Environmental Protection Agency

Usability Audit Review

Content and Navigation: Ground Water and Drinking Water

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February 2018

Property of ForeSee – Proprietary & Confidential

Agenda

› **Overview of Usability Audit Review**

- Top Usability Issues
- Key Points

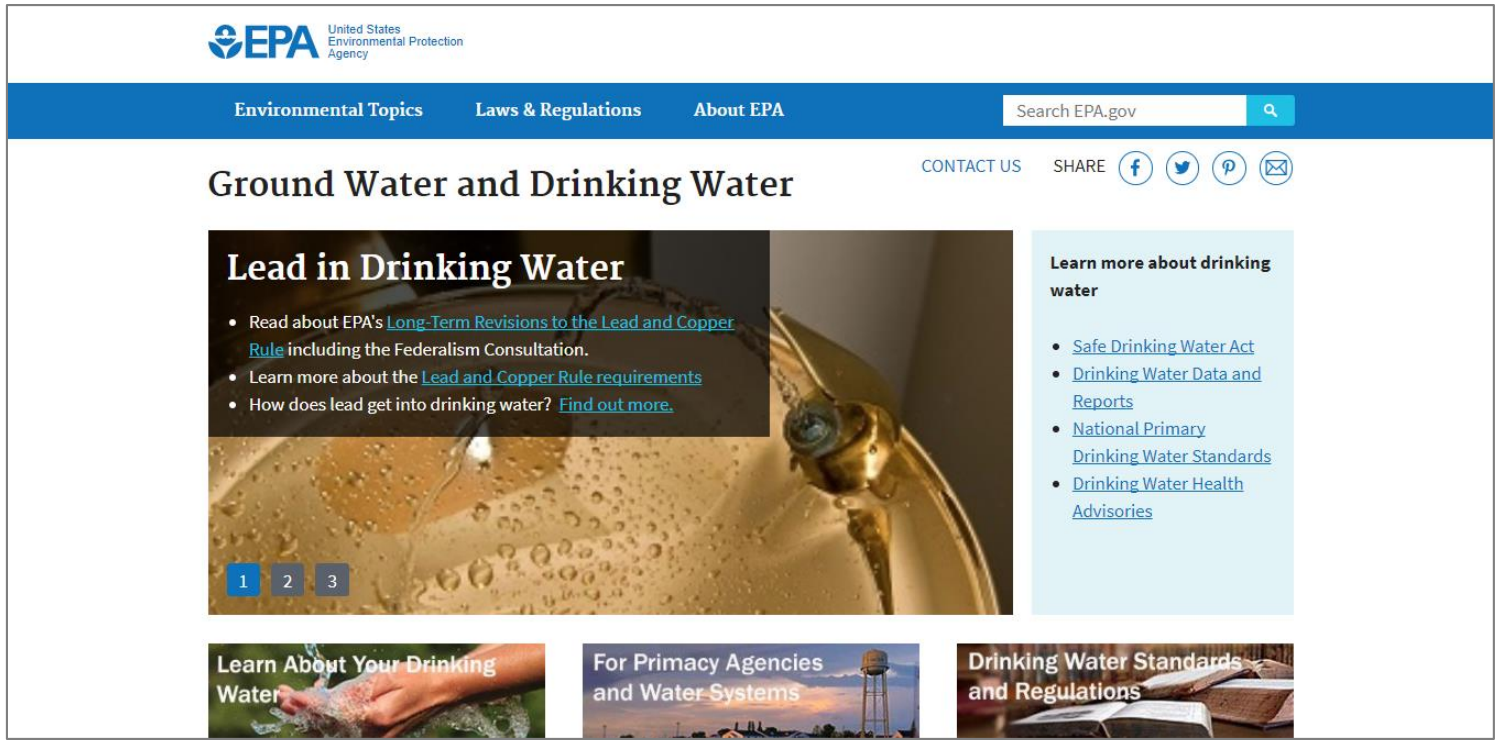
ForeSee Usability Process

- Audit
- Analysis
- Independent Evaluation
- Target Customer Needs and Expectations

Usability Indicators

- Individual Application
- Pass/Fail Metric
- Measures Specific Aspect of Usability
- Proprietary to ForeSee
- Website Analysis and External Research
- Best Practice

Scope and Specifications



- February 2018
- 1366 x 768
- Iterative Evaluation

This audit examines content and navigation within the Ground Water and Drinking Water section to evaluate the organization and categorization of information, the intuitiveness of navigation, and how clearly labeling communicates the nature of content and its structure. This audit focuses on the core components of orientation, labeling, navigation, and organization.

Agenda

- Overview of Usability Audit Review
- › **Top Usability Issues**
- Key Points

Top Usability Issues

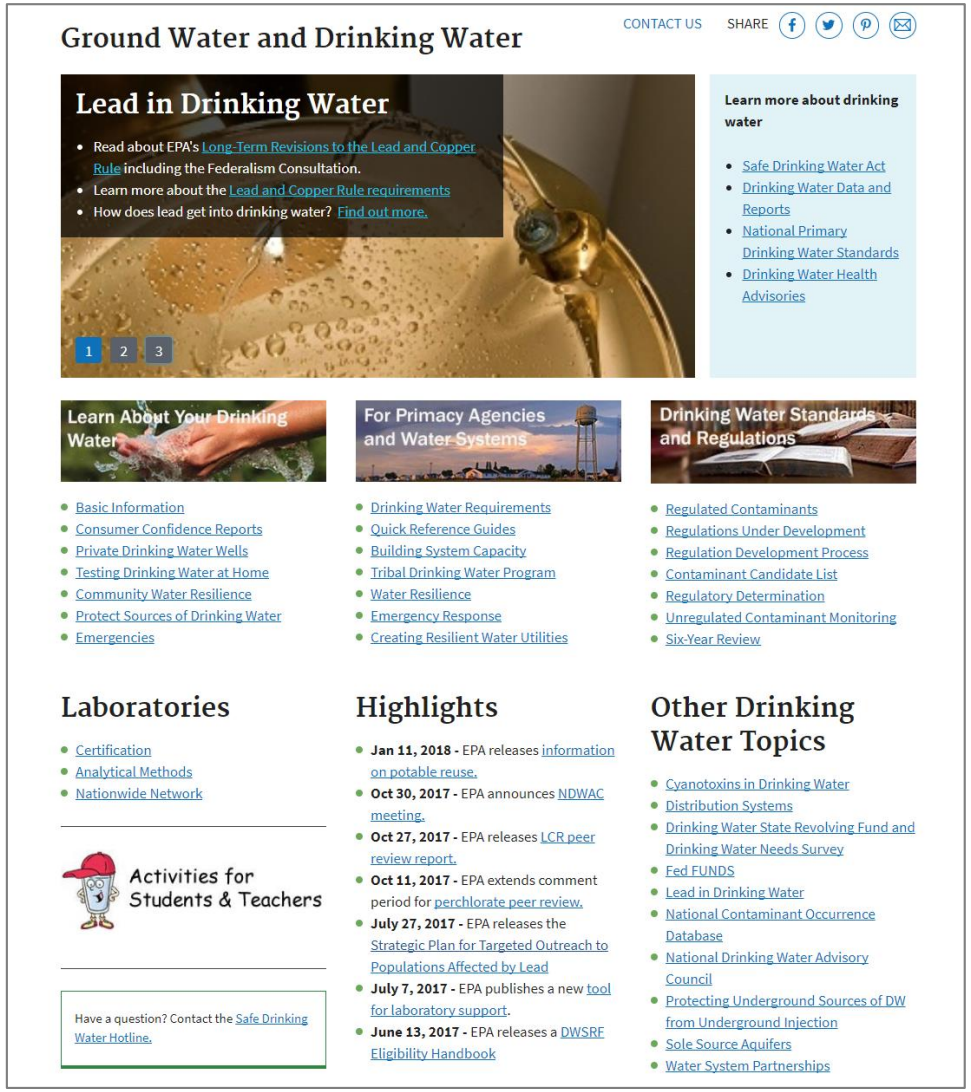
- Categorization
- Labeling and Messaging
- Landing Pages
- Local Navigation
- Visual Presentation
- Expected Location
- Instructions
- Presentation of Content
- Help Content
- Broken Links

Categorization

Homepage presents too many options

The categorization of content within the Ground Water and Drinking Water section does not help visitors find desired content. For example, visitors looking for their local water quality report or information about their watershed may be overwhelmed by the number of options presented to them on the section's homepage. This increases the time and effort required for them to determine which links lead to the content they seek.

Recommendation: Reduce the number of links on the section's homepage.



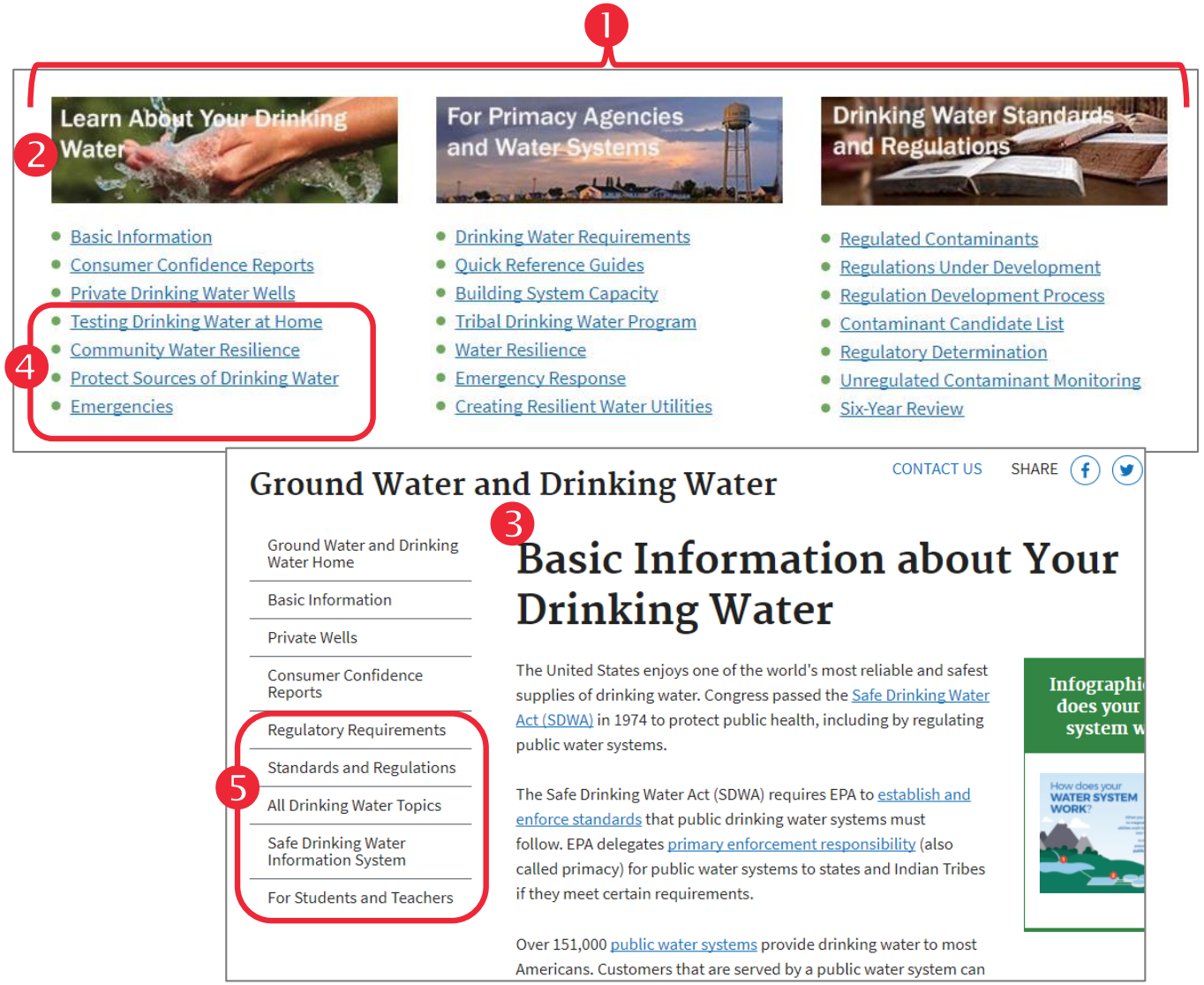
Categorization is incomplete

Although the visual organization of content on the homepage implies that there are three top-level categories within the section ❶, the content presented on these pages does not represent everything visitors can do in the section. As shown, the group of links for Learn about Your Drinking Water ❷ and the menu on the subsequent page ❸ each contain links that are not repeated in the other group ❹ ❺. This makes it more difficult for visitors to understand how content within the section is structured and delays them in their task of identifying the most relevant or useful content.

The section could create more intuitive pathways by grouping content logically into general to specific categories. This would allow visitors to evaluate all available areas of content more quickly and target those of relevance to them.

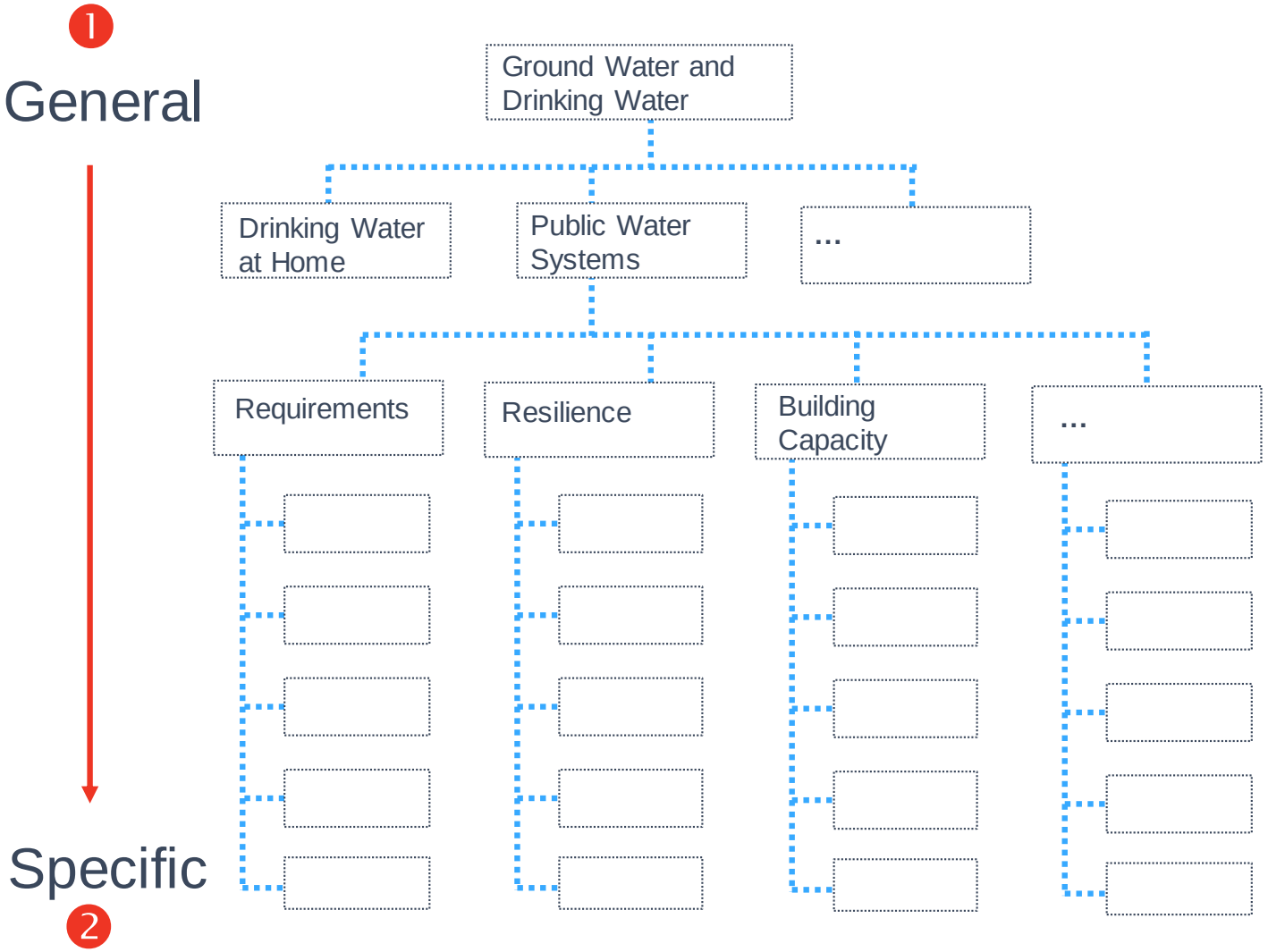
Recommendations:

- Avoid overlapping subcategories.
- Organize content within Ground Water and Drinking Water into thematically-related categories and subcategories.



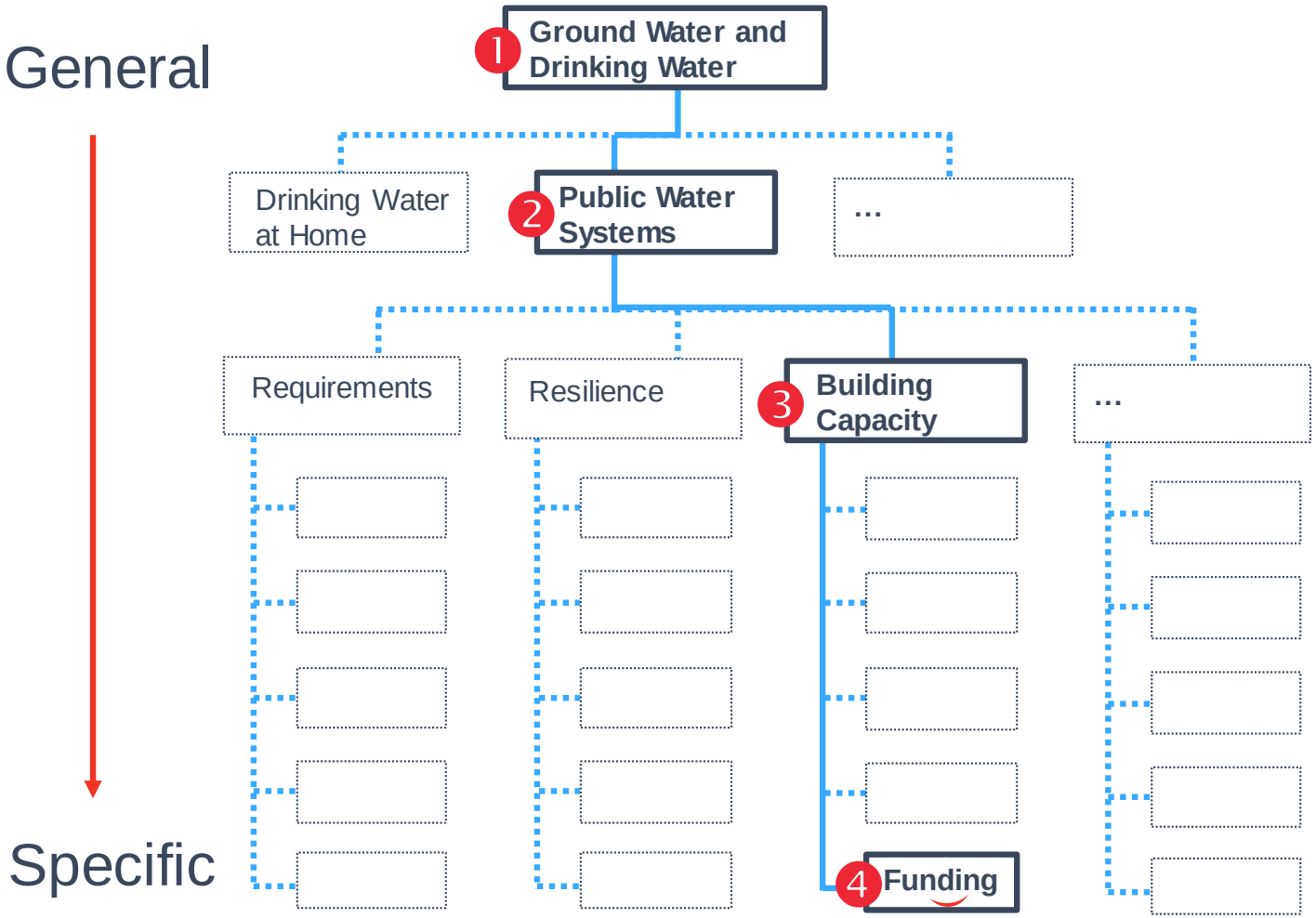
Mockup: Effective categorization

To be able to navigate to the desired information or resources within Ground Water and Drinking Water, visitors must be able to follow a strong information scent from very general content areas near the top of the section ❶ down to very specific content areas ❷. This is accomplished by establishing an information hierarchy that gradually discloses clear choices to visitors.



Mockup: Effective categorization

Thus, supported by descriptive link labeling, visitors could successfully navigate with each click toward the very specific information they seek deeper in the site because the appropriate path or choice is clear on each page ❶ ❷ ❸ ❹. For large sites, this deep-structured hierarchy is preferable to the shallow hierarchy currently in place. Although the category page attempts to expose content and reduce clicks, it creates an unintuitive structure and an overwhelming number of links higher in the site.



Categorization

Recommendations

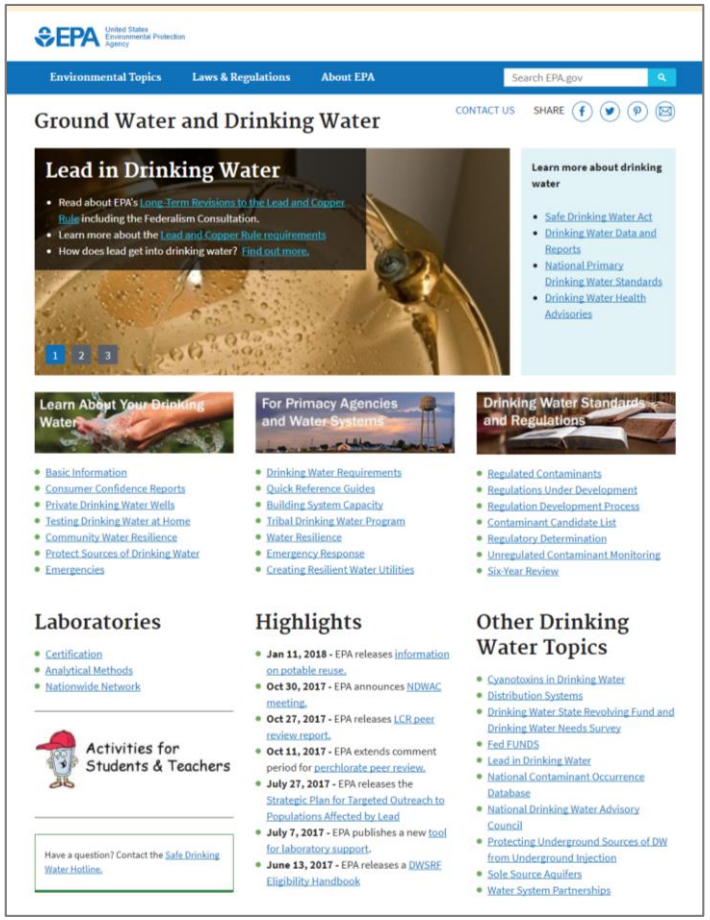
- Reduce the number of links on the section’s homepage.
- Avoid overlapping subcategories.
- Organize content within Ground Water and Drinking Water into thematically-related categories and subcategories.

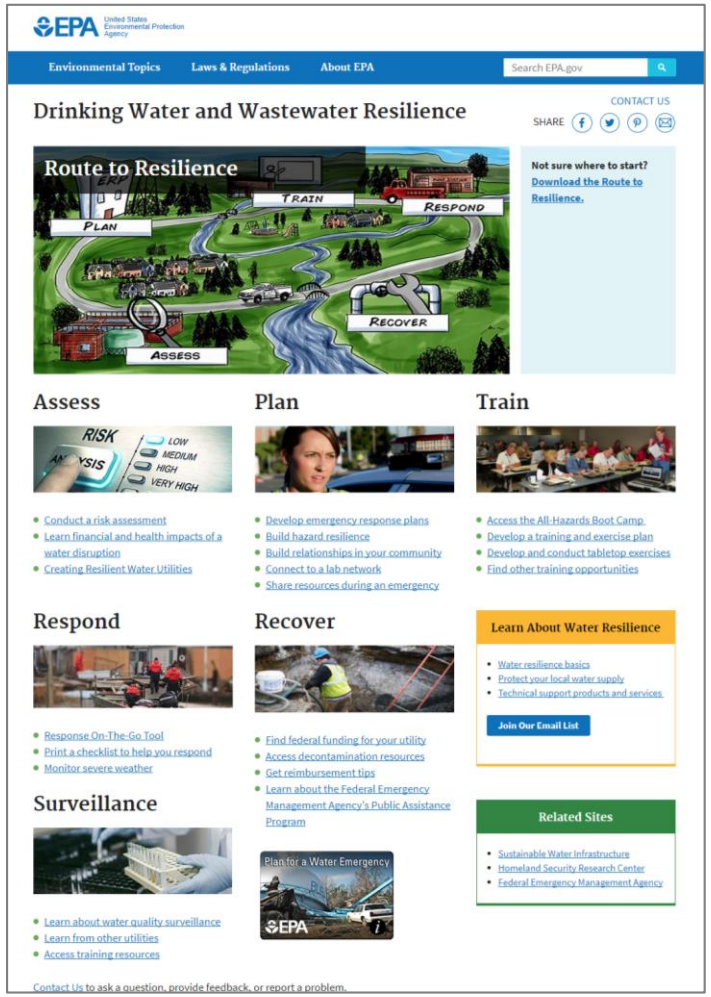
Landing Pages

Landing pages do not effectively introduce content

Primary pages serve to introduce a section's content, set visitor expectations about what can be accomplished, and provide efficient pathways for doing so. Typically, visitors look to the centerwell for overview text and linkage to content on deeper pages within the section. Although the Ground Water and Drinking Water page and other landing pages in the section provide groups of links to subsequent content, they fail to provide a general overview of the content within the section. This slows visitors as they seek to gain an understanding of the breadth and depth of the content within each section.

Recommendation: Ensure that the Ground Water and Drinking Water homepage and other landing pages in the section provide an overview of the content within the section.



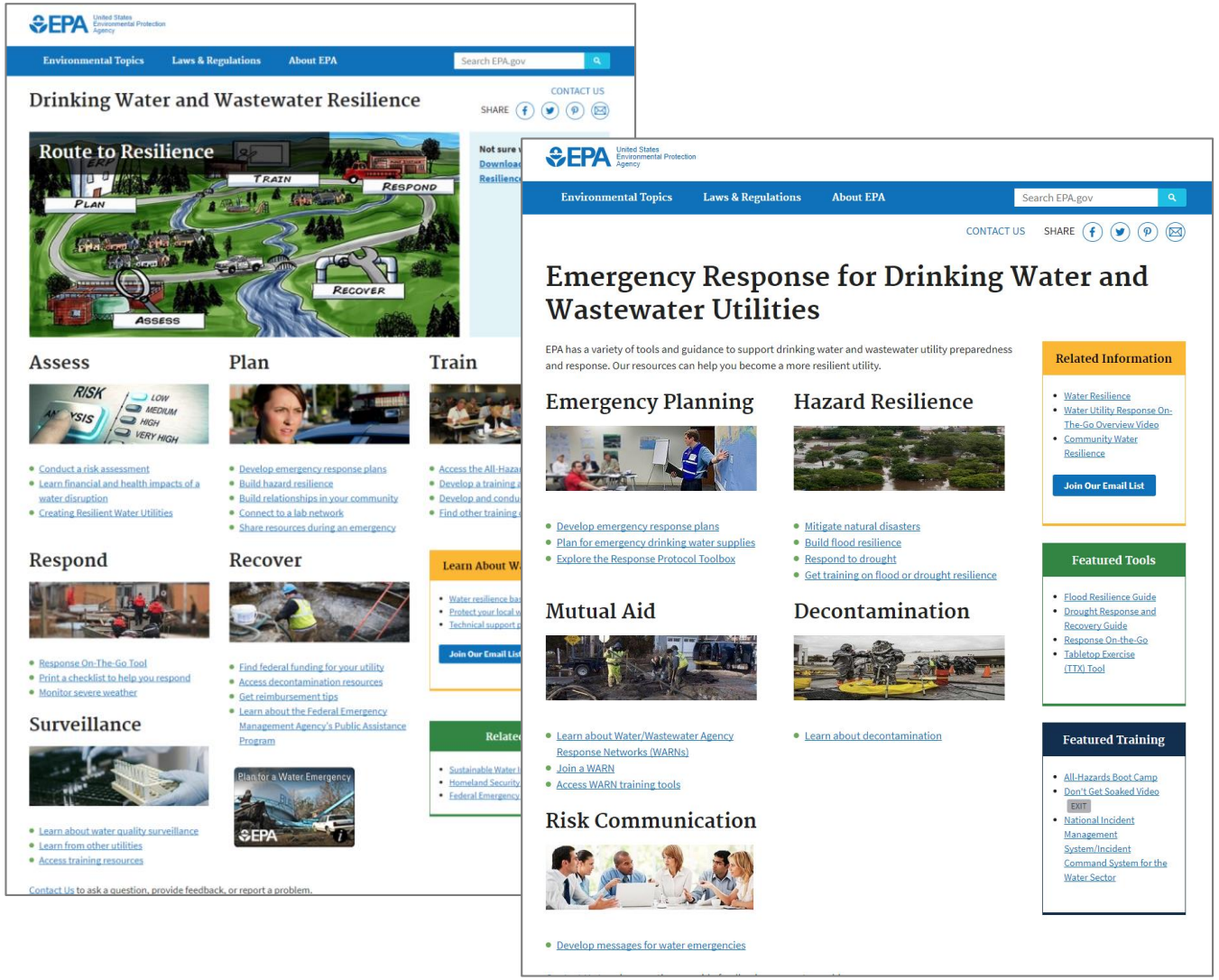


Scope notes are missing from landing pages

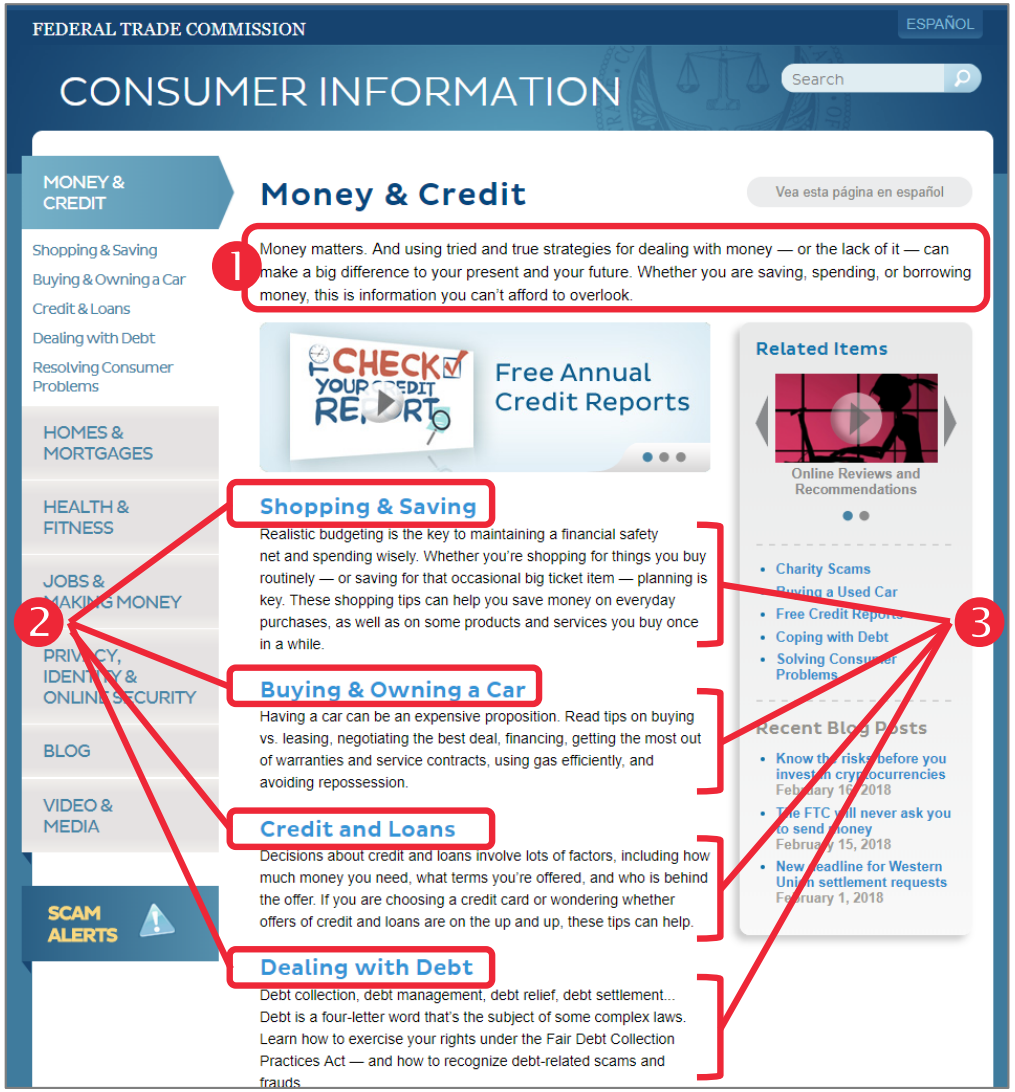
Furthermore, landing pages within the section do not provide explanatory text for links on the page. The inclusion of scope notes helps to explain the nature of content and categories and entice visitors to learn more. In addition to clarifying the type of content visitors will encounter by clicking on navigation choices, these notes help to guide visitors down the correct path and assure them that the first click they make from the landing page is the correct one.

Scope notes can range in length from a short phrase to a few sentences, depending on the link or links they are describing.

Recommendation: Supplement links with succinct scope notes that set initial expectations and help visitors select the best one.



Best practice: Introduction of content on a landing page



This category landing page shows effective use of the centerwell to provide an overview of the category ❶ and linkage to deeper pages ❷. Descriptive text in the centerwell provides additional context for content in each subcategory ❸.

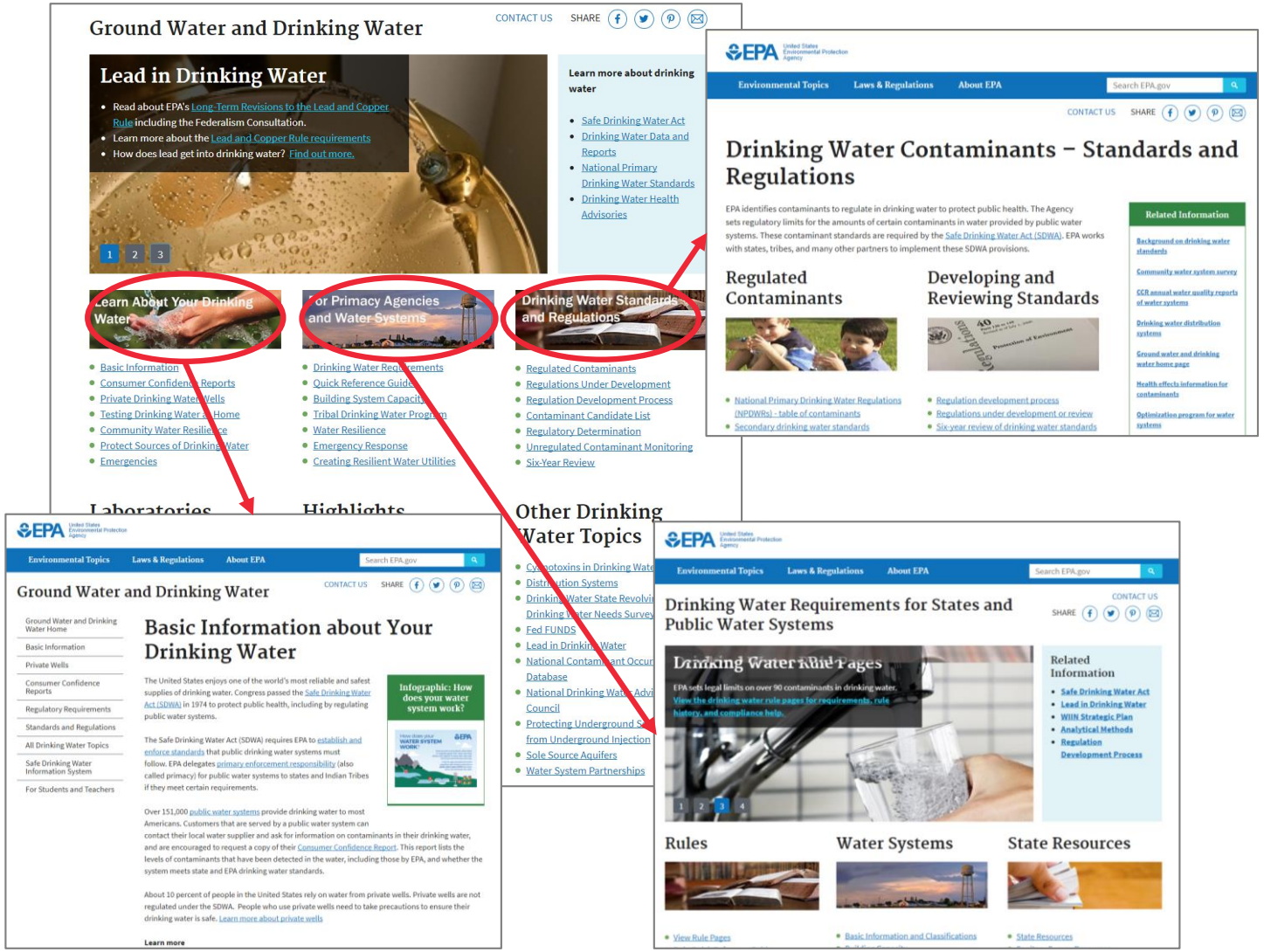
Category headings return different types of content

The site does not set accurate expectations regarding subsequent content. Although visitors may expect category landing pages when clicking on the headings in the Ground Water and Drinking Water homepage, each of these links returns a different style page. The differences in the page structure prevent visitors from understanding how the category is structured and organized.

Furthermore, navigation is hindered as only the Basic Information about Your Drinking Water page provides an explicit link to return to the category homepage.

Recommendations:

- Implement the site template consistently throughout the category.
- Provide linkage to the Ground Water and Drinking Water homepage on all pages of the category.



Landing Pages

Recommendations

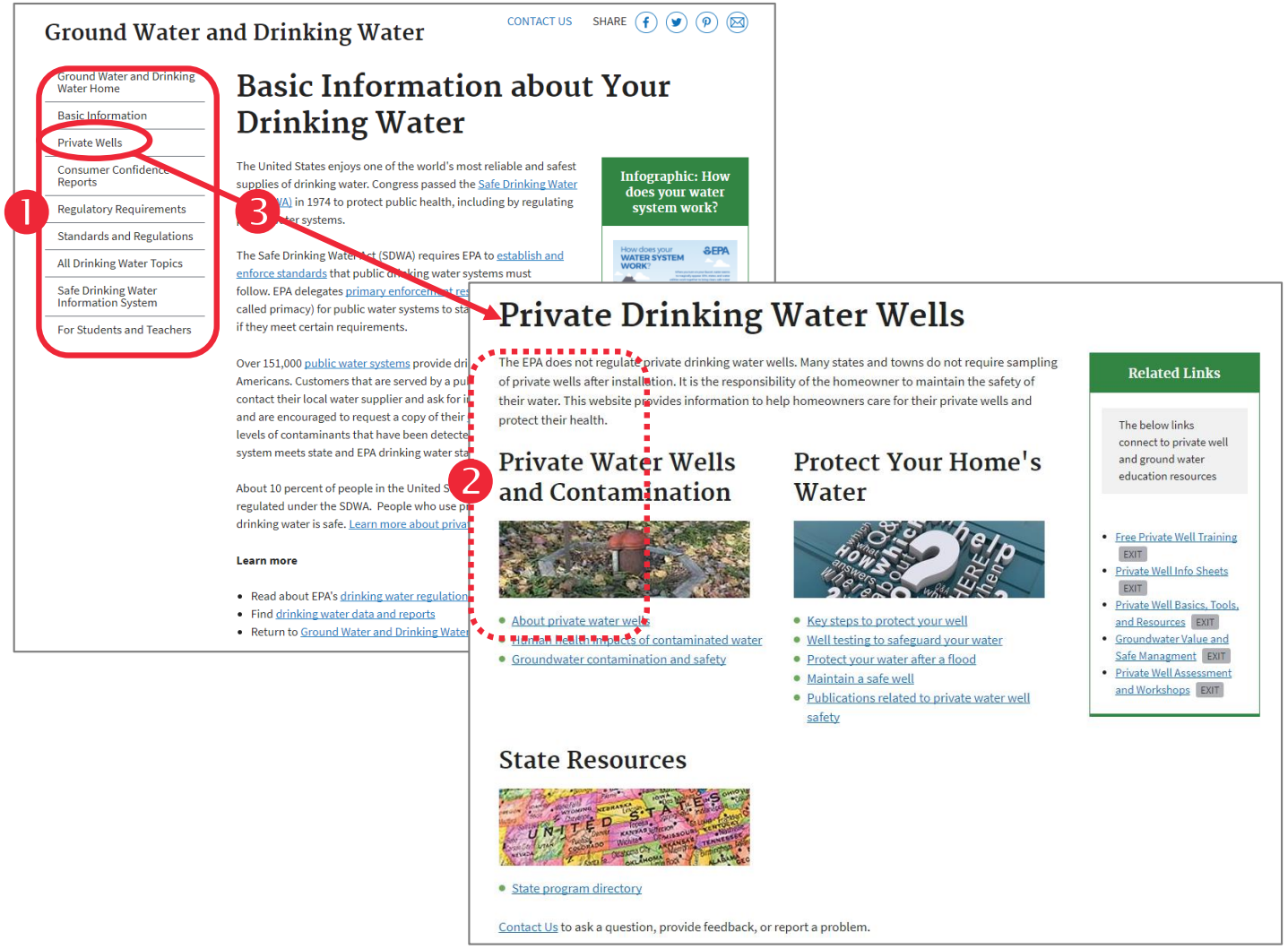
- Ensure that the Ground Water and Drinking Water homepage and landing pages in the section provide an overview of the content within the section.
- Supplement links with succinct scope notes that set initial expectations and help visitors select the best one.
- Implement the site template consistently throughout the category.
- Provide linkage to the Ground Water and Drinking Water homepage on all pages of the category.

Local Navigation

Local navigation is missing on topic pages

Although the Ground Water and Drinking Water category provides navigation menus on some content pages ❶, navigation within the category is hindered by the absence of these menus on topical landing pages ❷. As visitors move from content pages to topic pages ❸, the loss of the menu results in a disjointed navigation experience in which they must scan some pages determine their options, but are offered a menu of options on others.

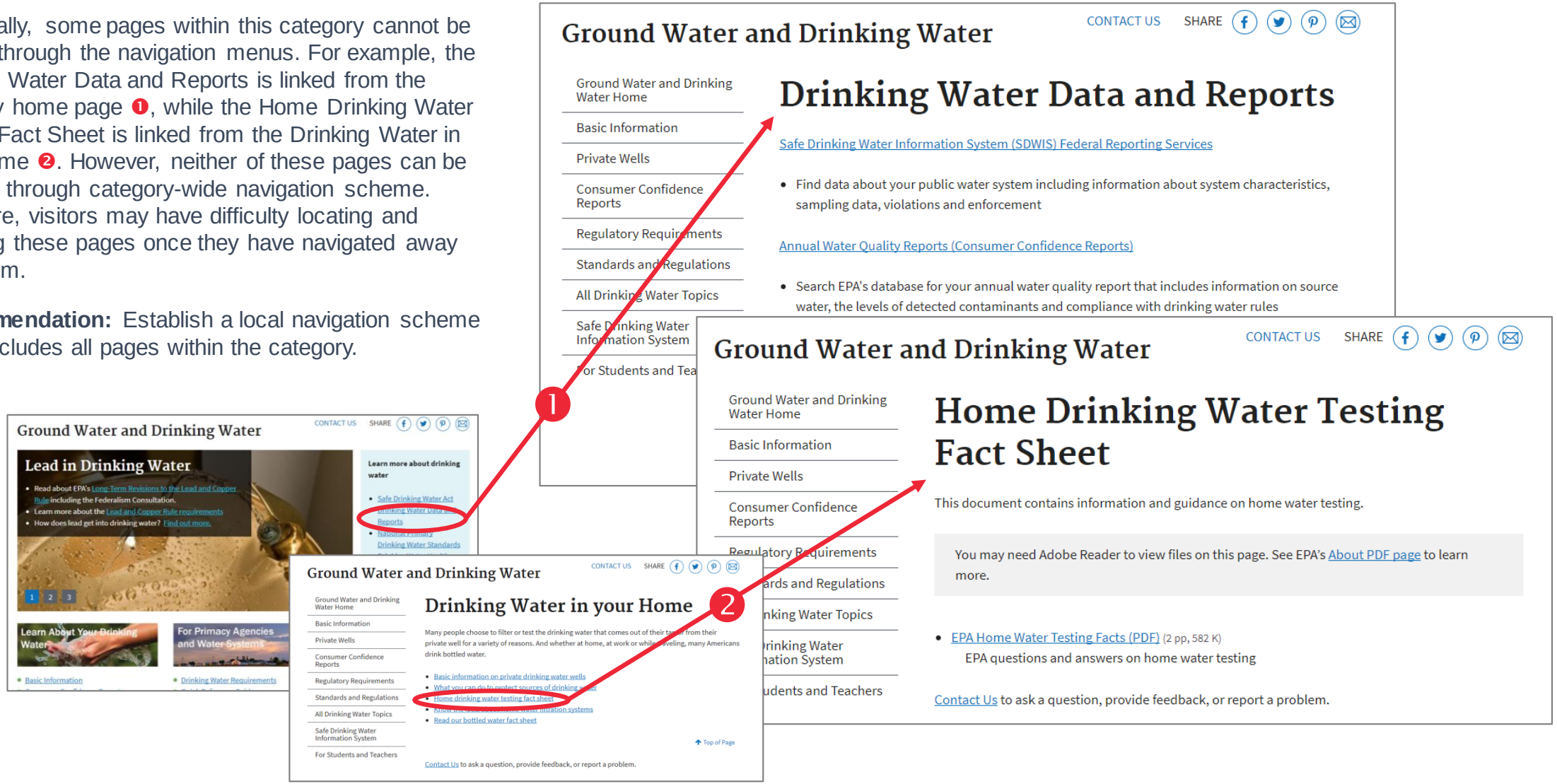
Recommendation: Display local navigation menus on all pages within the category.



Some pages are not included in the menu

Additionally, some pages within this category cannot be located through the navigation menus. For example, the Drinking Water Data and Reports is linked from the category home page ❶, while the Home Drinking Water Testing Fact Sheet is linked from the Drinking Water in Your Home ❷. However, neither of these pages can be reached through category-wide navigation scheme. Therefore, visitors may have difficulty locating and returning these pages once they have navigated away from them.

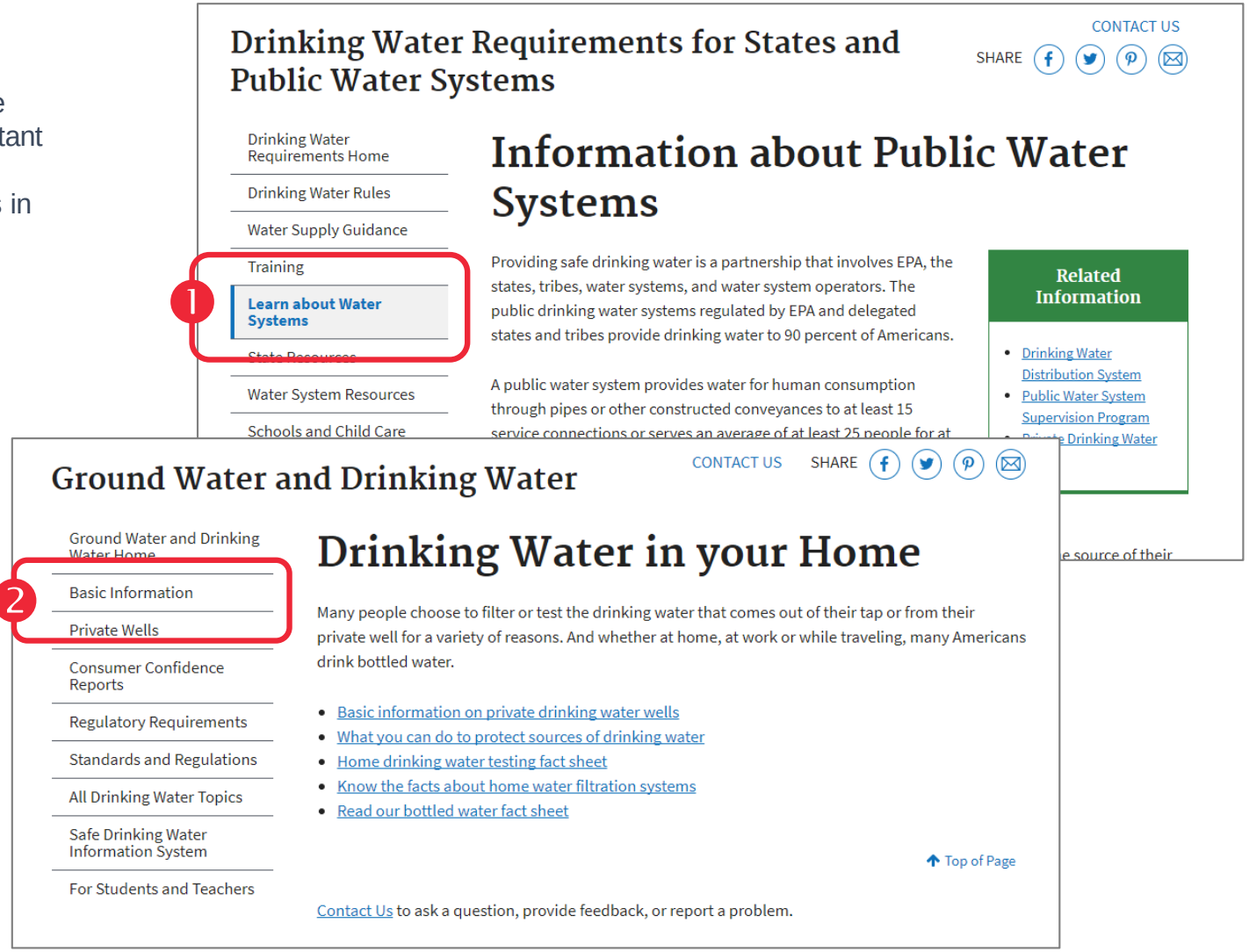
Recommendation: Establish a local navigation scheme which includes all pages within the category.



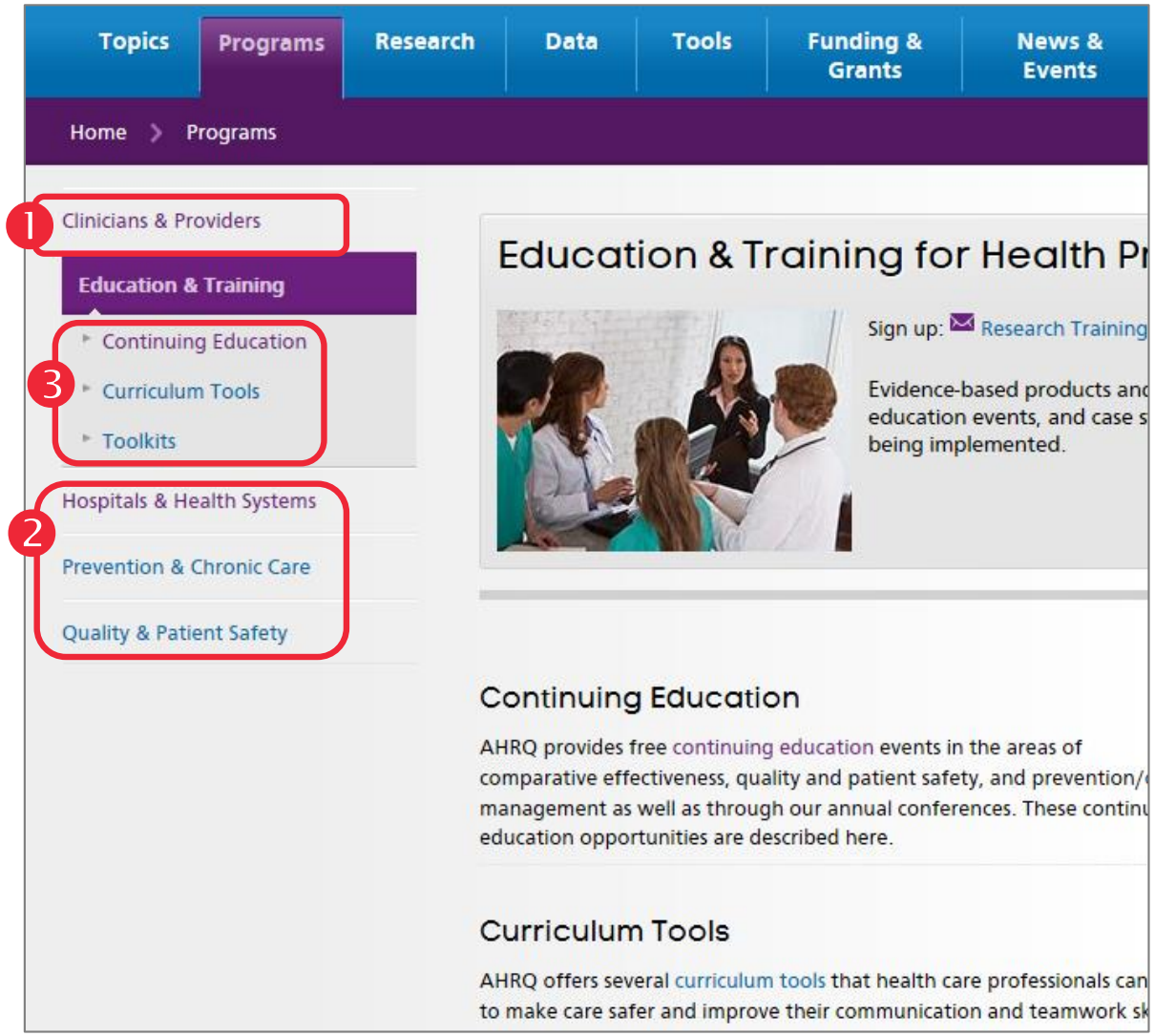
Some menus do not indicate the current location

Finally, the local navigation menus do not consistently highlight the current location within the category. While some menus differentiate the item corresponding to the current page ❶, other menus do not provide this important orientation cue ❷. This risks that visitors will fail to understand how the current page relates to other items in the menu.

Recommendation: Differentiate the item in the menu which corresponds to the current page.



Local navigation: Best practice



When present, hub and spokes navigation increases orientation, as visitors can understand the relationship of the current page to the rest of those in the current section, simply by noting which navigation options are highlighted and the how subsequent menus are nested.

This site effectively implements a local navigation menu on introductory category pages that provides cross linkage to pages at the same level ❶ ❷ and also to subsequent pages within the current topical area ❸.

Local Navigation

Recommendations

- Display local navigation menus all pages within the category.
- Establish a local navigation scheme which includes all pages within the category.
- Differentiate the item in the menu which corresponds to the current page.

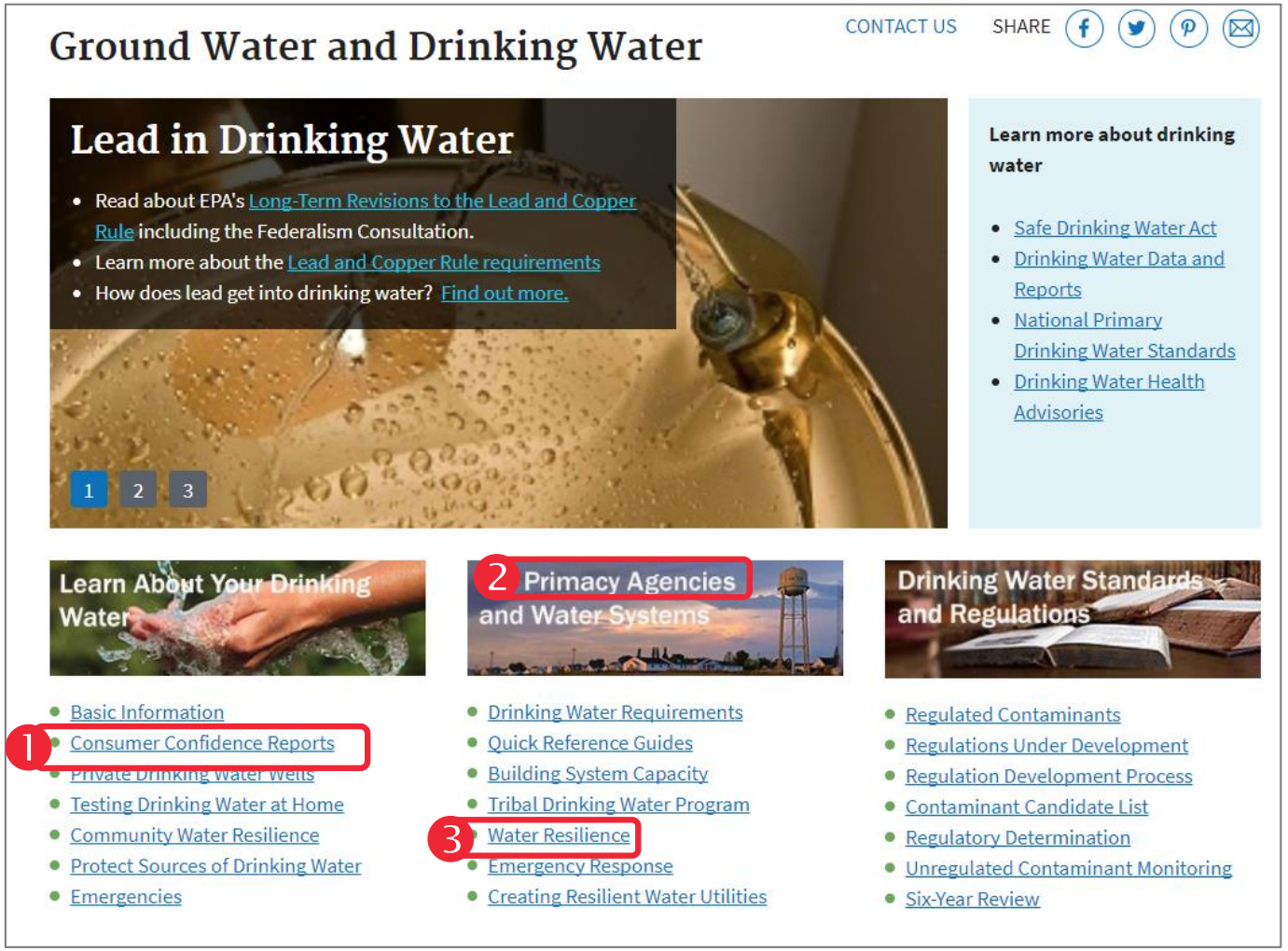
Labeling and Messaging

Some link labels hinder intuitive navigation

Visitors' tasks are impeded when link labels fail to match common terminology. For example, visitors looking for water quality reports may easily overlook links labeled Consumer Confidence Reports ❶, or CCR, since these terms contain no keywords that match the desired content. Other links also contain words that may be unfamiliar to visitors, such as "primacy agencies" ❷ and "water resilience" ❸. If a more familiar term is not available, the site should provide scope notes to set expectations regarding this content.

Recommendations:

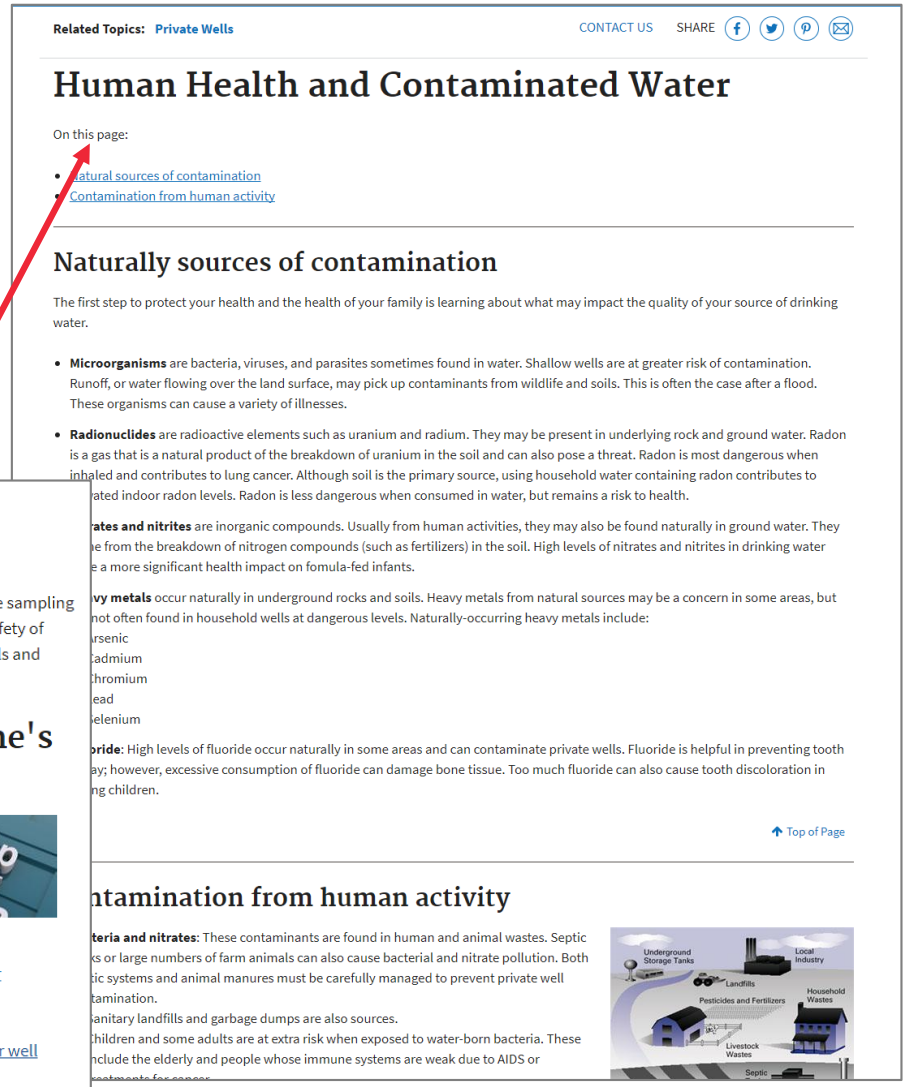
- Ensure link labels reflect common terminology.
- Provide scope notes when there is no appropriate familiar term.



Connection between content and category is not clear

In some instances, the site does not clarify the relationship of content in the group. For example, within Private Wells, the Human Health and Contaminated Water page contains important information for well owners, but it does not make a direct connection between the two topics. If this content is intended for well owners, there should be an appropriate introduction stating this and addressing their specific concerns.

Recommendation: Provide content introductions which connect the content on the page to the intended audience or the current category.



Related Topics: Private Wells

CONTACT US SHARE

Human Health and Contaminated Water

On this page:

- atural sources of contamination
- Contamination from human activity

Naturally sources of contamination

The first step to protect your health and the health of your family is learning about what may impact the quality of your source of drinking water.

- **Microorganisms** are bacteria, viruses, and parasites sometimes found in water. Shallow wells are at greater risk of contamination. Runoff, or water flowing over the land surface, may pick up contaminants from wildlife and soils. This is often the case after a flood. These organisms can cause a variety of illnesses.
- **Radionuclides** are radioactive elements such as uranium and radium. They may be present in underlying rock and ground water. Radon is a gas that is a natural product of the breakdown of uranium in the soil and can also pose a threat. Radon is most dangerous when inhaled and contributes to lung cancer. Although soil is the primary source, using household water containing radon contributes to ated indoor radon levels. Radon is less dangerous when consumed in water, but remains a risk to health.

ates and nitrites are inorganic compounds. Usually from human activities, they may also be found naturally in ground water. They e from the breakdown of nitrogen compounds (such as fertilizers) in the soil. High levels of nitrates and nitrites in drinking water e a more significant health impact on fomula-fed infants.

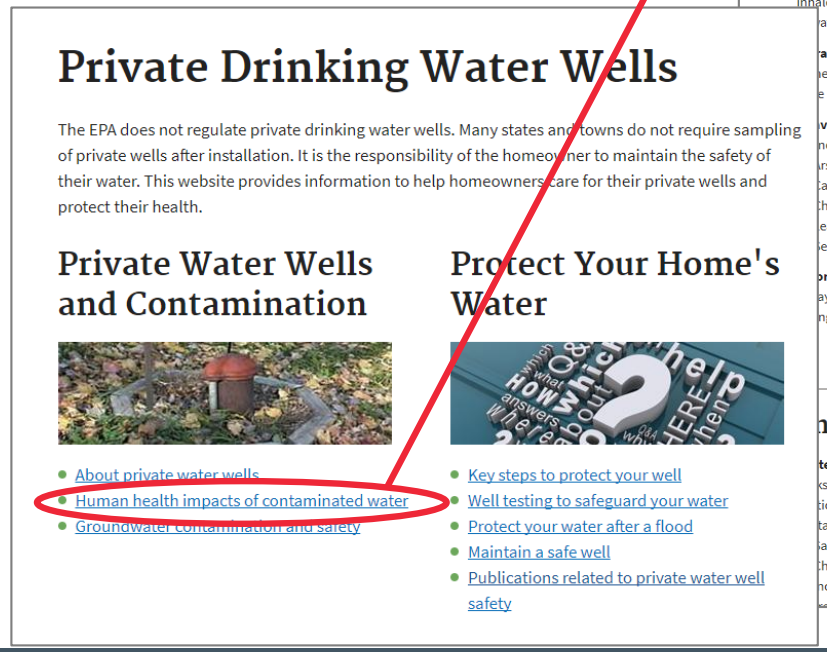
vy metals occur naturally in underground rocks and soils. Heavy metals from natural sources may be a concern in some areas, but not often found in household wells at dangerous levels. Naturally-occurring heavy metals include:
rsenic
admium
hromium
ead
elenium

oride: High levels of fluoride occur naturally in some areas and can contaminate private wells. Fluoride is helpful in preventing tooth ay; however, excessive consumption of fluoride can damage bone tissue. Too much fluoride can also cause tooth discoloration in ng children.

Top of Page

ntamination from human activity

teria and nitrates: These contaminants are found in human and animal wastes. Septic ks or large numbers of farm animals can also cause bacterial and nitrate pollution. Both tic systems and animal manures must be carefully managed to prevent private well tamination.
anitary landfills and garbage dumps are also sources.
hildren and some adults are at extra risk when exposed to water-born bacteria. These nclude the elderly and people whose immune systems are weak due to AIDS or



Private Drinking Water Wells

The EPA does not regulate private drinking water wells. Many states and towns do not require sampling of private wells after installation. It is the responsibility of the homeowner to maintain the safety of their water. This website provides information to help homeowners care for their private wells and protect their health.

Private Water Wells and Contamination

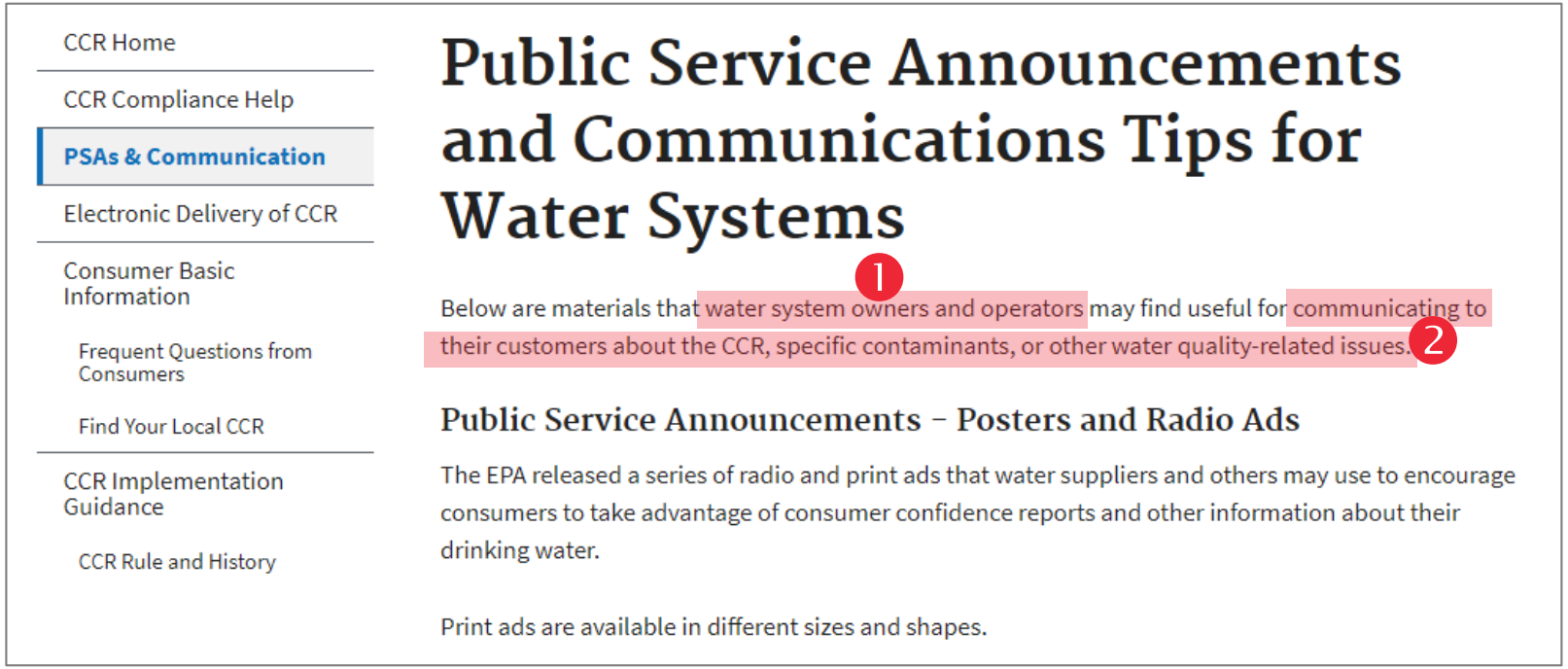
- About private water wells
- Human health impacts of contaminated water
- Groundwater contamination and safety

Protect Your Home's Water

- Key steps to protect your well
- Well testing to safeguard your water
- Protect your water after a flood
- Maintain a safe well
- Publications related to private water well safety

Best practice: Introducing content

This page demonstrates the best practice of providing an introductory statement which identifies the intended audience ❶ and states the purpose of the information ❷.



CCR Home

CCR Compliance Help

PSAs & Communication

Electronic Delivery of CCR

Consumer Basic Information

Frequent Questions from Consumers

Find Your Local CCR

CCR Implementation Guidance

CCR Rule and History

Public Service Announcements and Communications Tips for Water Systems

❶

Below are materials that water system owners and operators may find useful for communicating to their customers about the CCR, specific contaminants, or other water quality-related issues. ❷

Public Service Announcements – Posters and Radio Ads

The EPA released a series of radio and print ads that water suppliers and others may use to encourage consumers to take advantage of consumer confidence reports and other information about their drinking water.

Print ads are available in different sizes and shapes.

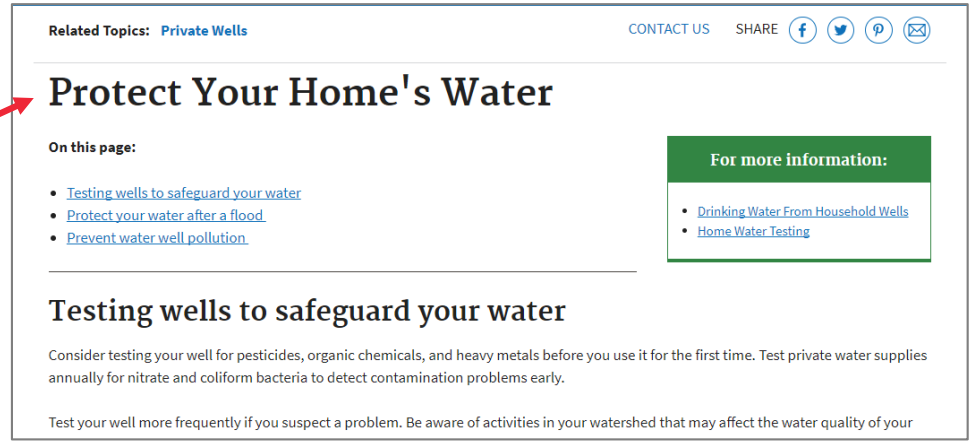
Labeling and Messaging

Recommendations

- Ensure link labels reflect common terminology.
- Provide scope notes when there is no appropriate familiar term.
- Provide content introductions which connect the content on the page to the intended audience or the current category.

Expected Location

Link labels do not match page headings



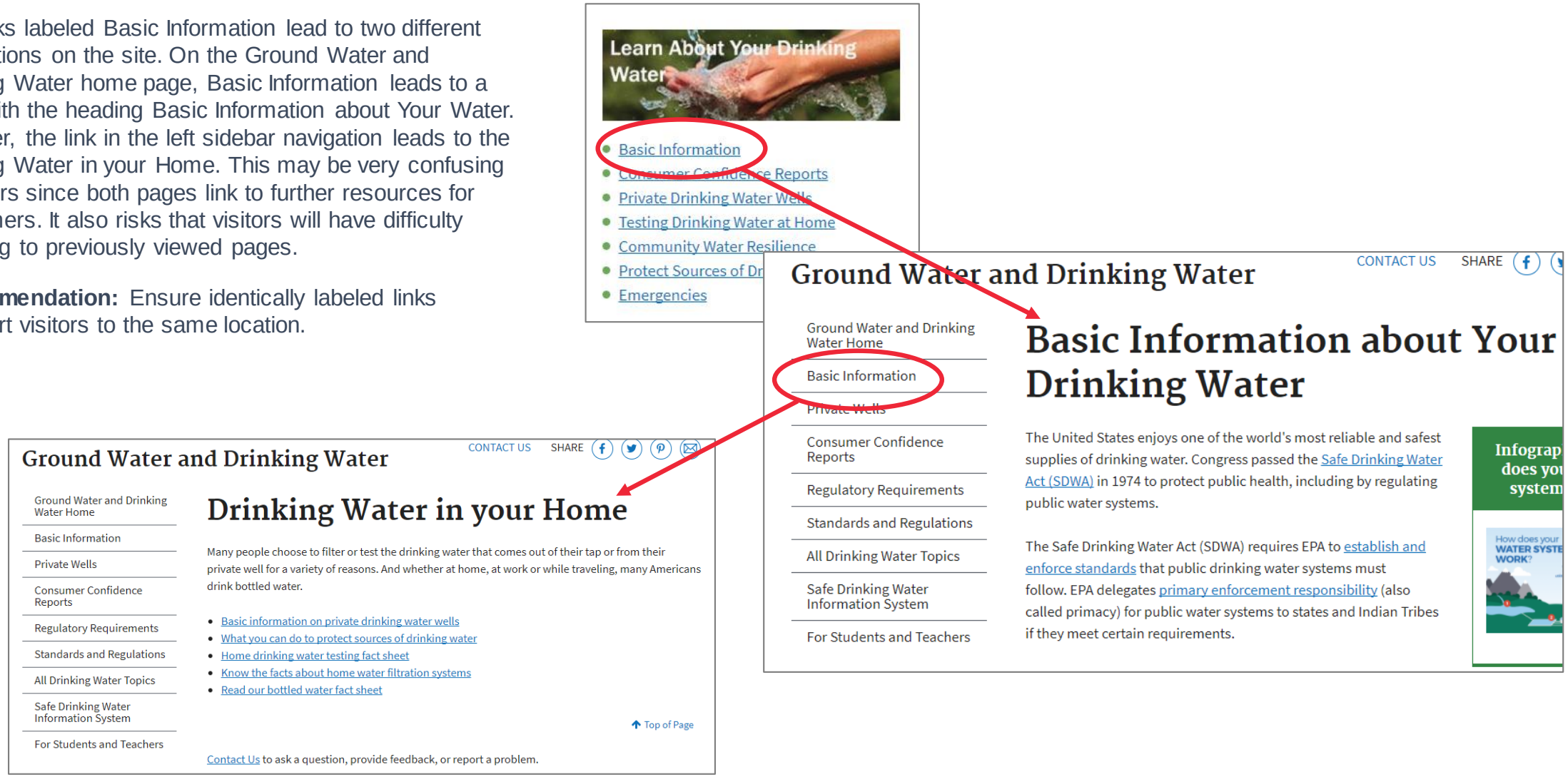
Visitors navigating within the Ground Water and Drinking Water site may become confused when page headings do not match the corresponding link labels. For example, the label Testing Drinking Water at Home ❶ leads to a page with the heading Protect Your Home's Water. Similarly, the label Water Resilience ❷ leads to Drinking Water and Wastewater Resilience. Instead, the site should ensure link labels and page headings have a one-to-one match to orient visitors and reassure them that they have accessed the correct page.

Recommendation: Ensure link labels and corresponding page headings match exactly.

Identically labeled links lead to different pages

Two links labeled Basic Information lead to two different destinations on the site. On the Ground Water and Drinking Water home page, Basic Information leads to a page with the heading Basic Information about Your Water. However, the link in the left sidebar navigation leads to the Drinking Water in your Home. This may be very confusing to visitors since both pages link to further resources for consumers. It also risks that visitors will have difficulty returning to previously viewed pages.

Recommendation: Ensure identically labeled links transport visitors to the same location.



Expected Location

Recommendations

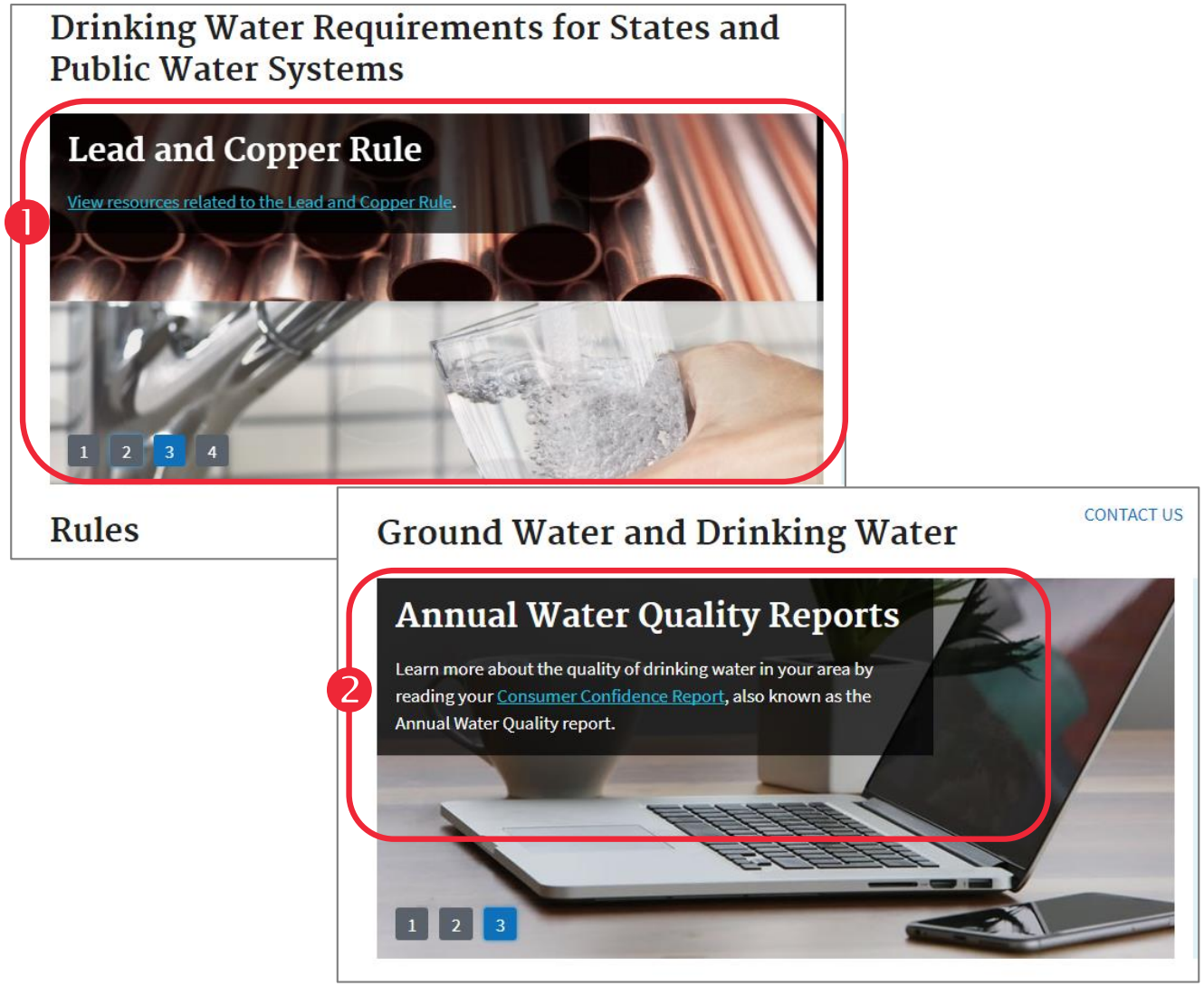
- Ensure link labels and corresponding page headings match exactly.
- Ensure identically labeled links transport visitors to the same location.

Visual Presentation

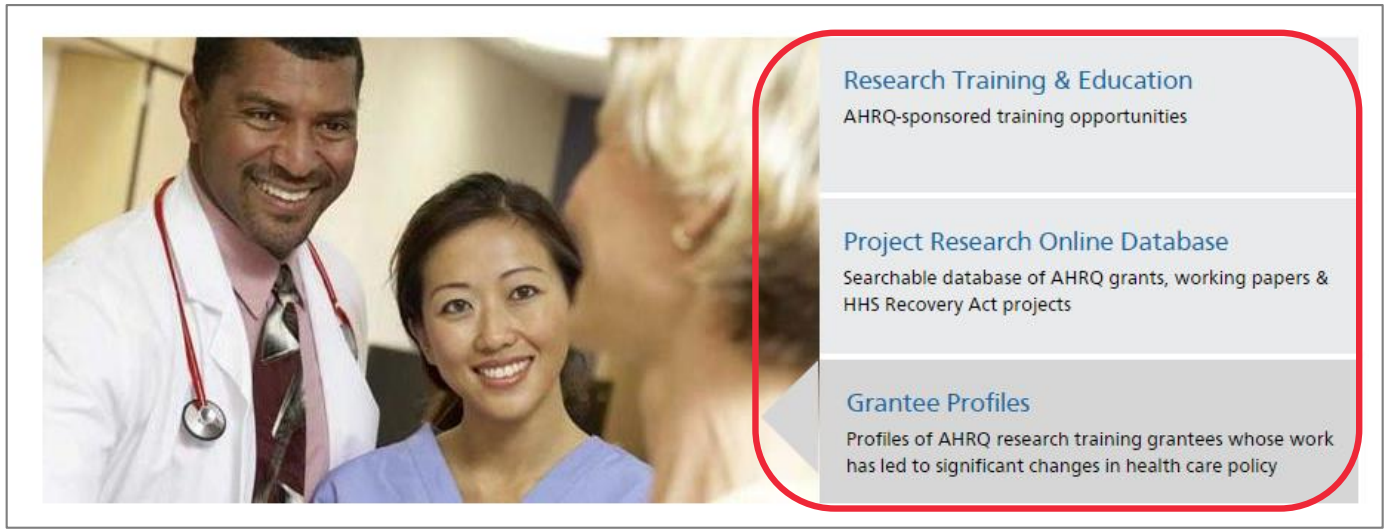
Featured content lacks prominence

The site displays featured content within the rotating image blocks on the Ground Water and Drinking Water home page and on other topical landing pages. Visitors can easily miss this content because the images and messages in the block change frequently ❶. For example, visitors may miss the featured item regarding annual water quality reports ❷ since it shares space with two other items.

Recommendation: Persistently display headlines and copy for content featured in the rotating image block.



Best practice: Persistent messages

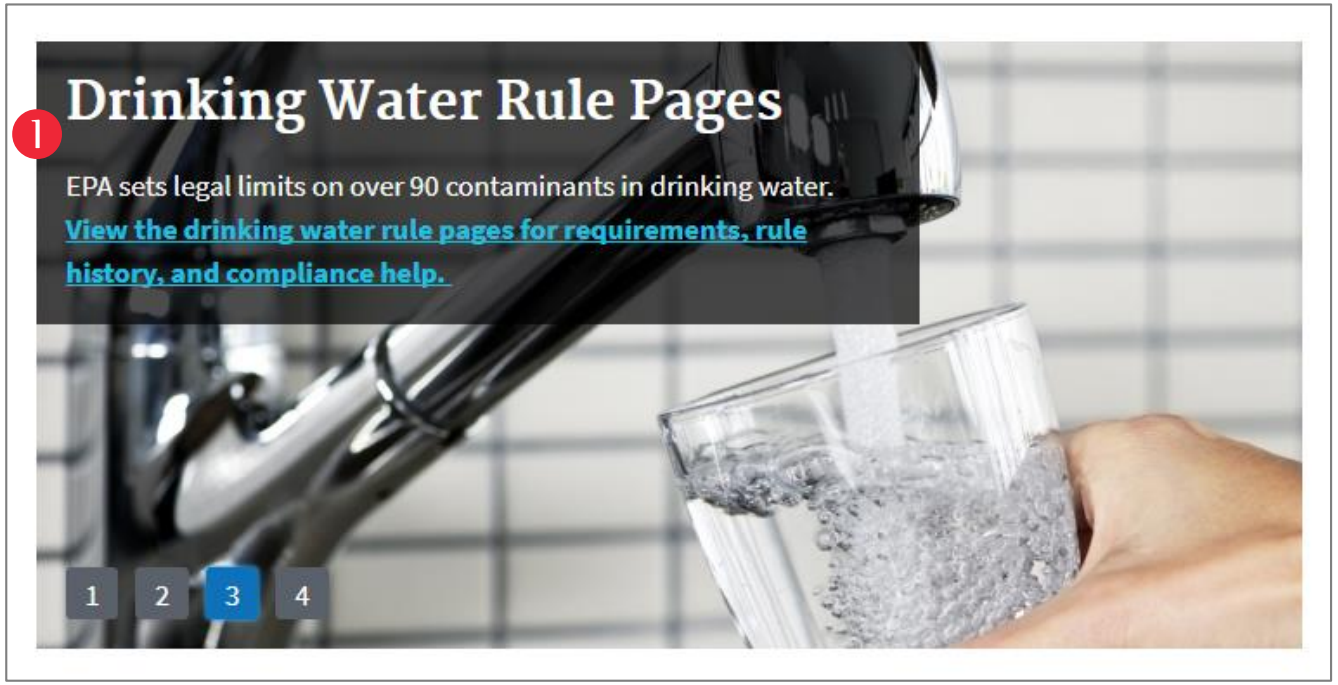


In these examples, sites display headlines for all featured items outside the rotating block. This helps visitors find featured content even when the image is out of view.

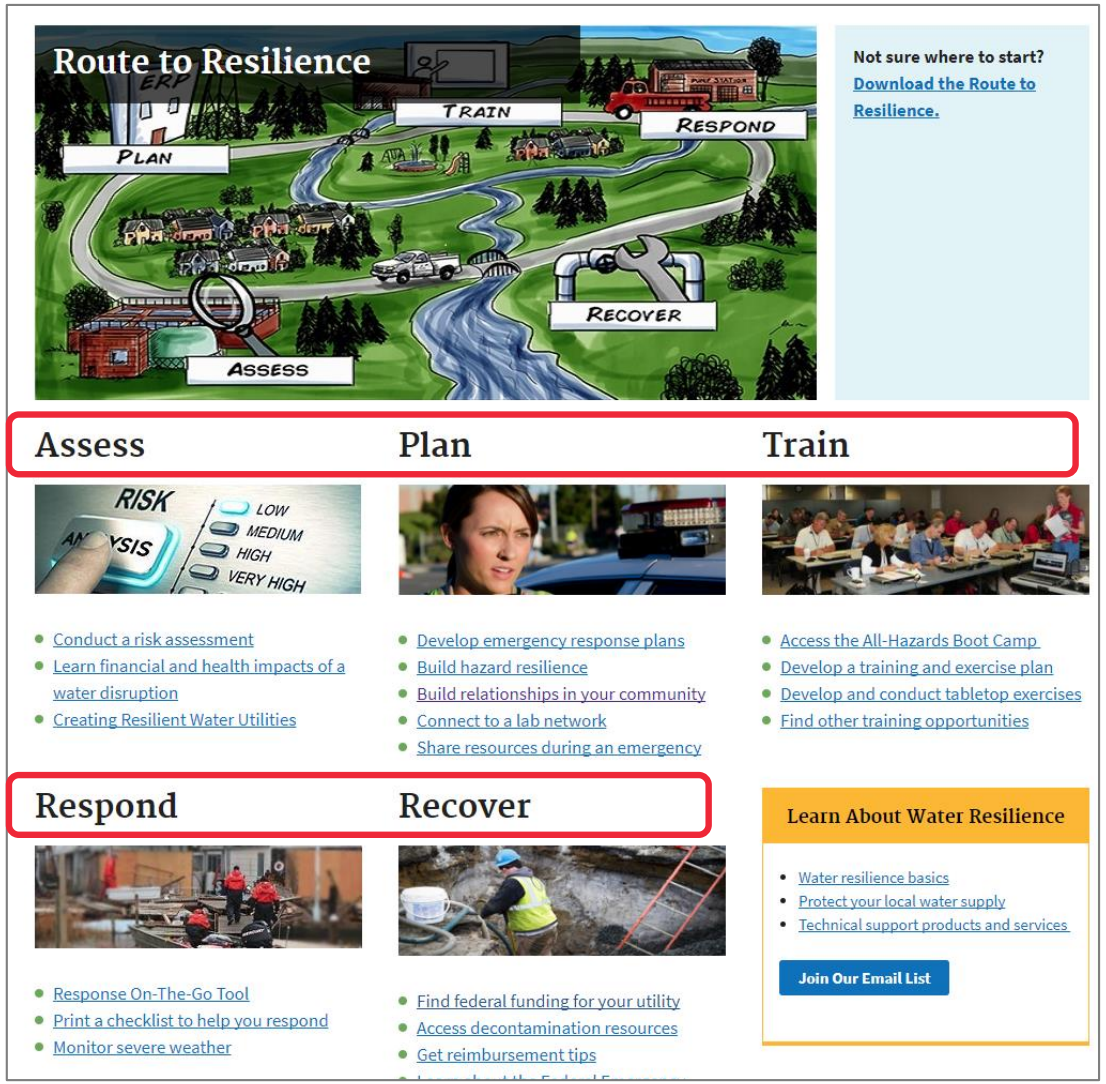
Headings and link labels on images are difficult to read

The site inappropriately displays text over images in the rotating image blocks ❶ on landing pages and on the content dividers ❷ on the Ground Water and Drinking Water home page. Doing so forces visitors to re-focus their attention as they read content on the page, as they are unable to simply scan text; rather their eyes must jump the gaps between images and text. In addition, visitors must strain to view text in graphics as the color of the text does not consistently contrast with the background.

Recommendation: Avoid displaying text over images.



Best practice: Separating text and images



The section headings on this page are separated from the associated images. This increases the readability of these elements.

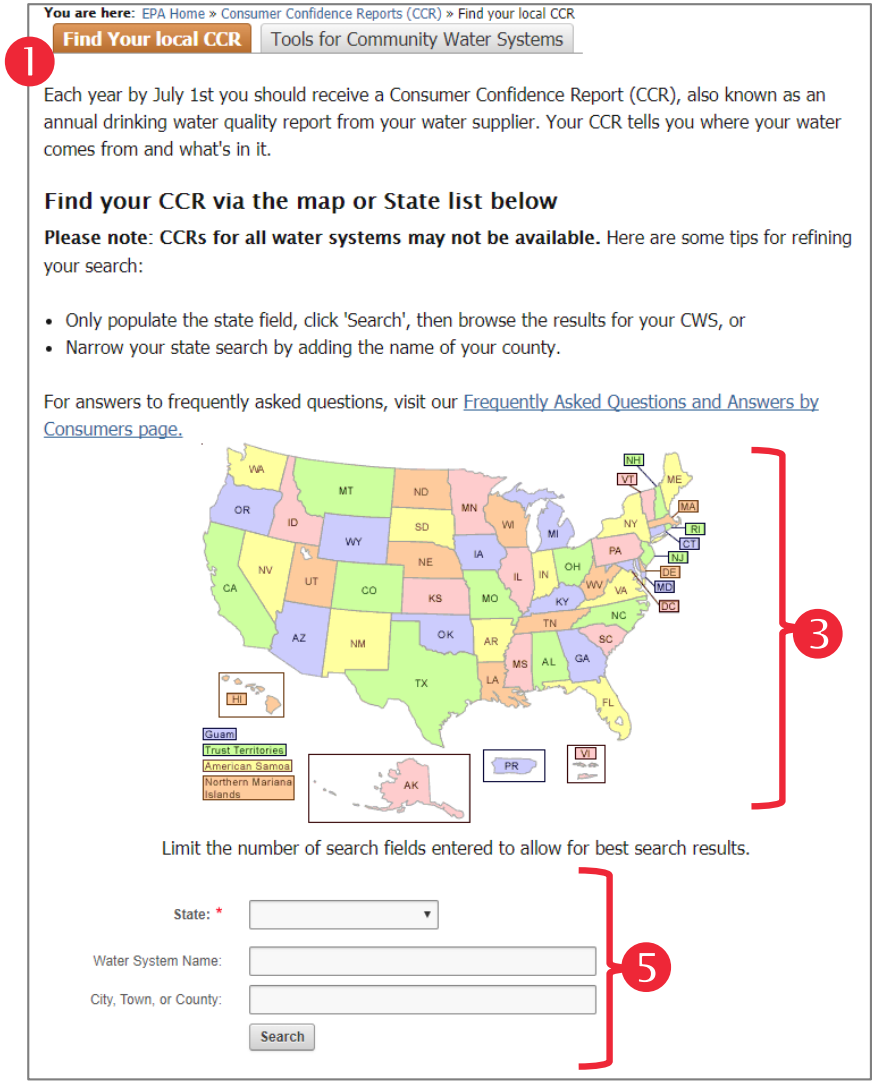
Visual Presentation

Recommendations

- Persistently display headlines and copy for content featured in the rotating image block.
- Avoid displaying text over images.

Instructions

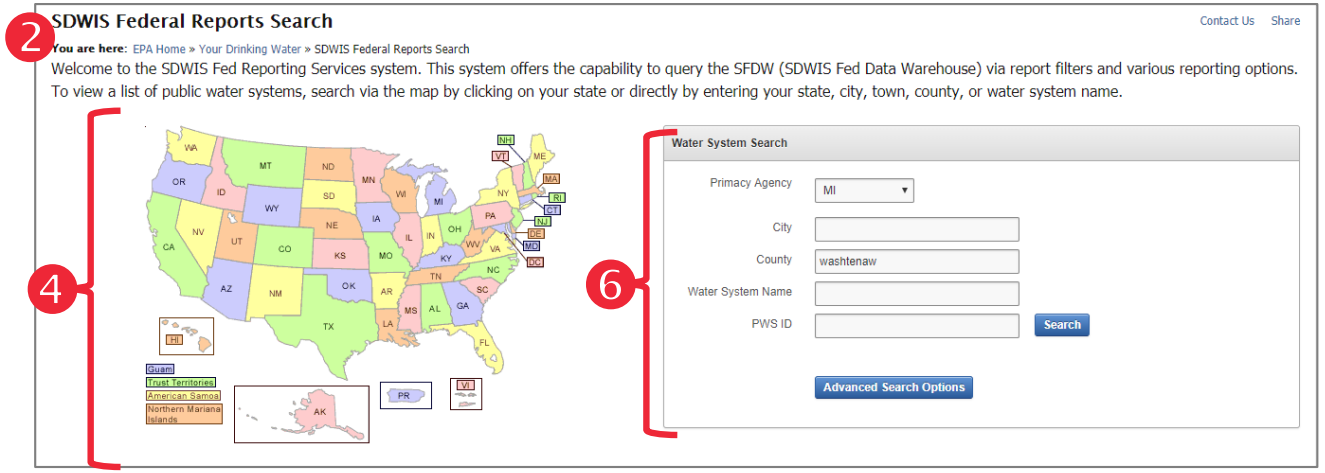
Input elements are unclear



The Consumer Confidence Reports online search tool ❶ and the SDWIS Federal Reports Search ❷ offer two methods of entering search criteria: a clickable state map ❸ ❹ and a set of input fields ❺ ❻. However, may not be clear to visitors that these are two independent options, nor is it apparent how these options differ. Since the map is more visually engaging, visitors are likely to click on it before considering the options provided in the input form. For both tools, this returns a large number of results which may require further filtering. To help visitors receive a smaller, more relevant results set, the site should provide prominent messaging that informs them of the differences between the two search methods.

Recommendations:

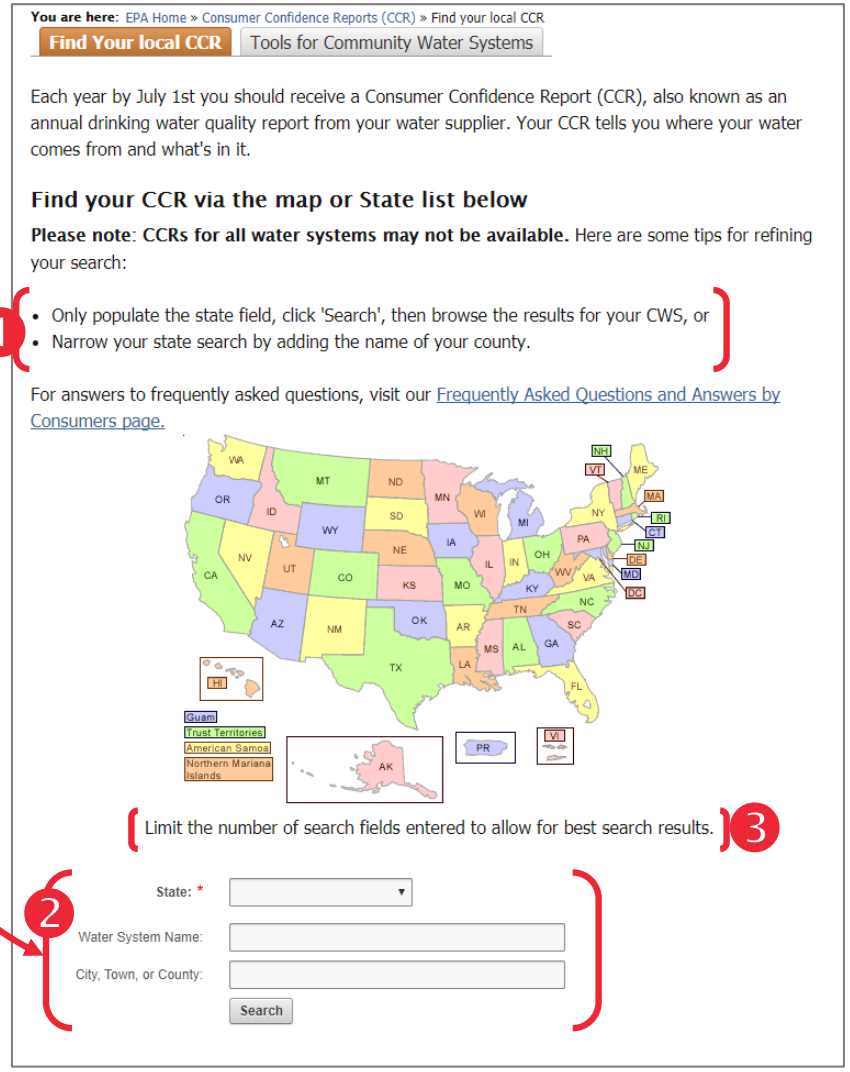
- Add messaging indicating the differences between the clickable map and input forms such as: Click Map to view all results for your state or enter State plus city or county to view fewer results.
- Consider removing the clickable map.



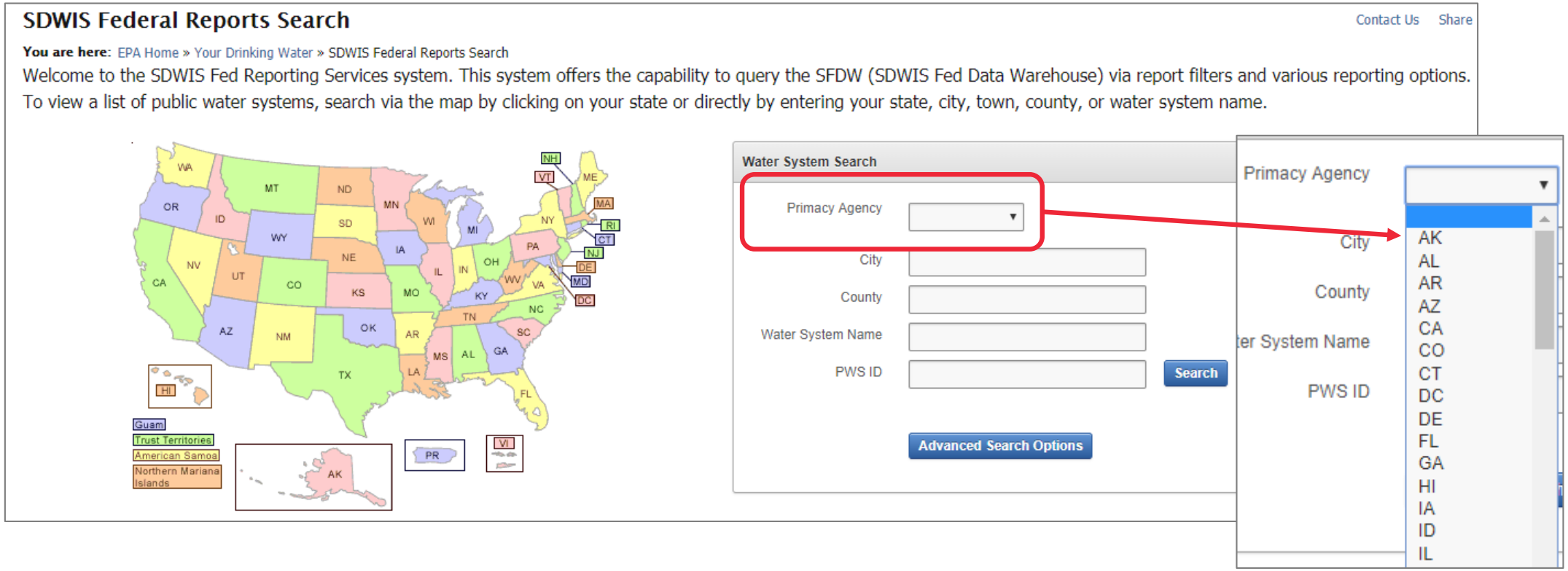
Instructions are too far from input fields

Next, instructions provided for the input form ❶ are displayed above the clickable map, far from the associated fields ❷. Another instruction is provided above the search fields ❸, but since it is positioned closer to the map than the form, visitors may assume it refers to that element. This risks that visitors will struggle to understand the instructions or overlook them.

Recommendation: Locate instructions near the corresponding element and separately from instructions pertaining to other elements.



Label is confusing



Additionally, the SDWIS Water System Search displays an ambiguous label for an essential input field. Laymen may be unfamiliar with the term Primacy Agency and may hesitate to enter criteria. Furthermore they may be puzzled by the lack of an explicit field for state.

Recommendations:

- Avoid jargon when labeling input fields.
- Change the label Primacy Agency to State.

Instructions

Recommendations

- Add messaging indicating the differences between the clickable map and input forms such as: Click Map to view all results for your state or enter State plus city or county to view fewer results.
- Consider removing the clickable map.
- Locate instructions near the corresponding element and separately from instructions pertaining to other elements.
- Avoid jargon when labeling input fields.
- Change the label Primacy Agency to State.

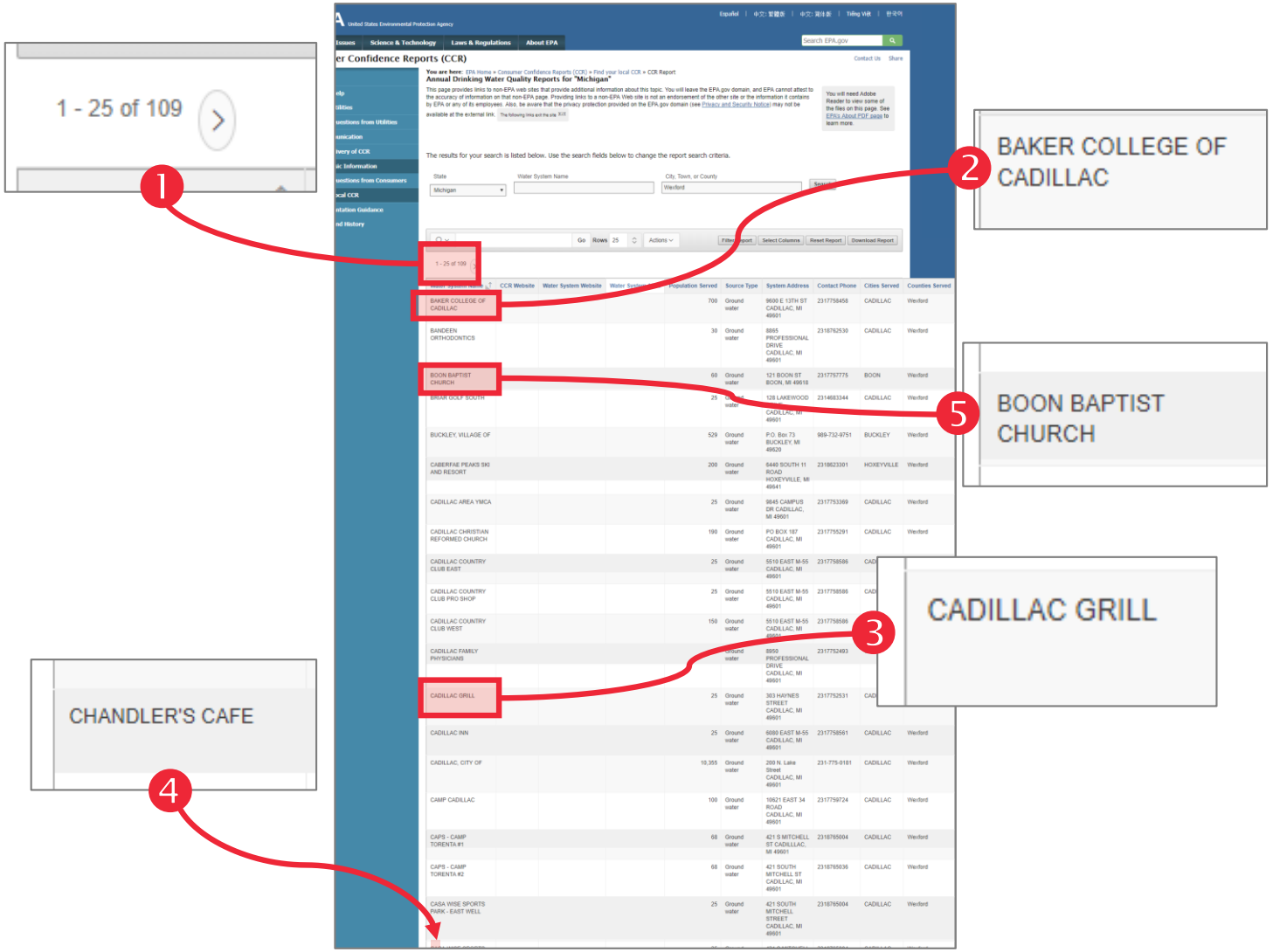
Presentation of Content

CCR report returns unwanted results

Visitors searching for their local water quality report may be disconcerted when a search on their state and county returns too many results. For example, Wexford County, Michigan has a population of 33,000, but the CCR search functionality returns 109 results for water systems within the county ❶. Listed among these results are colleges ❷, restaurants ❸ ❹, and churches ❺. It may not be clear to visitors why these entities are listed as “water systems”.

These unexpected results increase the difficulty of locating the desired information. To help visitors locate relevant information, the site should display only municipal or residential water systems first and provide the option to view all results.

Recommendation: Automatically filter the results of the CCR search functionality to display only municipal or residential water systems and provide an option to view all results.



Expected content is unavailable (1 of 3)

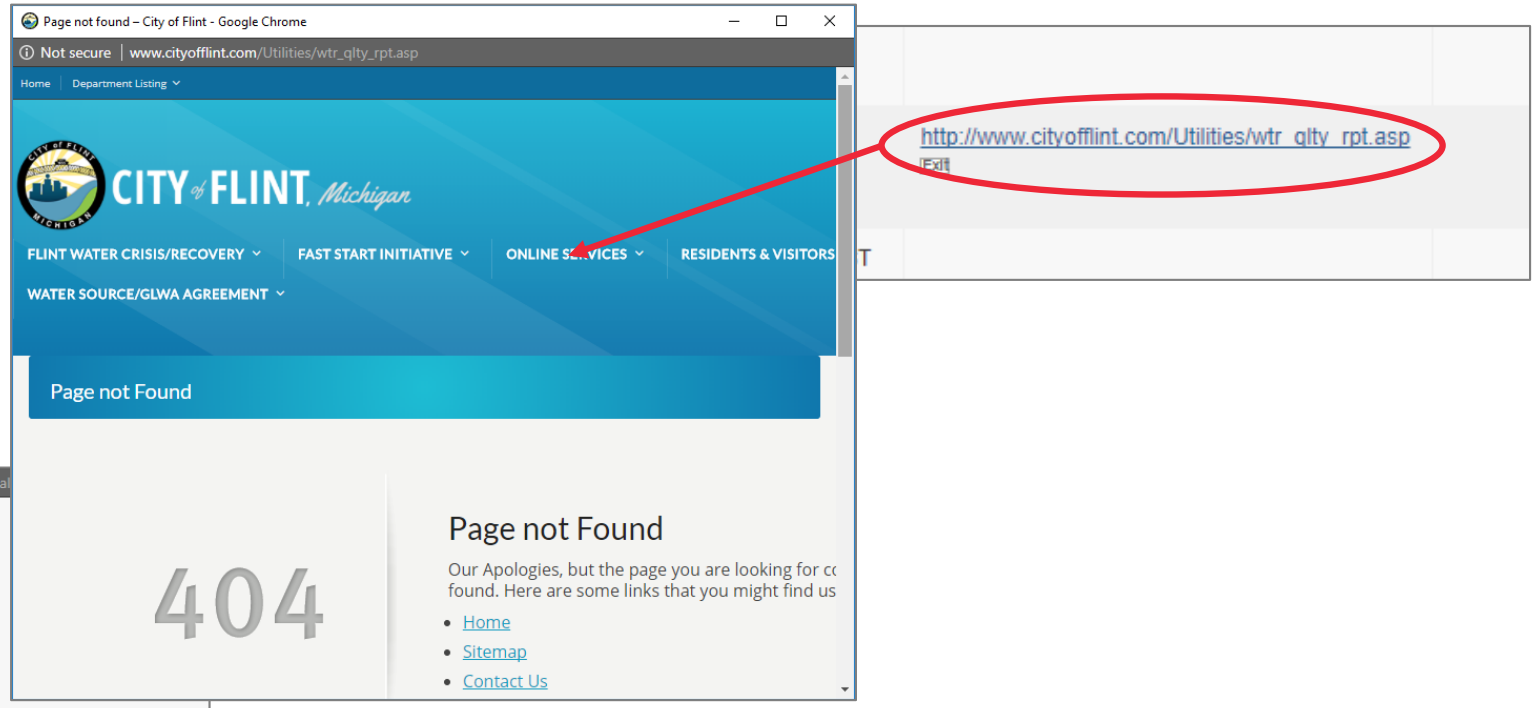
Too often the Consumer Confidence Reports list fails to provide a link to the water quality report…

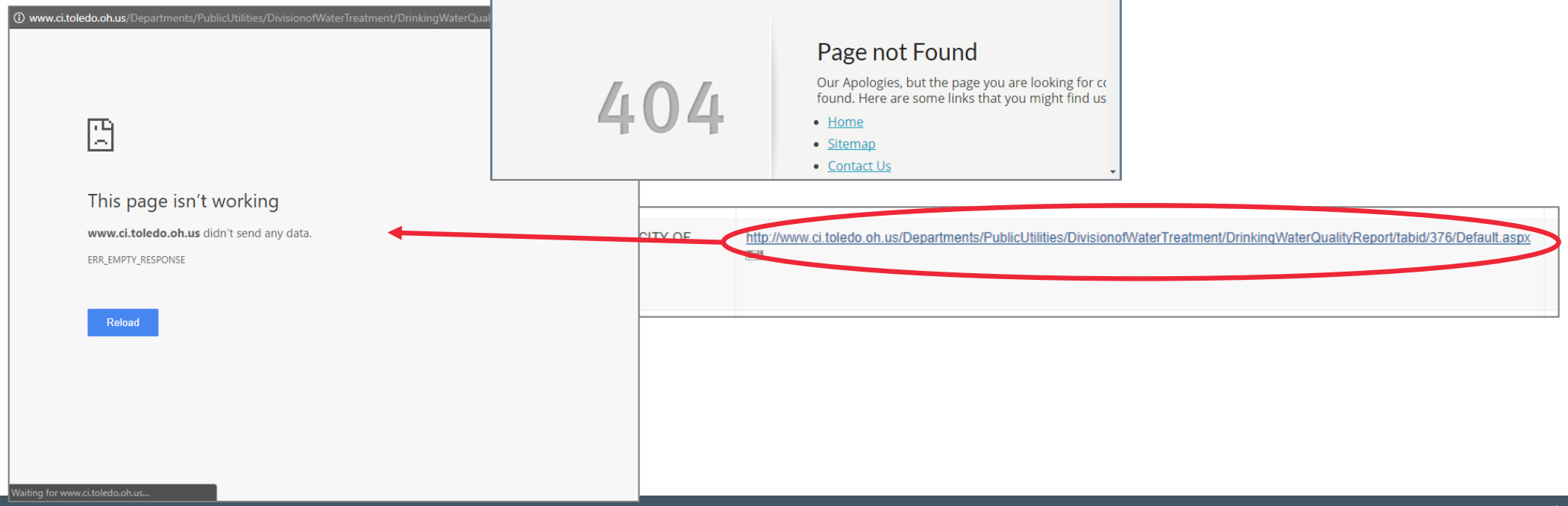
BUCKLEY, VILLAGE OF				529	Ground water	P.O. Box 73 BUCKLEY, MI 49620	989-732-9751	BUCKLEY	Wexford

CADILLAC, CITY OF				10,355	Ground water	200 N. Lake Street CADILLAC, MI 49601	231-775-0181	CADILLAC	Wexford

Expected content is unavailable (2 of 3)

Or the link provided yields no result.



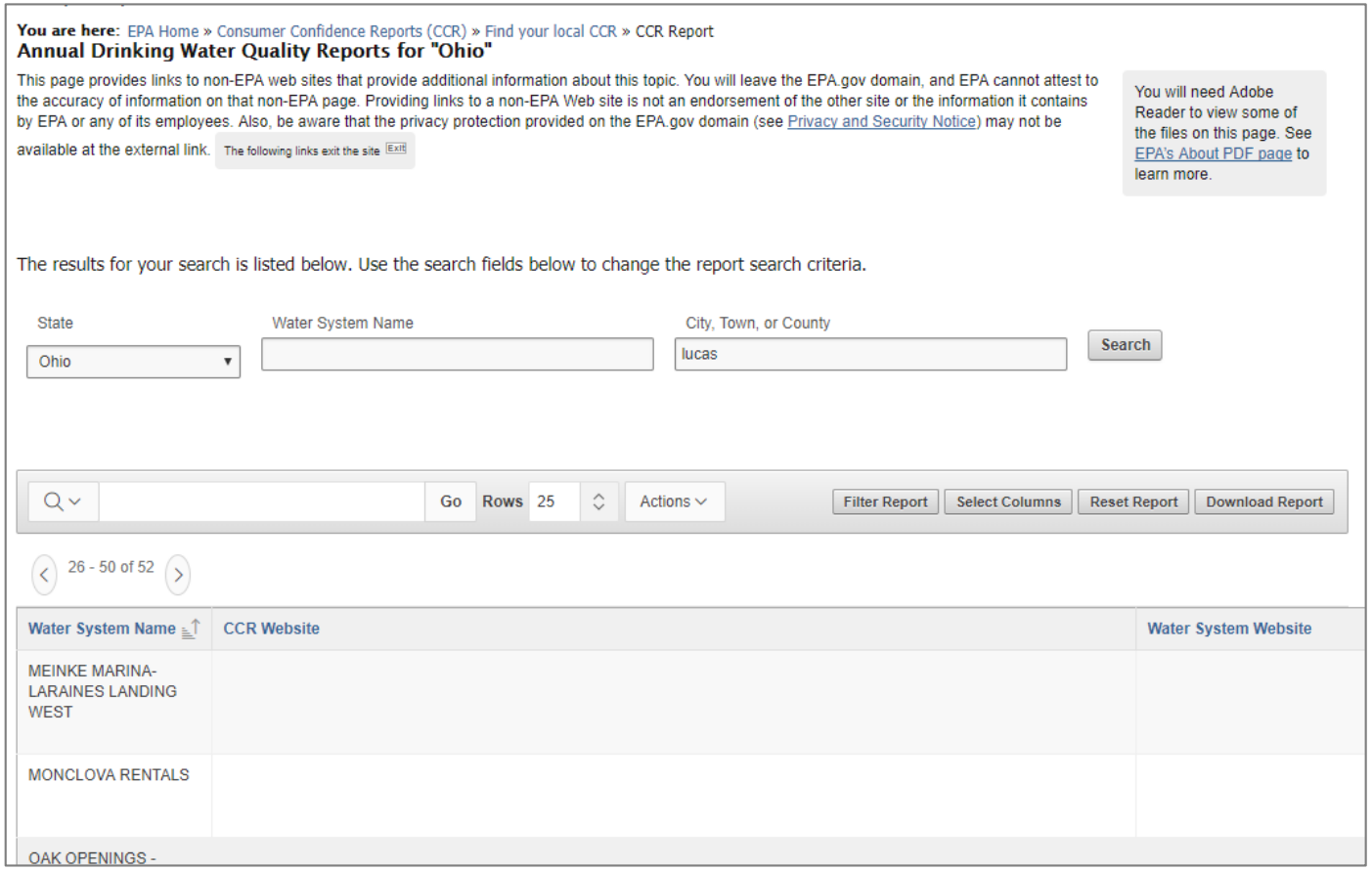


Expected content is unavailable (3 of 3)

Currently, the page does not provide assistance or recommend a course of action for visitors who are unable to find their local water quality report through the CCR report feature.

Recommendations:

- Strive to provide accurate links to all municipal water system websites.
- Provide messaging to suggest next steps if the CCR is not available on the EPA site.



Presentation of Content

Recommendations

- Automatically filter the results of the CCR search functionality to display only municipal or residential water systems and provide an option to view all results.
- Strive to provide accurate links to all municipal water system websites.
- Provide messaging to suggest next steps if the CCR is not available on the EPA site.

Help Content

Glossary definitions are missing

CCR Information for Consumers

Basic Information

EPA requires community water systems to deliver a Consumer Confidence Report, also known as an annual drinking water quality report, to their customers. These reports provide Americans information about their local drinking water quality.

Highlights

- Use EPA's online search tool to get a copy of your Consumer Confidence Report
- Read EPA's Quick Reference Guide to the Consumer Confidence Report
- Consumer Confidence Report Questions and Answers

When does my water report get sent to me?

Reports must be sent by your water supplier each year by July 1.

If I did not receive my report, how do I get a copy?

You can either call your local water supplier or you may also find your report using EPA's CCR search tool.

What type of information is in the report?

- The lake, river, aquifer, or other source of the drinking water;
- A brief summary of the risk of contamination of the local drinking water source;
- The regulated contaminant found in local drinking water;
- The potential health effects of any contaminant detected in violation of an EPA health standard;
- An accounting of the system's actions to restore safe drinking water;
- An educational statement for vulnerable populations about avoiding Cryptosporidium;
- Educational information on nitrate, arsenic, or lead in areas where these contaminants may be a concern;
- Phone numbers of additional sources of information, including the water system;
- EPA's Safe Drinking Water Hotline number 1-800-426-4791.

The site does not consistently provide glossary definitions to assist visitors in understanding unfamiliar terminology used across the category. For example, on the CCR Information for Consumers page they may not know the meaning of aquifer ❶ or Cryptosporidium ❷. While terms and acronyms are defined in contextual help layers on some pages ❸, if visitors access other pages, they miss out on this added help. This risks that visitors to these pages will not fully benefit from the information provided there. The site should implement contextual glossary definitions for all pages.

Recommendation: Provide contextual glossary definitions on all pages.

What is a Healthy Watershed?

A healthy watershed is one in which natural land cover supports:

- dynamic hydrologic and geomorphologic processes within their natural range of variation,
- habitat of sufficient size ... atic and riparian species, and
- physical and chemical wate ... healthy biological communities.

Natural vegetative cover in the ... one, helps maintain the natural flo ... levels in lakes and wetlands. This, in turn, helps maintain natural geomorphic processes, such as sediment storage and deposition, that form the basis of aquatic habitats. Connectivity of aquatic and riparian habitats in the

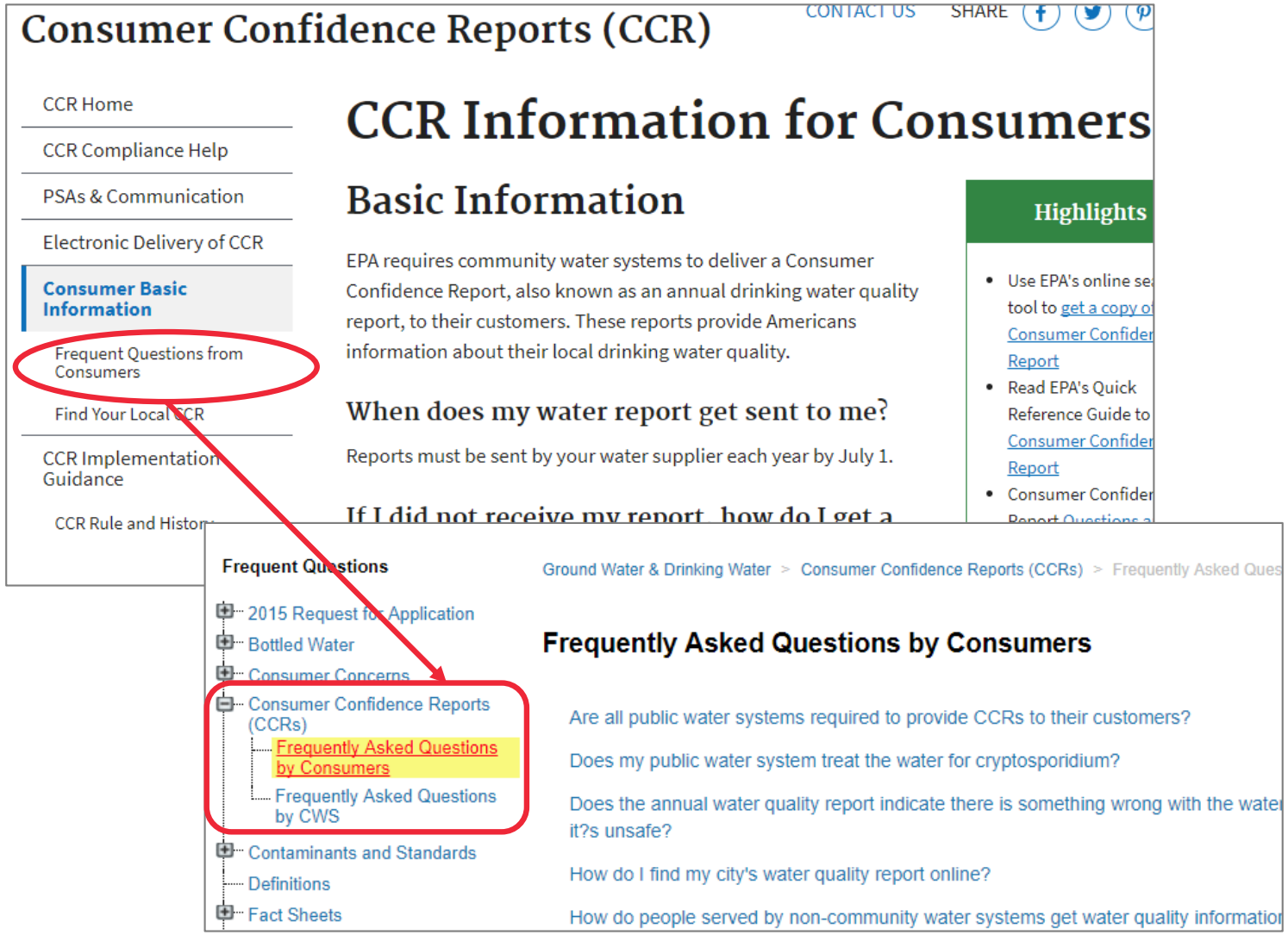
geomorphologic

Pertaining to the study of physical landscapes (landforms) and the processes that create and mold them.

Glossary and FAQ content is hard to find

Additionally, access to help content within the Ground Water and Drinking Water section is inconsistent. First, the glossary is not linked from within the category. Next, some pages provide access to Frequent Questions, as shown, but others do not. Thus, visitors who need help with content on the site may be unable to find needed answers.

Recommendation: Display links to the Drinking Water Glossary and FAQ content on all related pages.



Site map is missing

The site should also consider providing a site map, such as the one shown in this example. Providing a site map supports orientation and navigation, by providing an at-a-glance and hierarchical view of the site's offerings, allowing visitors to better understand the site's structure and breadth of content.

Recommendation: Consider providing a site map.

Region 8 Drinking Water Online Site Map

- Drinking Water Online Home Page
  - About Us
  - Contact List (PDF)
  - Contact Us
  - Navigation Tips
  - Site Map
- Drinking Water Watch
  - Log In page
  - Registration and Account Maintenance
- Emergencies and Security
  - Loss of Pressure
  - Natural Disasters
  - Security
  - TCR/E-Coli Positive
- Presentations
- Reporting, Forms and Instructions
  - Consumer Confidence Reports
    - Requirements
    - Tools for Preparing a CCR
    - Guidance Documents
  - Reporting Forms
    - Changes to Public Water Systems (CHG)
    - Consumer Confidence Reports (CCR)
    - Emergency Response Plan Templates (ERP)
    - Ground Water Rule (GWR)
    - Lead & Copper Rule (LCR)
    - Public Notification (PN)
    - Sanitary Surveys (SS)
    - Stage 1 Disinfectants/Disinfection By-Products Rule (Stage 1 DBPR)
      - DBP Precursors (DBPP)
    - Stage 2 Disinfectants/Disinfection By-Products Rule (Stage 2 DBPR)

Related Topics on this Website

- Navigation Tips

EPA Headquarters Information

- Water Topics

Help Content

Recommendations

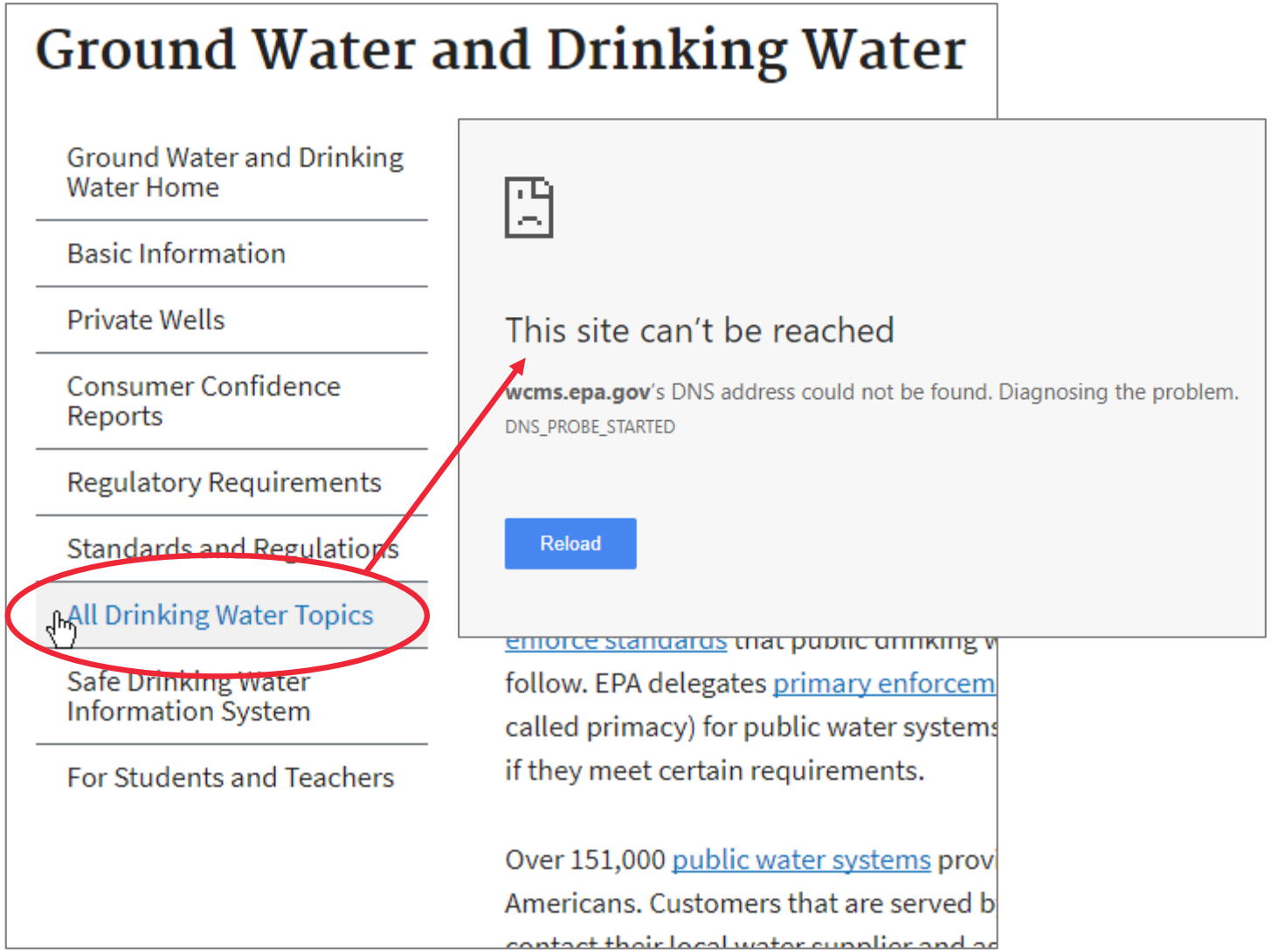
- Provide contextual glossary definitions on all pages.
- Display links to the Drinking Water Glossary and FAQ content on all related pages.
- Consider providing a site map.

Broken Links

Overview of Water content is missing

The navigation menu provided on Ground Water and Drinking Water content pages contains a link which promises to provide an overview of all drinking water topics. Such content should be extremely useful for visitors who are unable to locate desired content within the section. However, the link leads to a blank page with no explanation or way to move forward.

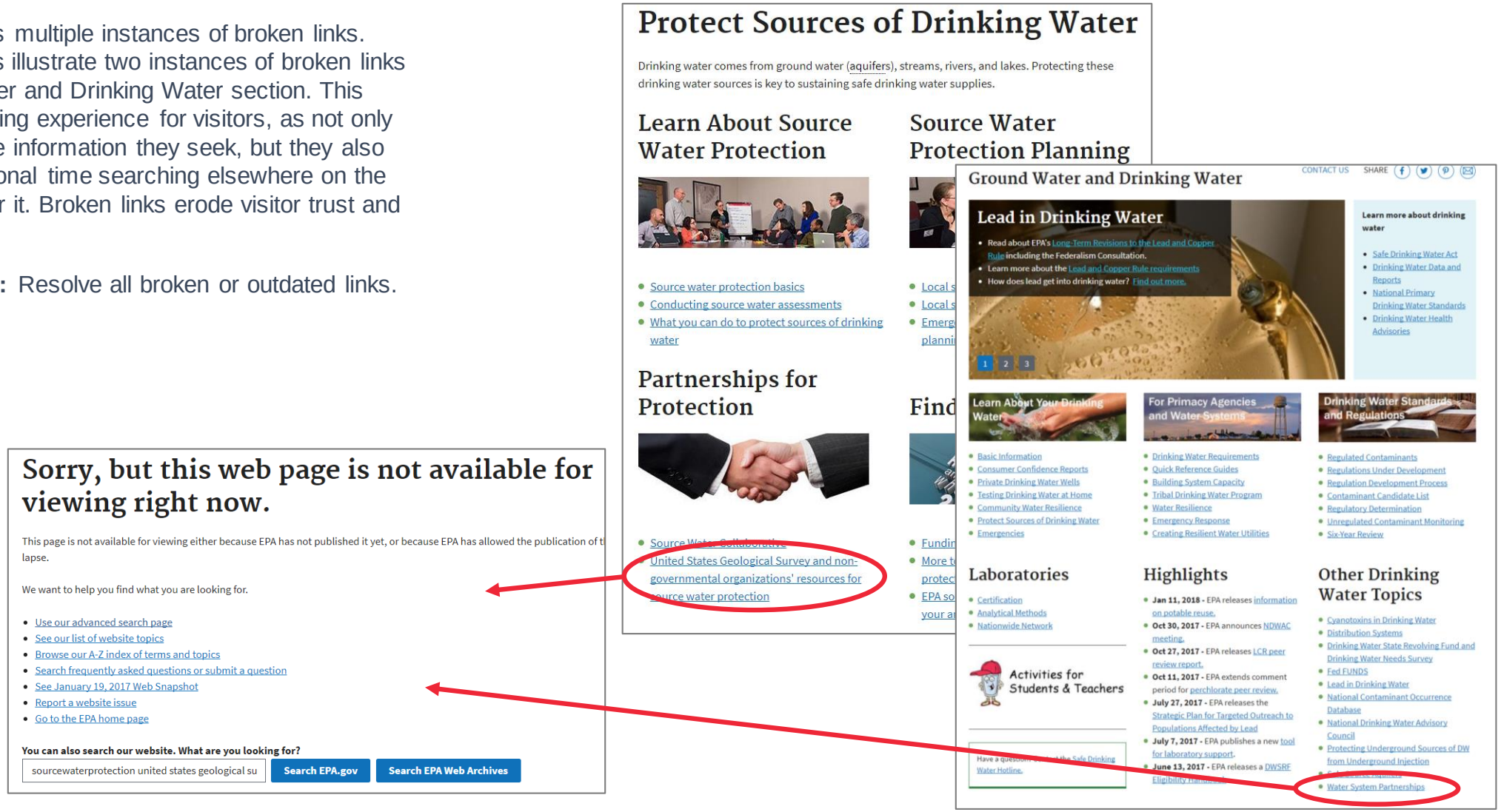
Recommendation: Ensure all menu links work as expected.



Other links fail to return expected content

Finally, site exhibits multiple instances of broken links. These screenshots illustrate two instances of broken links in the Ground Water and Drinking Water section. This results in a frustrating experience for visitors, as not only do they not find the information they seek, but they also might spend additional time searching elsewhere on the site—or offsite—for it. Broken links erode visitor trust and waste their time.

Recommendation: Resolve all broken or outdated links.



Broken Links

Recommendations

- Ensure all menu links work as expected.
- Resolve all broken or outdated links.

Agenda

- Overview of Usability Audit Review
- Top Usability Issues
- › **Key Points**

Key Points

To support information discovery and intuitive navigation, the Ground Water and Drinking Water section should implement a hierarchical categorization scheme.

Support navigation in the current and future structures by:

- Providing linkage to the homepage throughout the section;
- Implementing a consistent and comprehensive local navigation scheme; and
- Ensuring link labels and page headings match exactly.

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