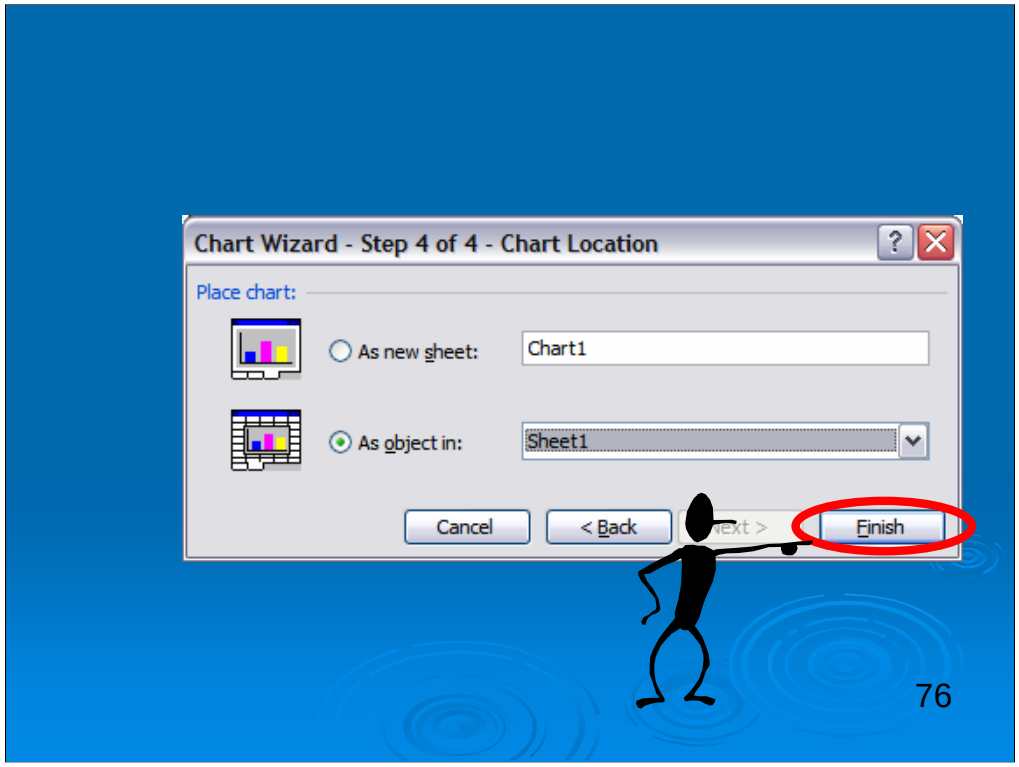
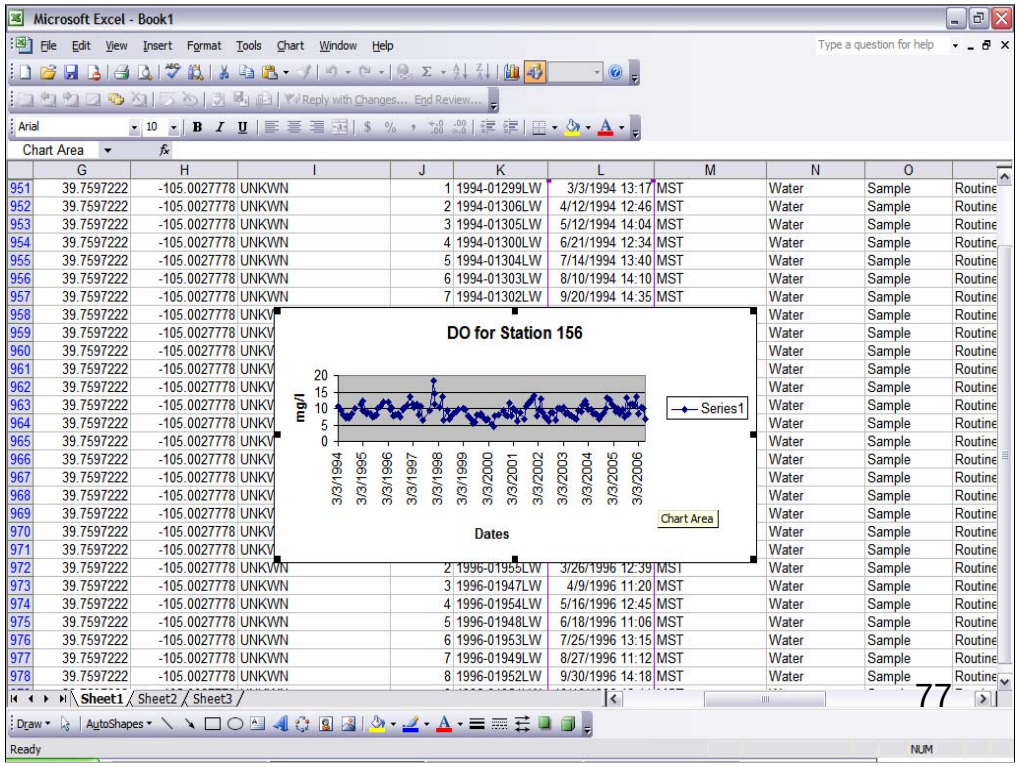
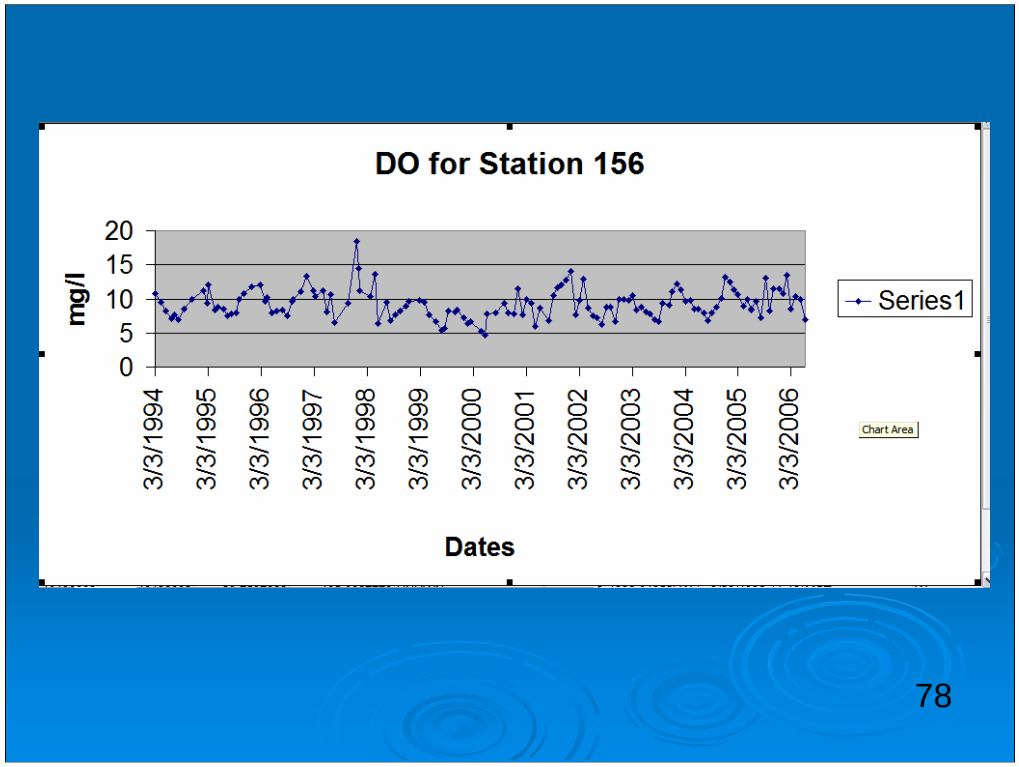


Chart Wizard - Step 4 of 4 - Chart Location
Place chart:
As new sheet:
Chart1
As object in:
Sheet1
Cancel
< Back
Finish
76


Microsoft Excel - Book1
DO for Station 156
mg/l
Dates
Series1
Chart Area
Sheet1
Sheet2
Sheet3
Ready


DO for Station 156
mg/l
20
15
10
5
0
3/3/1994
3/3/1995
3/3/1996
3/3/1997
3/3/1998
3/3/1999
3/3/2000
3/3/2001
3/3/2002
3/3/2003
3/3/2004
3/3/2005
3/3/2006
Dates
Series1
Chart Area

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What Can We Say About This Graph?

- For this station, the DO is seasonal and it looks like there was some type of event in early 1998 that caused a DO spike.
- For context, maybe we should look at the other types of data that are available at this station.
- We can use the Watershed Summary tool again to do just that!

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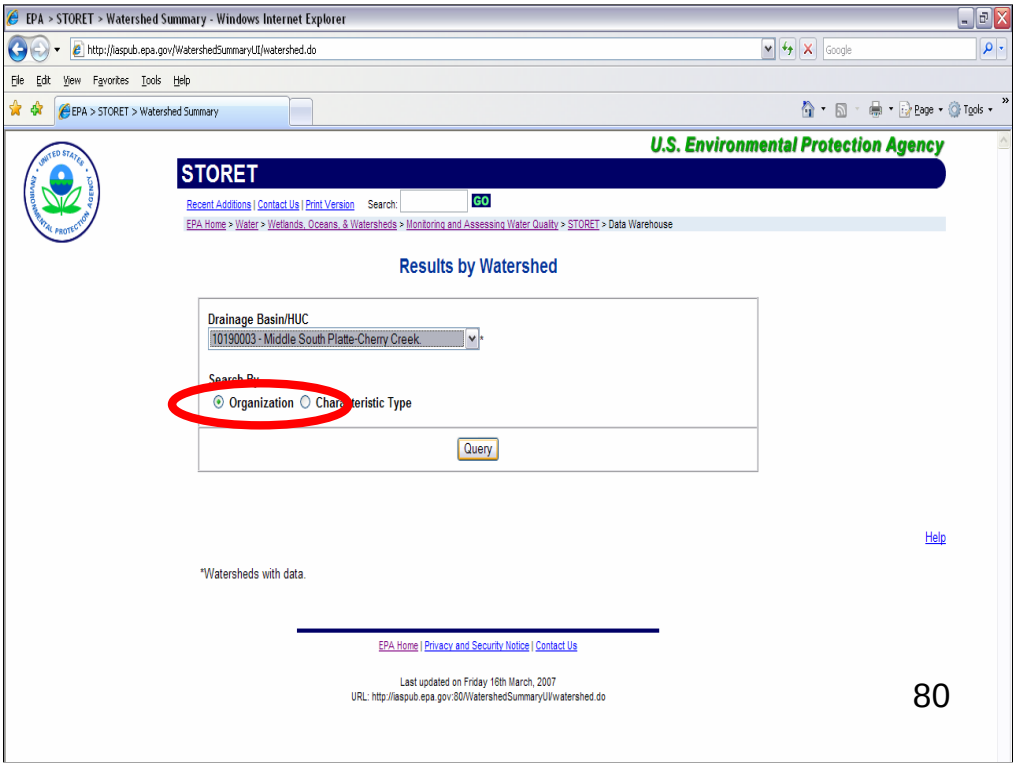
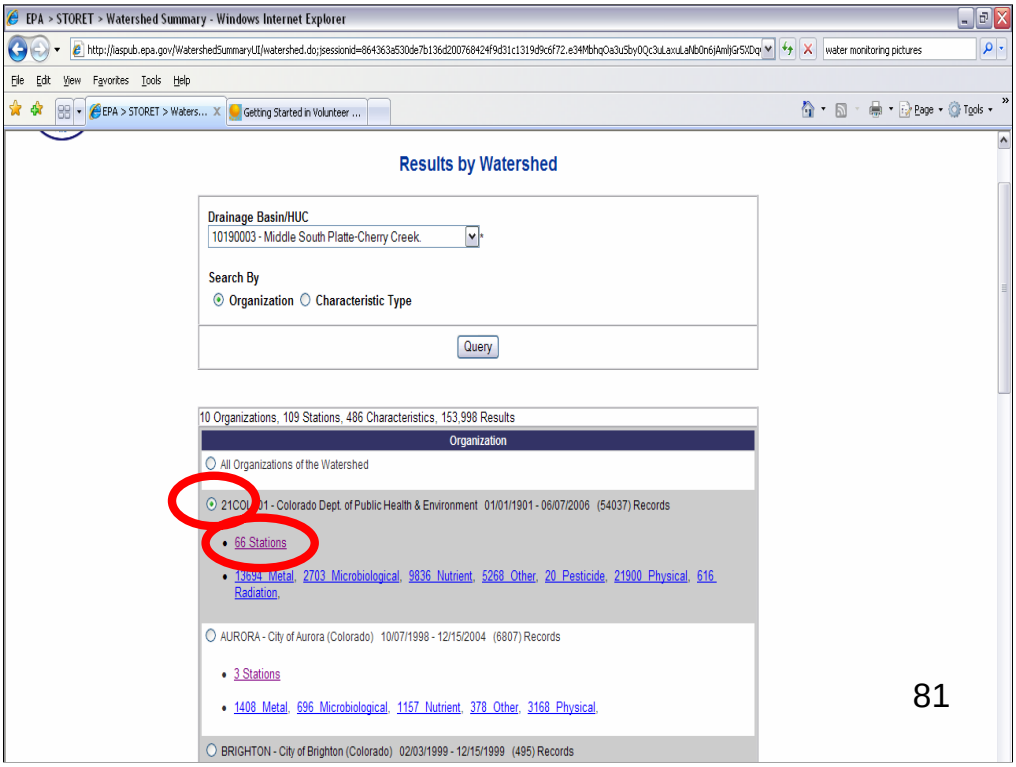

EPA > STORET > Watershed Summary - Windows Internet Explorer
http://iaspub.epa.gov/WatershedSummaryUI/watershed.do
File Edit View Favorites Tools Help
EPA > STORET > Watershed Summary
U.S. Environmental Protection Agency
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Results by Watershed
Drainage Basin/HUC
10190003 - Middle South Platte-Cherry Creek
Search By:
Organization
Characteristic Type
Query
Help
*Watersheds with data.
EPA Home | Privacy and Security Notice | Contact Us
Last updated on Friday 16th March, 2007
URL: http://iaspub.epa.gov:80/WatershedSummaryUI/watershed.do
80


EPA > STORET > Watershed Summary - Windows Internet Explorer
File Edit View Favorites Tools Help
EPA > STORET > Waters...
Getting Started in Volunteer ...
Page Tools
Results by Watershed
Drainage Basin/HUC
10190003 - Middle South Platte-Cherry Creek.
Search By
Organization Characteristic Type
Query
10 Organizations, 109 Stations, 486 Characteristics, 153,998 Results
Organization
All Organizations of the Watershed
21COLO1 - Colorado Dept. of Public Health & Environment 01/01/1901 - 06/07/2006 (54037) Records
66 Stations
13694 Metal, 2703 Microbiological, 9836 Nutrient, 5268 Other, 20 Pesticide, 21900 Physical, 616 Radiation.
AURORA - City of Aurora (Colorado) 10/07/1998 - 12/15/2004 (6807) Records
3 Stations
1408 Metal, 696 Microbiological, 1157 Nutrient, 378 Other, 3168 Physical.
BRIGHTON - City of Brighton (Colorado) 02/03/1999 - 12/15/1999 (495) Records

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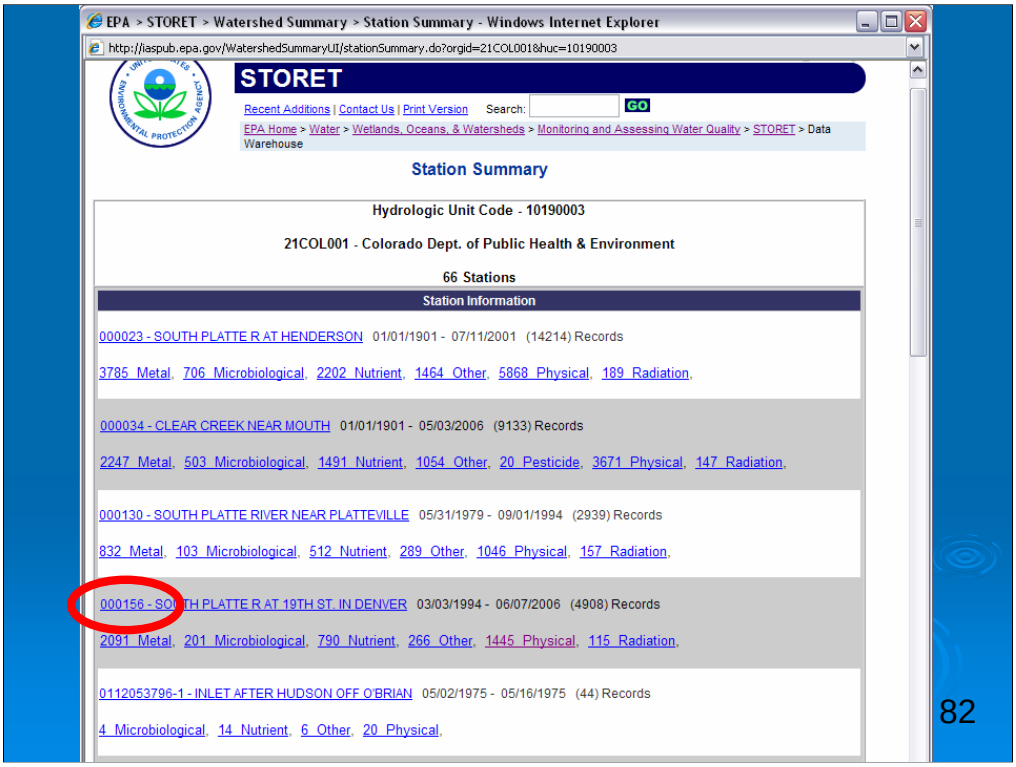
EPA > STORET > Watershed Summary > Station Summary - Windows Internet Explorer
http://iaspub.epa.gov/WatershedSummaryUI/stationSummary.do?orgid=21COL001&huc=10190003
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Station Summary
Hydrologic Unit Code - 10190003
21COL001 - Colorado Dept. of Public Health & Environment
66 Stations
Station Information
000023 - SOUTH PLATTE R AT HENDERSON 01/01/1901 - 07/11/2001 (14214) Records
3785 Metal, 706 Microbiological, 2202 Nutrient, 1464 Other, 5868 Physical, 189 Radiation,
000034 - CLEAR CREEK NEAR MOUTH 01/01/1901 - 05/03/2006 (9133) Records
2247 Metal, 503 Microbiological, 1491 Nutrient, 1054 Other, 20 Pesticide, 3671 Physical, 147 Radiation,
000130 - SOUTH PLATTE RIVER NEAR PLATTEVILLE 05/31/1979 - 09/01/1994 (2939) Records
832 Metal, 103 Microbiological, 512 Nutrient, 289 Other, 1046 Physical, 157 Radiation,
000156 - SOUTH PLATTE R AT 19TH ST. IN DENVER 03/03/1994 - 06/07/2006 (4908) Records
2091 Metal, 201 Microbiological, 790 Nutrient, 266 Other, 1445 Physical, 115 Radiation,
0112053796-1 - INLET AFTER HUDSON OFF O'BRIAN 05/02/1975 - 05/16/1975 (44) Records
4 Microbiological, 14 Nutrient, 6 Other, 20 Physical,

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EPA > STORET > Watershed Summary > Station Summary - Windows Internet Explorer
http://iaspub.epa.gov/WatershedSummaryUI/stationSummary.do?orgid=21COL001&huc=10190003
STORET
Recent Additions | Contact Us | Print Version Search: GO
EPA Home > Water > Wetlands, Oceans, & Watersheds > Monitoring and Assessing Water Quality > STORET > Data Warehouse
Station Summary
Hydrologic Unit Code - 10190003
21COL001 - Colorado Dept. of Public Health & Environment
66 Stations
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000023 - SOUTH PLATTE R AT HENDERSON 01/01/1901 - 07/11/2001 (14214) Records
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2247 Metal, 503 Microbiological, 1491 Nutrient, 1054 Other, 20 Pesticide, 3671 Physical, 147 Radiation,
000130 - SOUTH PLATTE RIVER NEAR PLATTEVILLE 05/31/1979 - 09/01/1994 (2939) Records
832 Metal, 103 Microbiological, 512 Nutrient, 289 Other, 1046 Physical, 157 Radiation,
000156 - SOUTH PLATTE R AT 19TH ST. IN DENVER 03/03/1994 - 06/07/2006 (4908) Records
2091 Metal, 201 Microbiological, 790 Nutrient, 266 Other, 1445 Physical, 115 Radiation,
0112053796-1 - INLET AFTER HUDSON OFF O'BRIAN 05/02/1975 - 05/16/1975 (44) Records
4 Microbiological, 14 Nutrient, 6 Other, 20 Physical,

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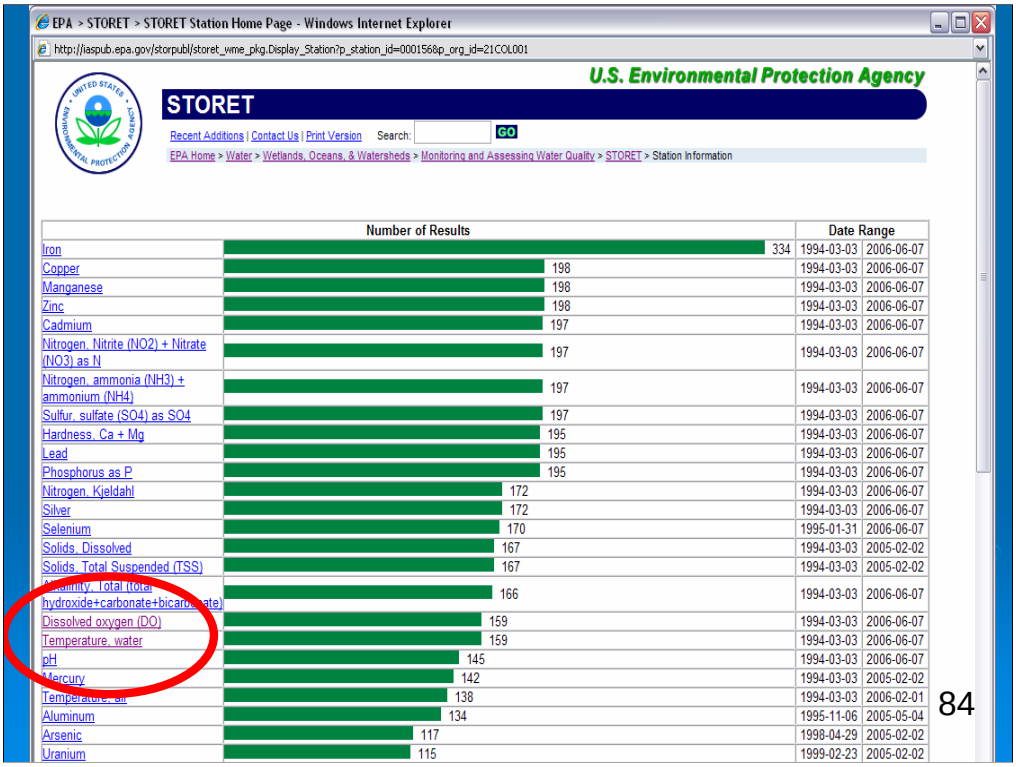

	Number of Results	Date Range	
Iron	334	1994-03-03	2006-06-07
Copper	198	1994-03-03	2006-06-07
Manganese	198	1994-03-03	2006-06-07
Zinc	198	1994-03-03	2006-06-07
Cadmium	197	1994-03-03	2006-06-07
Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	197	1994-03-03	2006-06-07
Nitrogen, ammonia (NH3) + ammonium (NH4)	197	1994-03-03	2006-06-07
Sulfur, sulfate (SO4) as SO4	197	1994-03-03	2006-06-07
Hardness, Ca + Mg	195	1994-03-03	2006-06-07
Lead	195	1994-03-03	2006-06-07
Phosphorus as P	195	1994-03-03	2006-06-07
Nitrogen, Kjeldahl	172	1994-03-03	2006-06-07
Silver	172	1994-03-03	2006-06-07
Selenium	170	1995-01-31	2006-06-07
Solids, Dissolved	167	1994-03-03	2005-02-02
Solids, Total Suspended (TSS)	167	1994-03-03	2005-02-02
Alkalinity, Total (total hydroxide+carbonate+bicarbonate)	166	1994-03-03	2006-06-07
Dissolved oxygen (DO)	159	1994-03-03	2006-06-07
Temperature, water	159	1994-03-03	2006-06-07
pH	145	1994-03-03	2006-06-07
Mercury	142	1994-03-03	2005-02-02
Temperature, air	138	1994-03-03	2006-02-01
Aluminum	134	1995-11-06	2005-05-04
Arsenic	117	1998-04-29	2005-02-02
Uranium	115	1999-02-23	2005-02-02

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Watershed Characterization

- We've pulled some site specific water quality monitoring data from the STORET Warehouse
- This type of data, used along with other information about your watershed, can help you characterize it

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Future Developments

- Soon, you will be able to submit data to the STORET Warehouse with an easy to use Web tool for smaller organizations
- This tool will be available in early 2008 for physical and chemical parameters, and later in 2008 for biological parameters

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What Will You Need to Use the Tool?

- An Internet connection

- Your data organized in these categories
  - Projects (Why data was collected)
  - Stations (Where data was collected)
  - Results (When, How and What was collected)

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An Invitation

- EPA is developing this tool so that users can walk through the process of submitting a simple file to the STORET Warehouse
- As we develop this tool, we'd like your feedback as to how it works
- Watch for future Webcasts where you can share your thoughts

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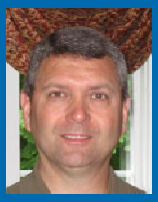
Questions?



Randy E. Hill, IT Specialist, US EPA Monitoring Branch

Dwane Young, IT Specialist, US EPA Monitoring Branch

Kristen Gunthardt, IT Specialist, US EPA Monitoring Branch

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