



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION



Bureau of Clean Water

How to Develop Web Reports

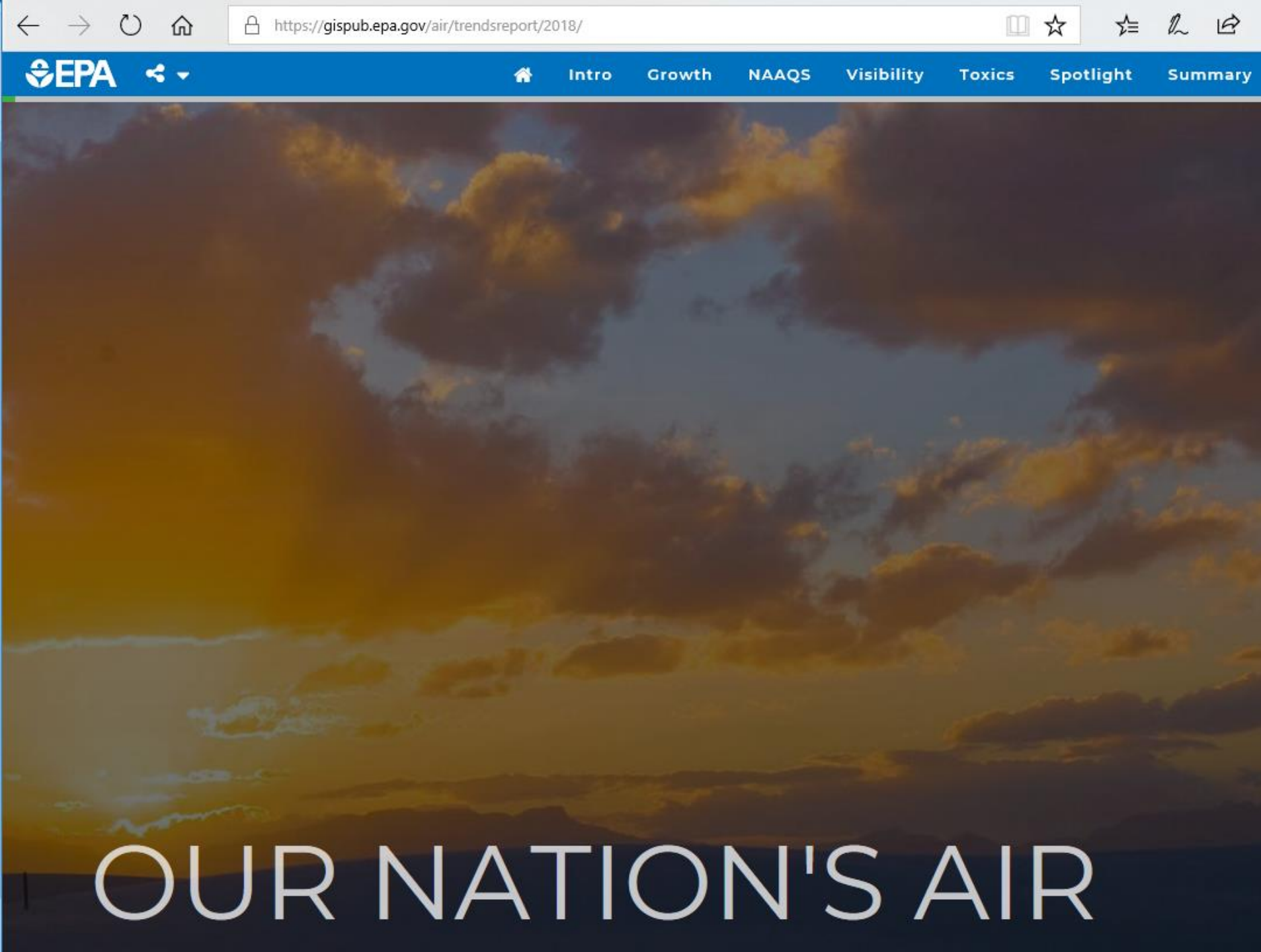
Gary Walters

Environmental Program Manager

Water Quality Division

EPA Air Quality Trends Report

- EPA developed an interactive web application for the Air Quality Trends
 - EPA publishes an annual air trends report in the form of an interactive web application (<https://gispub.epa.gov/air/trendsreport/2018/>). The report features a suite of visualization tools that allow the user to:
 - Learn about air pollution and how it can affect our health and environment.
 - Compare key air emissions to gross domestic product, vehicle miles traveled, population, and energy consumption back to 1970.
 - Take a closer look at how the number of days with unhealthy air has dropped since 2000 in 35 major US cities.
 - Explore how air quality and emissions have changed through time and space for each of the common air pollutants.
 - Check out air trends where you live.
 - Users can share this content across social media, with access to Facebook, Twitter, Pinterest, and other major social media sites.



<https://gispub.epa.gov/air/trendsreport/2018/>

Interactive and periodically updated

Developed by Arthur Zuco in the EPA Air Quality Assessment Division

GitHUB and open source

The screenshot shows a web browser window displaying a GitHub repository. The browser tabs include '2018 Integrated Report', 'GitHub - USEPA/Air-Tre', and 'Our Nation's Air 2018'. The address bar shows the URL 'https://github.com/USEPA/Air-Trends-Report'. The repository page displays statistics: 44 commits, 2 branches, 0 releases, and 3 contributors. A yellow progress bar is visible. Below the statistics, there are buttons for 'Branch: master', 'New pull request', 'Find File', and 'Clone or download'. A commit history table is shown with columns for commit message, description, and time ago. The latest commit is by 'aevans04' with the message '1) flyer bar chart change' on Aug 28 2018. Below the commit history, the 'README.md' file is displayed, featuring a 'Disclaimer' section.

Commit Message	Description	Time Ago
aevans04 1) flyer bar chart change	Latest commit a25be72 on Aug 28 2018	
etrends_2016	2016 updates	2 years ago
etrends_2017	Update README.md	10 months ago
etrends_2018	1) flyer bar chart change	9 months ago
README.md	Update README.md	10 months ago

Disclaimer

The United States Environmental Protection Agency (EPA) GitHub project code is provided on an "as-is" basis and the user assumes responsibility for its use. EPA has relinquished control of the information and no longer has responsibility to protect the integrity, confidentiality, or availability of the information. Any reference to specific commercial products, processes, or services by service mark, trademark, manufacturer, or otherwise, does not constitute or imply their endorsement, recommendation or favoring by EPA. The EPA seal and logo shall not be used in any manner to imply endorsement of any commercial product or activity by EPA or the United States Government.

- Programming language published on GitHUB
 - <https://github.com/USEPA/Air-Trends-Report>
- Open source so meaning no cost to the user

What's Needed to Develop This Application Infrastructure

1. Microsoft Visual Studio
2. Graphics (Highcharts (link: <https://www.highcharts.com/>) , Plotly (link: <https://plot.ly/>) , D3 (link: <https://d3js.org/>))
3. ArcGIS or other mapping products if mapping is included
4. Photo and video editing software
5. External Facing Web Server

Personnel

1. GIS
2. Business/Program
3. Communications
4. Education
5. Administration (Policy, Legal, etc.)
6. IT (web services)

Adding features and function

Adding interactive maps:

An image (.png) of the web mapping application is created. This image is then placed in the application with a link to a web mapping application url.

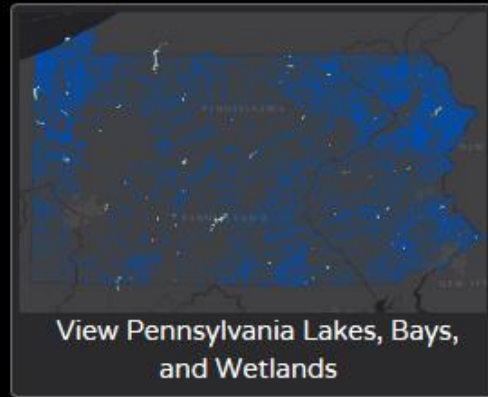
This coding links the maps you see to the left

```
<a href="https://padep-  
1.maps.arcgis.com/apps/View/index.html?appid=9bd2  
f843c4a44bb1a8ae0d024c66675f" target="_blank">  
    
</a>
```

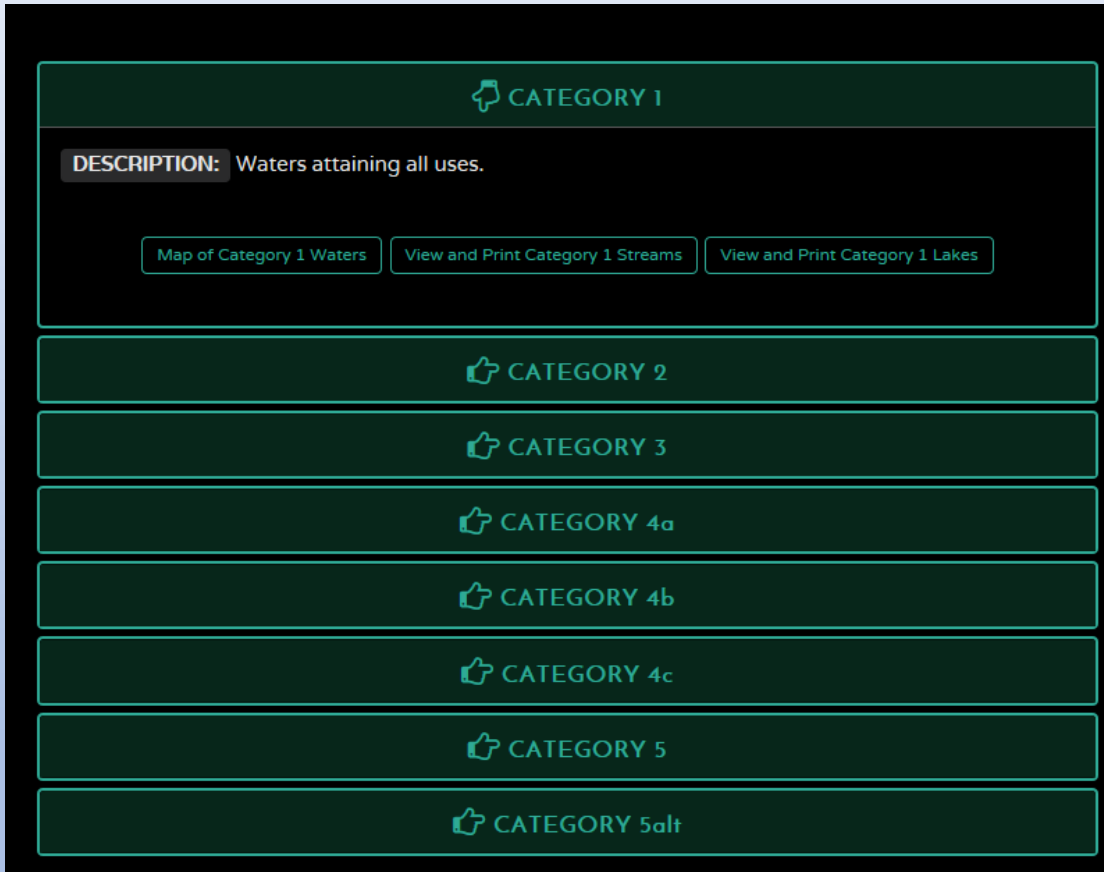
The layers and attributes for the maps are provided by the program and other data sources. The interactive maps for the PA 2018 IR are ArcGIS tools and published as ArcGIS Rest Map Service. Data layers and attributes reside in PA DEP's enterprise geodatabase.

PENNSYLVANIA WATER RESOURCES

Pennsylvania is a water rich state with approximately 85,000 miles of streams and rivers connecting over 700,000 acres of lakes, bays, and wetlands. Protection of these waters and the groundwater below is a challenging, but vital mission.



Adding features and function



Adding accordion menus:

It was necessary to provide all data in a variety of formats for printing. This includes data tables.

The Bootstrap accordion holds a set of panes whose titles are all visible, but only one pane's content is visible at a time. Clicking on a pane title slides the currently displayed one away and displays the clicked pane content. The first pane is the opened by default. In the Integrated Report, buttons were inserted the accordion content that are links to web mapping applications and Excel spreadsheets. When the buttons are clicked, the web mapping application will open in a new window or the Excel spreadsheet can be displayed or downloaded to the user's PC. The code on the next slide was used to program the CATEGORY 1 panel.

Code for Accordion Menu

```
• <div class="panel panel-info">
•
• <div class="panel-heading">
•   <center>
•     <h4 class="panel-title">
•       <a class="accordion-toggle" data-toggle="collapse" data-parent="#accordion" href="#cat1">
•         <i class="icon icon-hand-o-down icon-lg" aria-hidden="true"></i>
•           CATEGORY 1
•         </a>
•       </h4>
•     </center>
•   </div>
• <div id="cat1" class="panel-collapse collapse in">
•   <div class="panel-body">
•     <span class="label label-custom">DESCRIPTION:</span>
•     Waters attaining all uses.
•     <br><br>
•   </div>
•   <center>
•     <p> //Buttons in panel
•       <a href="https://padep-1.maps.arcgis.com/apps/View/index.html?appid=801e1ba978c24f4487e0c1a7aa23b972" class="btn-sm
• hvr-sweep-to-right" target="_blank" title="Map of Category 1 Waters">Map of Category 1 Waters</a>
•       <a href="./pdfs/Category1_Streams.xlsx" class="btn-sm hvr-sweep-to-right" target="_blank" title="View and Print
• Category 1">View and Print Category 1 Streams</a>
•       <a href="./pdfs/Category1_Lakes.xlsx" class="btn-sm hvr-sweep-to-right" target="_blank" title="View and Print
• Category 1">View and Print Category 1 Lakes</a>
•     </p>
•   </center>
• </div>
• </div>
```

ID	INT_COM_ID	INT_ASSE	BLN_ARCH	STR_GISKEY	STR_USER	DTE_CREA	BLN_ATTAINED	DTE_SYST	STR_ASSESSED	BLN_STR	STR_AS_STAT	ATTAINS_AU_ID	ATTAINS_AU_NAME	HUC8_COI	HUC8_NAI	REACHCOI	OLD_STRE	STREAM_I	LENGTH_N	MCD	COUN	
1	98358	54964005	3 NA NA	137	1 N	19990715-1052-TAS	tshervinsk	36356 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54964005	Phillips Creek-54964005	02050301	Lower Sus	02050301C	Phillips Cr	Phillips Cr	0.075186	Centre	PEN
2	98558	54964167	3 NA NA	137	1 N	19990715-1052-TAS	tshervinsk	36356 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54964167	Phillips Creek-54964167	02050301	Lower Sus	02050301C	Phillips Cr	Phillips Cr	0.420047	Centre	PEN
3	98822	54964391	3 NA NA	137	1 N	19990715-1052-TAS	tshervinsk	36356 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54964391	Phillips Creek-54964391	02050301	Lower Sus	02050301C	Phillips Cr	Phillips Cr	2.062331	Centre	PEN
4	97103	54962975	3 NA NA	175	1 N	19990812-1101-TAS	tshervinsk	36384 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54962975	Penns Creek-54962975	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.055302	Union	LEW
5	97146	54963003	3 NA NA	175	1 N	19990812-1101-TAS	tshervinsk	36384 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54963003	Penns Creek-54963003	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.085749	Union	LEW
6	97350	54963145	3 NA NA	175	1 N	19990812-1101-TAS	tshervinsk	36384 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54963145	Penns Creek-54963145	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.086992	Union	LEW
7	97439	54963215	3 NA NA	175	1 N	19990812-1101-TAS	tshervinsk	36384 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54963215	Penns Creek-54963215	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.14975	Union	LEW
8	96571	54962639	3 NA NA	190	1 N	19990824-1331-TAS	tshervinsk	36396 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54962639	Penns Creek-54962639	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.016777	Union	LIME
9	96579	54962643	3 NA NA	190	1 N	19990824-1331-TAS	tshervinsk	36396 Y	38552.64	Aquatic Life	NA NA NA NA	Approved	PA-SCR-54962643	Penns Creek-54962643	02050301	Lower Sus	02050301C	Penns Cre	Penns Cre	0.143537	Union	LIME

Adding features and function

Interactive graphics were used throughout the report: Highcharts were used to aid in the visual presentation of the data.

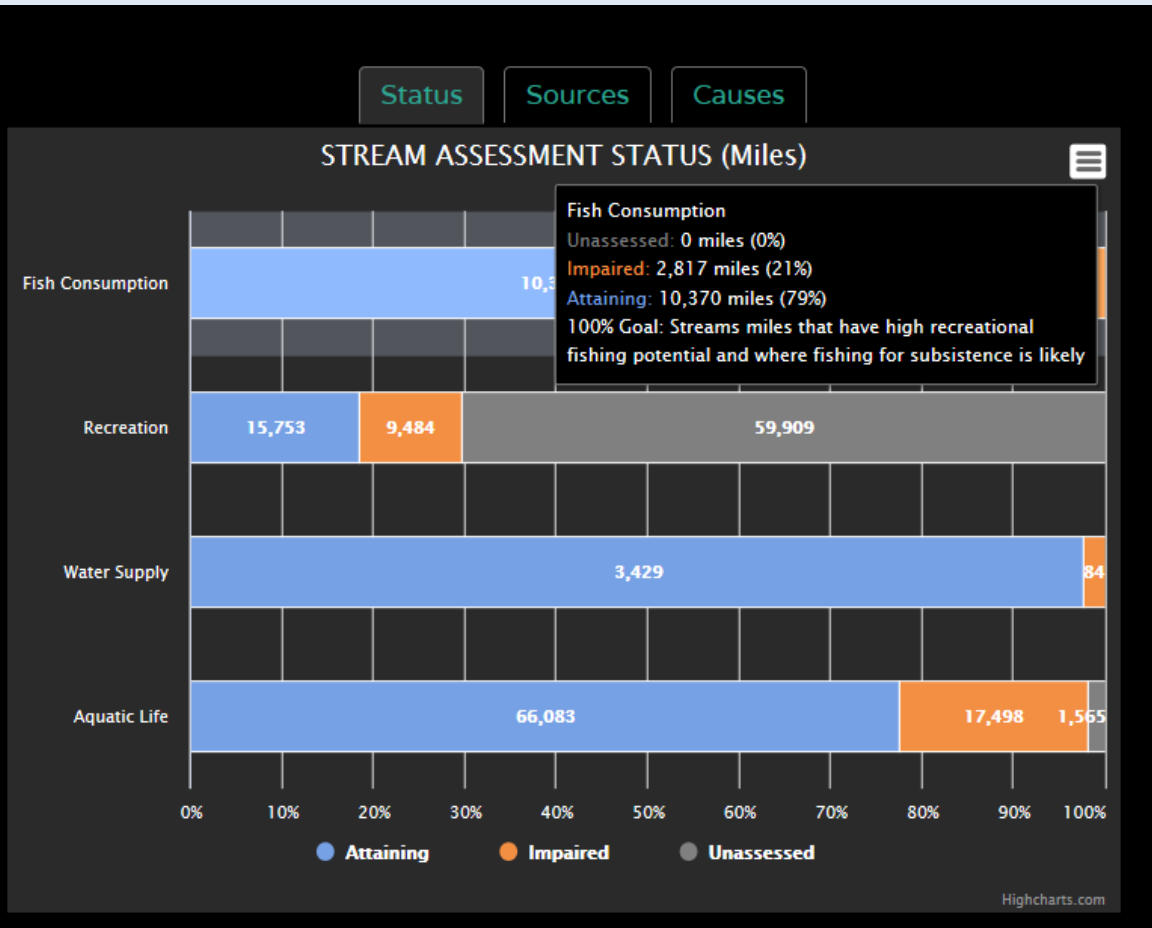
Functionality seen is integral to Highcharts. What you see at the left is a tab container that displays the HTML page containing the high chart.

The Highcharts export data module enables exporting the chart data to CSV or XLS table formats. The XLS converter is limited and only creates a HTML string that is passed for download, which works but creates a warning before opening.

The link for export module is

<https://www.highcharts.com/docs/export-module/export-module-overview>

The next five slides contain the programming code for this chart.




Code for Stream Assessment Status (Miles) Chart

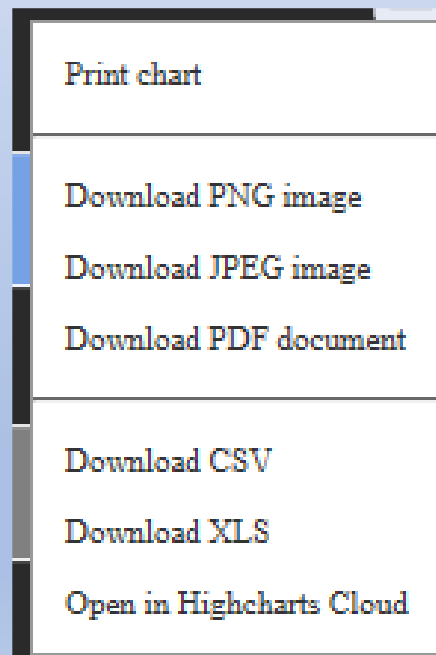
```
• <html lang="en" xmlns="http://www.w3.org/1999/xhtml">
• <head>
•   <meta charset="utf-8" />
•   <title> Streams Leading Causes of Impairment</title>
•   <style>
•     body {
•       margin-top: 3px;
•       margin-left: 0px;
•     }
•   </style>
•   <script type="text/javascript" src="https://ajax.googleapis.com/ajax/libs/jquery/2.1.4/jquery.min.js"></script>
•   <script src="https://code.highcharts.com/highcharts.js"></script>
•   <script src="https://code.highcharts.com/modules/data.js"></script>
•   <script src="https://code.highcharts.com/modules/exporting.js"></script>
•   <script src="https://code.highcharts.com/modules/export-data.js"></script>
•
• </head>
• <body>
•   <div id="container" style="height: 500px; margin-right:25px;"></div>
•
•   <script type="text/javascript">
•     $(function () {
•       Highcharts.setOptions({
•         chart: {
•           style: {
•             color: '#FFFFFF'
•           }
•         },
•         colors: ['#808080', '#f28f43', '#77a1e5', '#ffff00'],
•         lang: {
•           thousandsSep: ','
•         }
•       });
•
•       // The data for this chart is a .csv file
•       $.get('./data/highcharts/assessmentStatus.csv', function (data) {
•         $('#container').highcharts({
•           chart: {
•             type: 'bar',
•             backgroundColor: "#2a2a2b"
•           },
•           title: {
•             text: "STREAM ASSESSMENT STATUS (Miles)",
•             style: {
•               color: '#FFFFFF',
•             }
•           },
•           xAxis: {
•             type: "category",
•             labels: {
•               style: {
•                 color: '#FFFFFF',
•               }
•             }
•           },
•           crosshair: true
•         },
•       });
•     });
•   </script>
•
```


Code for Stream Assessment Status (Miles) Chart

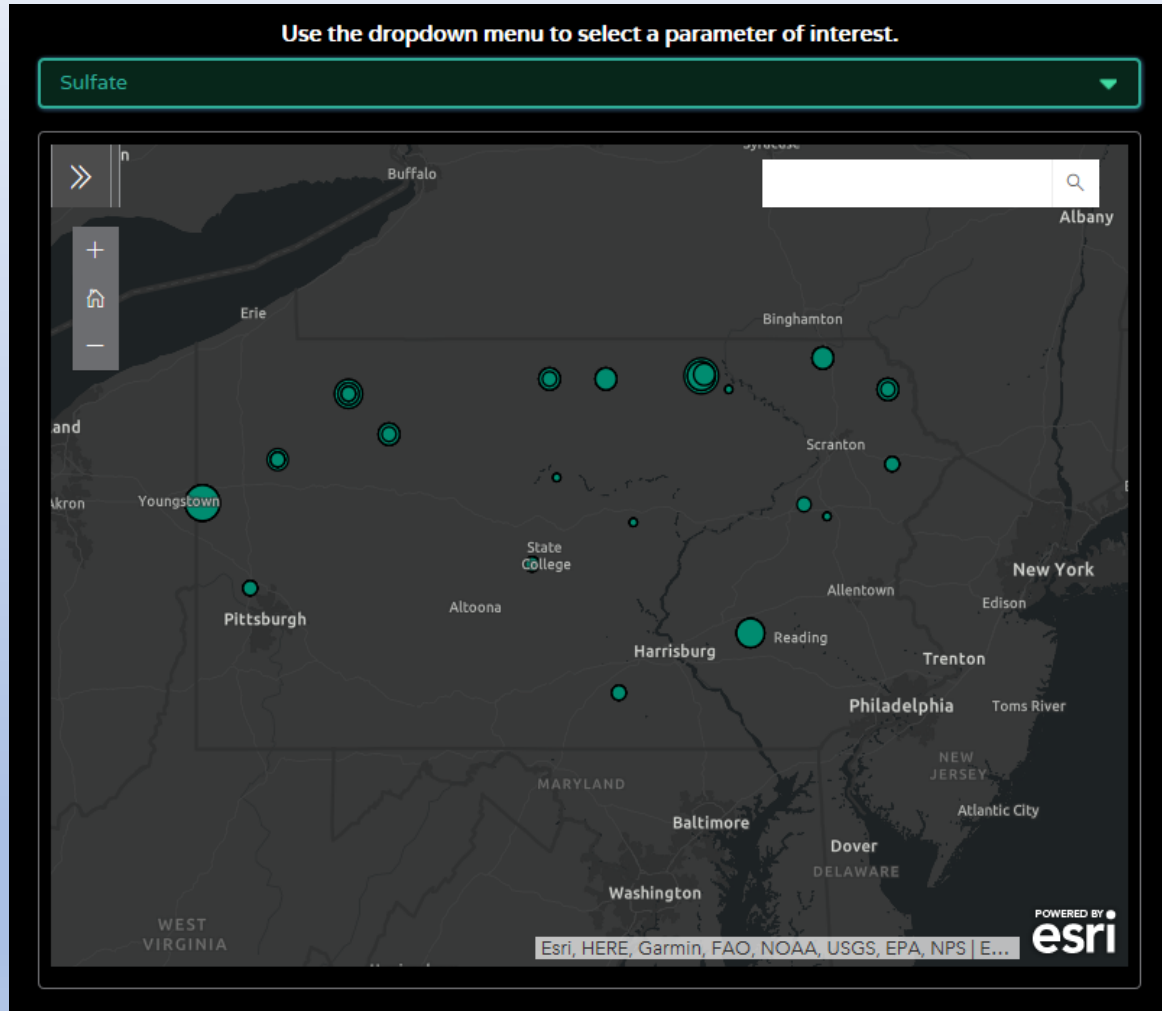
```
• jQuery.each(this.points, function (i, point) {
•     var val = Highcharts.numberFormat(point.y, 3);
•     var color = this.series.color;
•     if (tip2 != 'test2') {
•         tip2 += '<span style="color:' + point.series.color + '>'
•             + point.series.name + " : </span>"
•             + Highcharts.numberFormat(point.y, "0") + " miles ("
•             + Highcharts.numberFormat(point.percentage, "0")
•             + "%)"
•             + "<br/>"
•     } else {
•         tip2 = '<span style="color:' + point.series.color + '>'
•             + point.series.name + " : </span>"
•             + Highcharts.numberFormat(point.y, "0") + " miles ("
•             + Highcharts.numberFormat(point.percentage, "0")
•             + "%)"
•             + "<br/>"
•     }
•     });
•     return tip1 + tip2 + tip3;
• },
•     style: {
•         color: '#FFFFFF',
•     },
•     backgroundColor: '#000',
•     shared: !0
• },
•     exporting:
•     {
•         enabled: true,
•         scale: 2,
•         sourceWidth: 800,
•         sourceHeight: 550,
•         filename: "StreamAssessmentStatus",
•         allowHTML: !0,
•         buttons: {
•             contextButton: {
•                 menuItems: [{
•                     textKey: 'printChart',
•                     onclick: function () {
•                         this.print();
•                     }
•                 }, {
•                     separator: true
•                 }, {
•                 }
•             }, {
•         }
•     }
• }
```


Printing and Exporting Formats

When you click on the  icon you will see the menu for printing the chart and for exporting the image or downloading the data behind the graphic.



Adding features and function



Interactive graphics were used throughout the report: Maps and dropdown menus for parameters were used graphically provide data.

This is accomplished through use of ArcGIS mapping and javascript programming in the report. When the user selects the parameter of interest, the javascript code loads the web mapping application into the container displaying the map the user has selected.

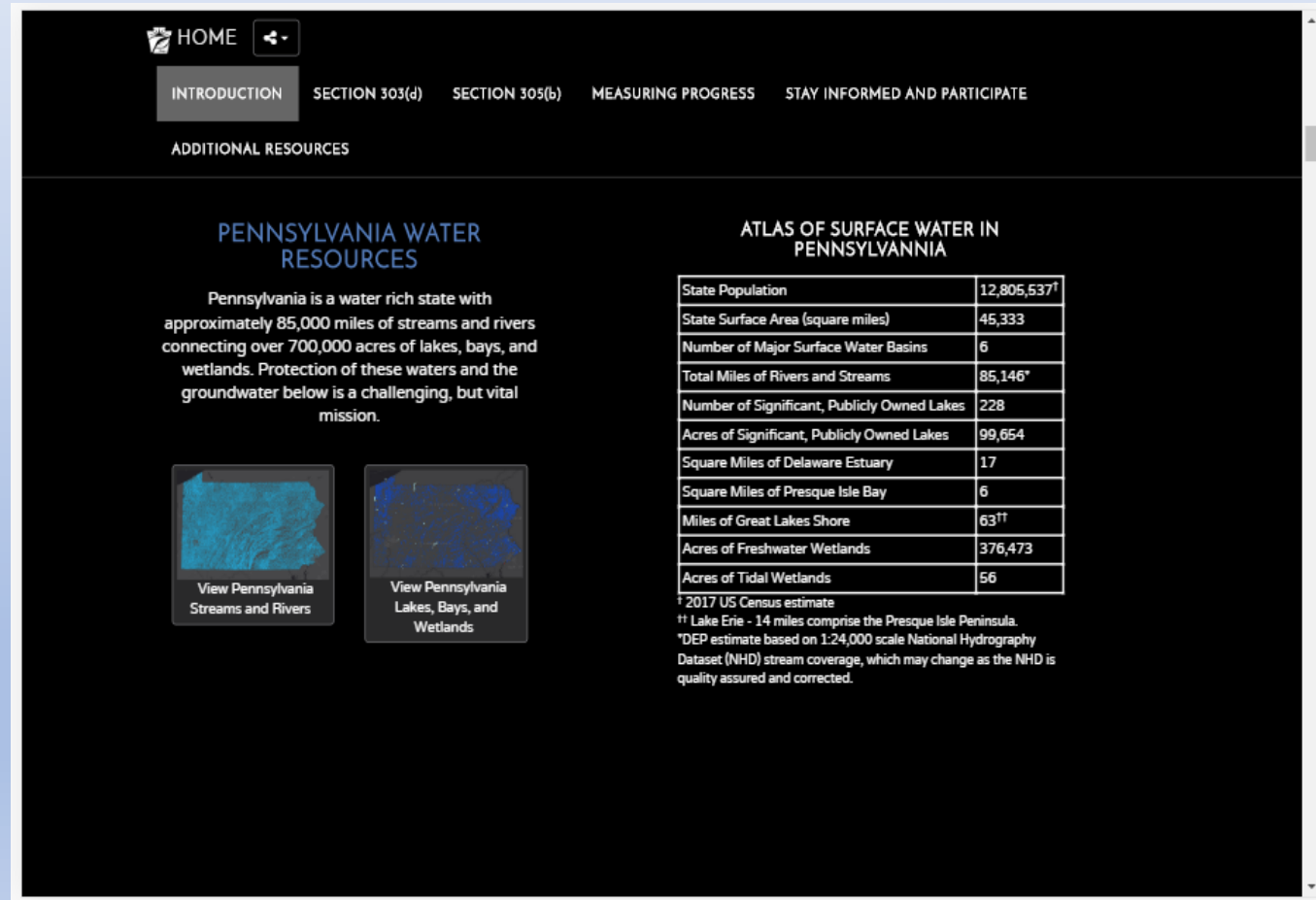
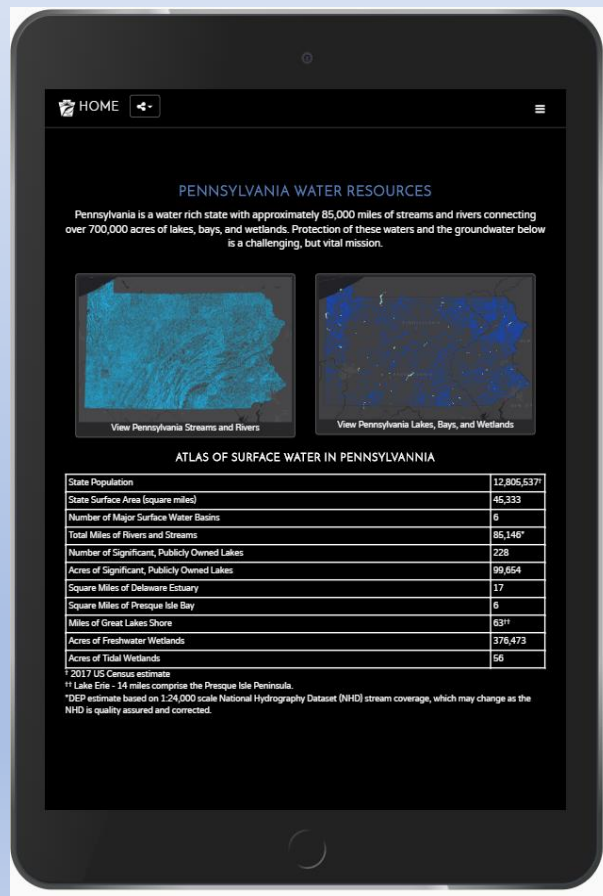
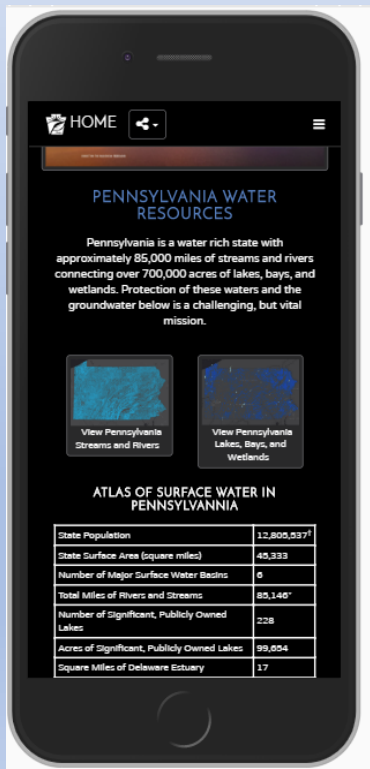
The next slide contains the programming code.

Code for Ground Water Data Mapping

```
• <div class="col-md-5 col-lg-5 col-lg-offset-1 wow fadeInRight" data-wow-duration="2s" data-wow-  
delay=".4s">  
•     <div class="form-group">  
•         <label for="toxicSelection"><strong>Use the dropdown menu to select a  
parameter of interest.</strong></label>  
•         <select class="form-control form-control-caret" id="toxicSelection"  
onchange="jsDropDown('groundwater_maps', 'Groundwater', this.value)">  
•             <option>Chloride</option>  
•             <option>Iron</option>  
•             <option>Manganese</option>  
•             <option selected>Nitrate</option>  
•             <option>Sulfate</option>  
•             <option>Total Dissolved Solids</option>  
•         </select>  
•     </div>  
•     <div id="toxics-map-container" class="embed-responsive embed-responsive-4by3">  
•         <span class="sr-only">Map depicting groundwater parameter models.</span>  
•         <iframe src="Groundwater/Nitrate.html" id="groundwater_maps" class="embed-  
responsive-item"></iframe>  
•     </div><br>  
• </div>  
•  
•     function jsDropDown (imgid, folder, newimg){  
•         document.getElementById(imgid).src= folder + "/" + newimg + ".html";  
•     }
```

Compatibility with Other Devices

One of the features of this programming code is the versatility to be displayed on a variety of devices. Below are examples of how the report appears on phones, tablets and laptops.



Bootstrap Tool

- Bootstrap is an open source toolkit for developing responsive, mobile-first websites with HTML, CSS, and JavaScript. Bootstrap is free to download and use.
- It provides basic style definitions for all HTML elements. In addition, developers can take advantage of CSS classes defined in Bootstrap to customize the appearance of their content.
- Bootstrap comes with several jQuery plugins. Each Bootstrap component consists of HTML structure, CSS declarations, and sometimes JavaScript code.
- The basic layout component is called a “Container”
- Every element on the page is placed on the container
- Using the Bootstrap Fluid Container, Bootstrap will figure out how wide the screen is and response by resizing your HTML elements.
- With this responsive design, there is no need to design a mobile version of your website.
- You can add Bootstrap to any app by adding the following code at the top of your HTML.
- ```
<!-- Bootstrap Core CSS -->
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/twitter-bootstrap/3.4.0/css/bootstrap.min.css" integrity="sha256-H0KfTigpUV+0/5tn2HXC0CPwhhDhWgSawJdnFd0CGCo=" crossorigin="anonymous" />
```

[www.depgis.state.pa.us/2018\\_integrated\\_report/index.html](http://www.depgis.state.pa.us/2018_integrated_report/index.html)

 HOME 

INTRODUCTION

SECTION 303(d)

SECTION 305(b)

MEASURING PROGRESS

STAY INFORMED AND PARTICIPATE

ADDITIONAL RESOURCES

# DRAFT 2018 PENNSYLVANIA INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT

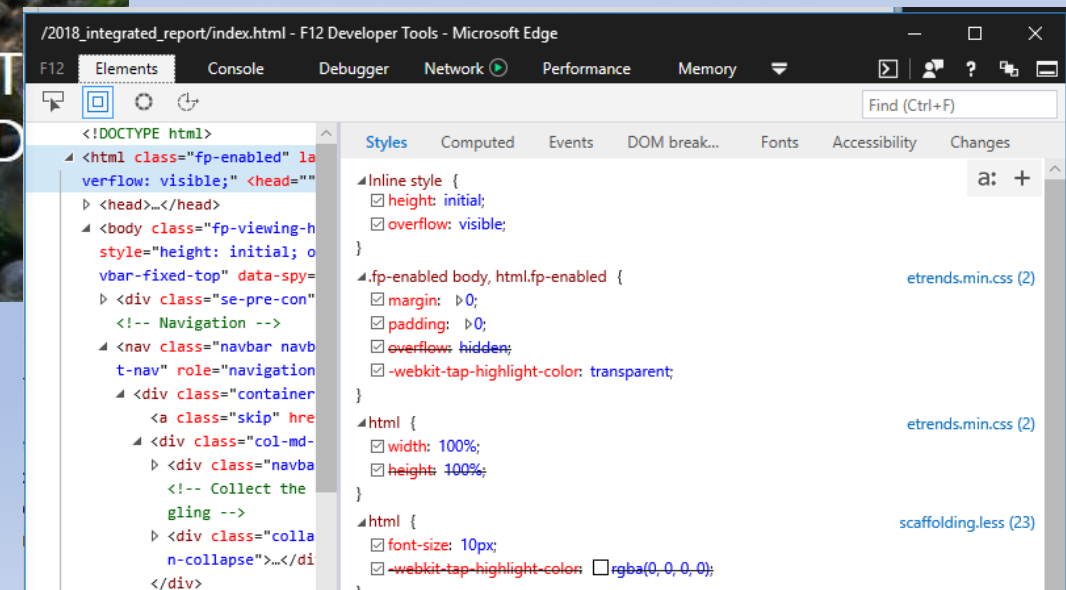
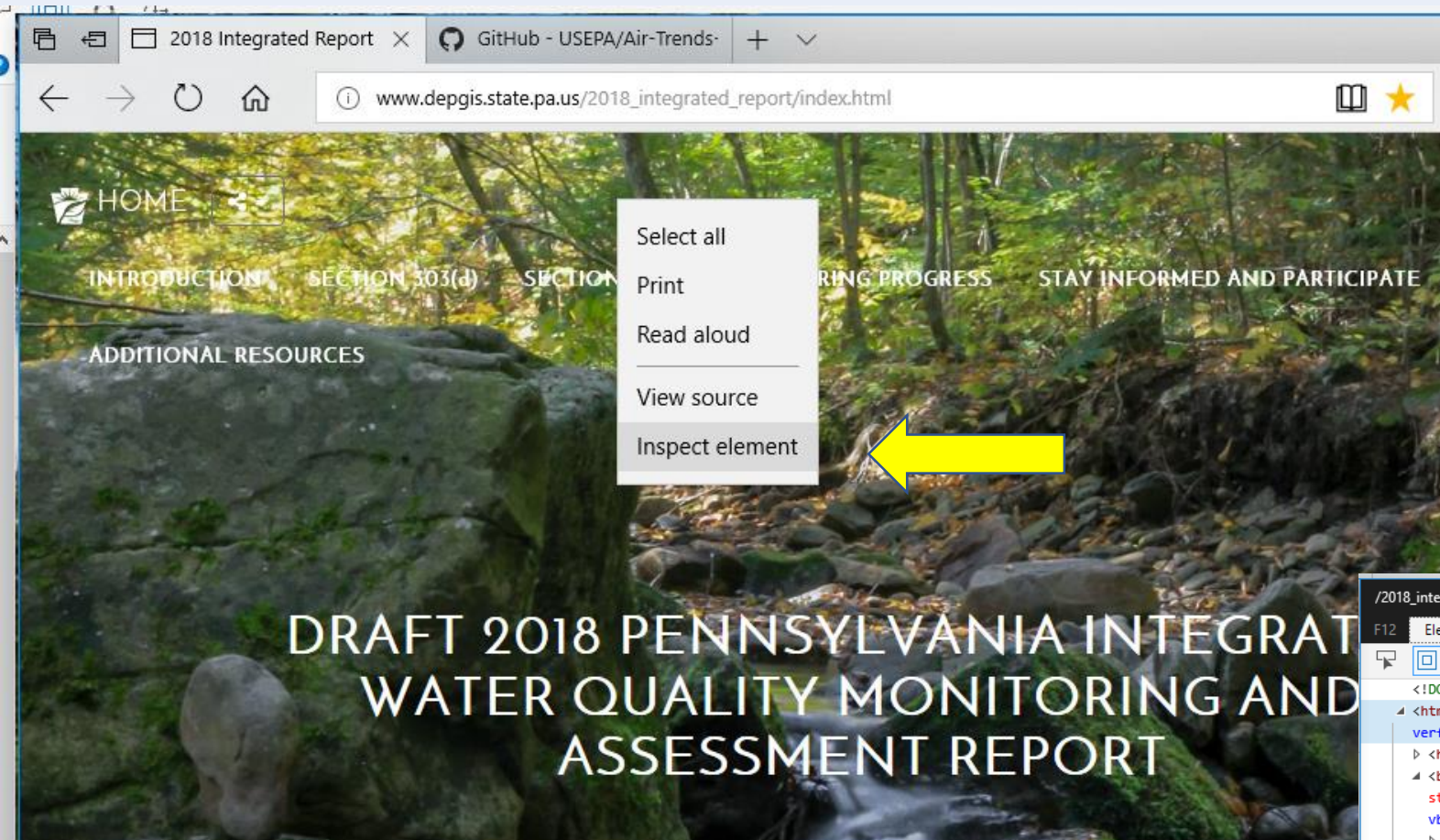
Clean Water Act

Section 303(d) List and 305(b) Report

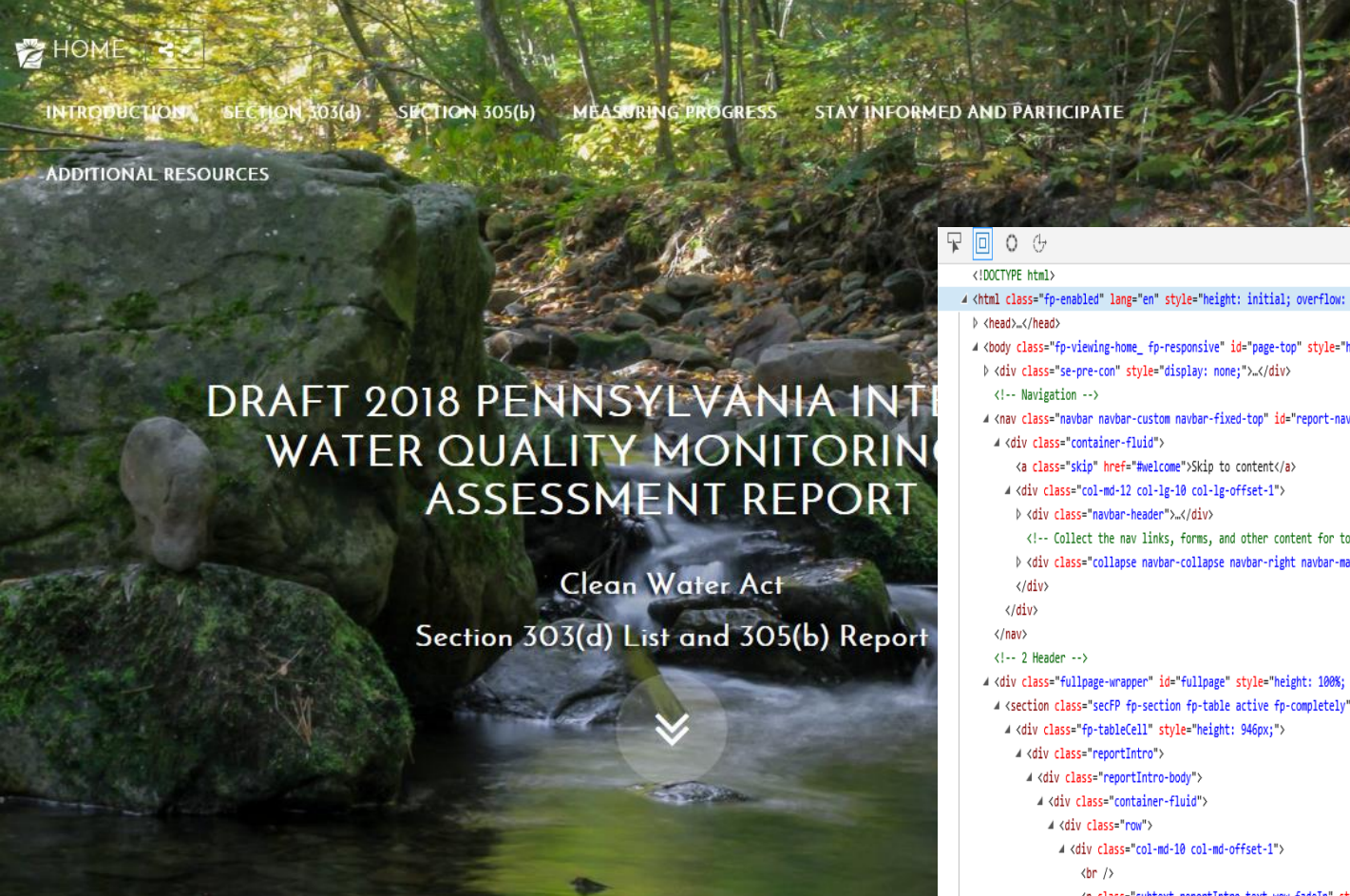


ASAPH RUN NEAR WELLSBORO, PA

# Tools to Examine Code



Place cursor on element and right click. Select Inspect element from popup.



# DRAFT 2018 PENNSYLVANIA INTEGRATED WATER QUALITY MONITORING ASSESSMENT REPORT

## Clean Water Act Section 303(d) List and 305(b) Report



Find (Ctrl+F)

```

<!DOCTYPE html>
<html class="fp-enabled" lang="en" style="height: initial; overflow: visible;" <head=""
 <head>...</head>
 <body class="fp-viewing-home_fp-responsive" id="page-top" style="height: initial; overflow: visible;" data-target=".navbar-fixed-top" data-spy="scroll">
 <div class="se-pre-con" style="display: none;">...</div>
 <!-- Navigation -->
 <nav class="navbar navbar-custom navbar-fixed-top" id="report-nav" role="navigation">
 <div class="container-fluid">
 Skip to content
 <div class="col-md-12 col-lg-10 col-lg-offset-1">
 <div class="navbar-header">...</div>
 <!-- Collect the nav links, forms, and other content for toggling -->
 <div class="collapse navbar-collapse navbar-right navbar-main-collapse">...</div>
 </div>
 </nav>
 <!-- 2 Header -->
 <div class="fullpage-wrapper" id="fullpage" style="height: 100%; position: relative;">
 <section class="secFP fp-section fp-table active fp-completely" style="height: 946px;" data-anchor="home_">
 <div class="fp-tableCell" style="height: 946px;">
 <div class="reportIntro">
 <div class="reportIntro-body">
 <div class="container-fluid">
 <div class="row">
 <div class="col-md-10 col-md-offset-1">

 <p class="subtext reportIntro-text wow fadeIn" style="visibility: visible; animation-name: fadeIn; animation-duration: 1s; animation-delay: 1.5s;" data-wow-duration="1s" data-wow-delay="1.5s"></p>
 <h1>DRAFT 2018 PENNSYLVANIA INTEGR...</h1>
 <p></p>
 <p class="subtext reportIntro-text wow fadeIn" style="visibility: visible; animation-name: fadeIn; animation-duration: 1s; animation-delay: 1.5s;" data-wow-duration="1s" data-wow-delay="1.5s">...</p>
 ...

 <div class="hi-icon-wrap hi-icon-effect-8 wow fadeIn" style="visibility: visible; animation-name: fadeIn; animation-duration: 1s; animation-delay: 2s;" data-wow-duration="1s" data-wow-delay="2s">

 </div>
 </div>
 </div>
 </div>
 <h2 style="text-align:right; font-size:12px; margin-bottom:0px; margin-right:20px">ASAPH RUN NEAR WELLSBORO, PA</h2>
 </div>
 </div>
 </div>
 </section>
 </div>
 </body>
 </html>

```

Styles
Computed
Events
DOM breakpoi...
Fonts
Accessibility
Changes

Inline style {

- height: initial;
- overflow: visible;

fp-enabled body, html,fp-enabled {

- margin: 0;
- padding: 0;
- overflow: hidden;
- webkit-tap-highlight-color: transparent;

html {

- width: 100%;
- height: 100%;

html {

- font-size: 10px;
- webkit-tap-highlight-color: rgba(0, 0, 0, 0);

html {

- font-family: sans-serif;
- ms-text-size-adjust: 100%;
- webkit-text-size-adjust: 100%;

{

- webkit-box-sizing: border-box;
- moz-box-sizing: border-box;
- box-sizing: border-box;

Pseudo :before element

after, :before {

- webkit-box-sizing: border-box;
- moz-box-sizing: border-box;
- box-sizing: border-box;

Pseudo :after element

after, :before {

- webkit-box-sizing: border-box;
- moz-box-sizing: border-box;
- box-sizing: border-box;



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION



Bureau of Clean Water

# Contact Information

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