A Plain-Language Overview of the
16 Technical Specifications for Section 508 Accessibility

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WHAT IS SECTION 508? **Section 508** is a part of the Rehabilitation Act of 1973 that requires that electronic and information technology developed, procured, maintained, or used by the Federal government be accessible to people with disabilities, starting June 21, 2001, unless it would pose an undue burden to do so. Information offered via the Web must be in compliance starting July 27, 2001.

WHAT IS THIS DOCUMENT? This document uses "plain language" to explain in simple terms the purpose and likely relevance of each of 16 technical specifications for Web-based information and applications required by Section 508 (1149.22 a-p). This document does not cover all background, definitions, and aspects of Section 508, but only the 16 technical specifications.* This document assumes that you know little or nothing about Web technology or programming, except for the words defined below.

WHY BE CONCERNED NOW? Although the enforcement provisions of Section 508 apply only to procurements on or after June 21, 2001, **EPA programs offered on the Internet or Intranet must be brought up to accessibility standards by July 27, 2001**, subject to availability of EPA funds and technology. This means you may have to retrofit your Web site.

HOW HARD IS THIS GOING TO BE? The most-needed of the 16 technical standards are relatively simple. It should cost almost nothing to include most accessibility standards when new Web pages are created. However the cost of retrofitting an existing Web site will depend on the size and complexity of the Web site, its current level of accessibility and technology, and the tools and skill of the Web programmer. My guess is that most Web sites will require relatively small (but possibly many) changes throughout the site.

*WHERE CAN I GET MORE INFORMATION? EPA-specific information is online at http://intranet.epa.gov/accessibility including complete details and many helpful explanations and examples of code. Official government information about Section 508 is available at http://www.section508.gov.

Key words and definitions:

user	the person, disabled or not, surfing the Web.
browser	the computer software the person uses to surf the Web, e.g., Netscape, Internet Explorer, or other type.
reader browser	a browser that audibly reads Web pages, for example, for a blind user.
server	the host computer where the Web site is actually stored.
server-side	executed or stored on the server.
client	the user's computer + browser used to surf the Web.
client-side	executed or stored on the client.
HTML	HyperText Markup Language, the code used to format Web pages. Similar to "reveal codes" in WordPerfect.
tag	an element of HTML that controls the page layout. Tags are placed between < and > brackets.

Technical Specification	Plain Language Explanation and "Worry" rating
(a) A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content). NOTE: Each "WORRY" rating (to the right) is an rough estimate of how much emphasis the specification might need, compared to typical usage on EPA Web sites. It is not a judgement about any disability or accessibility situation. All WORRY ratings are summarized in Appendix A.	**WHAT IT IS** (a) Each graphic on a Web page needs to have a text description added. This is so that a person using a text-based browser can understand what the graphic is about, either by reading the text description or for a blind person, having a reader browser say the text aloud. This is necessary when the graphic illustrates a key concept or is otherwise necessary to using the Web page. Text tags are easy to add to Web pages using HTML code called an "ALT" tag, but good text tags may require careful writing to avoid bias or other misinterpretation. Here are two examples of ALT tags: ALT="USEPA logo" ALT="three pigs standing in front of a brick house" It is critical that the text of a ALT tag convey the same information as the graphic, so the user can correctly access the information. However, ALT tags can also be used to hide decorative or superfluous graphics, e.g., a bullet, that do not otherwise help a text-based user access information. In this case, the tag looks like ALT="". The "longdesc" tag is similar to the ALT tag, but is used for a much longer text, like to describe a line graph. However, the longdesc tag is not recognized by all browsers. But new and revised Web pages should incorporate it where appropriate because longdesc is expected to be a standardized feature in future versions of Web browsers. Unofficial method: Another way to add a long description to a graphic is to use a "d" link. This is literally a letter "d" (for "description") that is placed on the Web page next to the graphic and has its font color set the same as the page (to not distract ordinary visual users). The "d" is then hyperlinked to another Web page containing the description. A "d" link is not an official standard but is a common technique that many users already understand. **HOW MUCH TO WORRY ABOUT IT: <u>LOTS.</u>** Because graphics are ubiquitous on the Web, **text tags are the single most important Section 508 specification**. Good text tags can take care of many accessibility problems.

Technical Specification	Plain Language Explanation and "Worry" rating
(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.	**WHAT IT IS** (b) If you provide a sound clip, movie segment, or even a PowerPoint type of presentation, you must include alternate ways for disabled users to understand the presentation. For example, a presentation can show transcript words at the same speed as the sound track, or a voice-over or a page of text can narrate and describe a video clip. **HOW MUCH TO WORRY ABOUT IT: LITTLE.** Because multimedia presentations aren't common.
(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.	**WHAT IT IS** (c) For example, a user who had trouble telling blue from green would be unable to use a Web site if required to "click on the blue button." This also applies to maps that have adjacent sections, e.g., avoid having dark blue and purple next to each other. **HOW MUCH TO WORRY ABOUT IT: <u>LOTS</u>.** Because color graphics are ubiquitous, e.g., buttons, maps. Any graphics copied from other Web sites must also be checked for accessibility problems.
(d) Documents shall be organized so they are readable without requiring an associated style sheet.	**WHAT IT IS** (d) A style sheet is brief piece of HTML code that precisely controls Web page design or adds special functions. However, a Web page that depends on a style sheet may not work right if the browser is incompatible with style sheet technology. Since a style sheet is not required to create basic Web pages, you can just avoid style sheets entirely. But in cases where a style sheet is used, the Web page must be organized so that the information can still be accessed even for browsers that cannot use style sheets. In other words, a Web page must still be functional even if it looks hideous to some users. **HOW MUCH TO WORRY ABOUT IT: SOME.** Because style sheets may be used on multiple Web pages, once you fix the problem, creating or adjusting the entire Web site may not be hard.
(e) Redundant text links shall be provided for each active region of a server-side image map. (f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.	**WHAT IT IS** (e) and (f) An image map is HTML code that defines ("maps") clickable areas of graphics, such as a banner or map of EPA regions. An image map can be either server-side or client-side, but either is used to produce the same mouse-click effect. Some browsers have trouble using server-side image maps, but these are useful because server-side image maps have capabilities that client-side image maps lack. So on pages where a server-side image map must be used, text links or other accessibility technique must be included on the Web page. An example of this is at http://www.epa.gov, where text links of each EPA region are placed next to the clickable map of the USA. **HOW MUCH TO WORRY ABOUT IT: <u>LOTS</u>**. Because image maps are very common.

Technical Specification	Plain Language Explanation and "Worry" rating
(g) Row and column headers shall be identified for data tables. (h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.	**WHAT IT IS** (g) & (h) A blind person accessing a Web page with a table of information hears the reader recite the contents of each cell in the table. So to help the person keep track of which cell is being accessed, special tags can be added to the inside of the HTML table definition that define each row and column of the table. These tags are not visible and do not affect the ordinary appearance of the table or the Web page. "Markup" means extra text and/or HTML code added specially to clarify the data table layout and content. **HOW MUCH TO WORRY ABOUT IT: SOME**. Tables are common especially in technical documents but it's easy to forget to add extra clarifying labels or code. Note: this requirement does not apply to invisible tables used to control page layout.
(i) Frames shall be titled with text that facilitates frame identification and navigation.	**WHAT IT IS** (i) "Frames" is a Web page design technique to divide the computer screen into two or more separate sections or "frames," and each frame can hold different information. This format can be used to present complementary pieces of information simultaneously to enhance access to information. But a Web page that depends on frames may not be useable by a person using a browser that can't access more than one frame at a time, for example a blind person who requires a reader browser to audible recite the contents of each frame. However, each frame when it is created is given a specific title or name that the computer needs to keep track of which information is displayed in which frame, and a person can use the frame titles to identify and navigate, also. So this specification is saying: when frame are created for a Web page, be sure to give the frames clear titles that reflect the content in order to help users who need it. For example, a frame of navigation links could be titled NAV_FRAME instead of FRAME2. **HOW MUCH TO WORRY ABOUT IT: LITTLE**. Because EPA Web policy discourages frames and your Web technical person should know this. Just avoid frames.
(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.	**WHAT IT IS** (j) A computer screen that rapidly changes from light to dark can induce an epileptic seizure in people with photosensitive epilepsy. So don't use any Web page changes or presentations that produce, accidently or on-purpose, any vivid light-dark differences that change or flash between these rates. **HOW MUCH TO WORRY ABOUT IT: LITTLE**. Because if your Web site is pretty much the same color or brightness without lots of rapid changes, it's probably OK.

Technical Specification	Plain Language Explanation and "Worry" rating
(k) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.	**WHAT IT IS** (k) When there is no other way to make a Web page accessible, then provide a plain ol' text-only Web page that duplicates the function & information, along with the regular Web page. And the information and function of the duplicate page must be updated whenever the regular page is updated. One example of this is a graphic of a org chart, plus a text-only version of the same information. **HOW MUCH TO WORRY ABOUT IT: <u>LOTS.</u>** Because it can be easy to forget a text-only page where appropriate. But it should be easy to avoid accessibility problems if your Web site is mainly text-based anyway.
(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.	**WHAT IT IS** (l) An example of this is when new navigation buttons or words or other things pop up when the mouse is moved. This might also apply to content that varies depending on the user, like a web page that shows today's date. A simpler or older browser may not be able to execute correctly the programming needed to produce these or other transient effects. An example of a Web page that uses scripting to create navigation buttons is http://www.epa.gov/oar/ and observe the navigation buttons in the left margin as you slide the mouse over them. **HOW MUCH TO WORRY ABOUT IT: SOME.** If lots of things move as you slide the mouse around, then you should definitely question how accessible the design is.
(m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with 1194.21(a) through (l).	**WHAT IT IS** (m) A plug-in is a piece of client-side software that the browser automatically uses to display content, like when Adobe Acrobat displays a pdf file. An applet is a small app(lication) that adds functionality to a Web page and usually does not require any special action by the user to install; the browser automatically loads the applet. So on any page with information that requires extra software to be used, on that same page you must also post a link to the software. And (according to Section 1194.21(a-l)) that software must be compatible with and not disrupt other accessibility features. NOTE ON PDF: Adobe says it is upgrading the Acrobat Reader software for better and easier access to pdf files. **HOW MUCH TO WORRY ABOUT IT: <u>LOTS</u>.** Because pdf files are very common, many Web pages will need a link to Adobe plug-in software. Otherwise, "LITTLE" because there aren't many other types of plug-ins used at EPA. Also, EPA Web policy discourages posting information in proprietary formats, e.g., WordPerfect, and your Web technical person should know this.

Technical Specification	Plain Language Explanation and "Worry" rating
(n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.	**WHAT IT IS** (n) Self-explanatory. Examples of ways to meet this requirement: Place the data entry fields on a form in a logical sequence. Put easy-to-find links to instructions. Make it possible to submit the form when the "Return" key is pressed, as well as by clicking on a "Submit" button. Offer alternative ways to submit the information, like, an email address to where the same information can be submitted manually, or a phone number where users can call and have the form filled out and submitted for them. **HOW MUCH TO WORRY ABOUT IT: SOME**. Because it shouldn't be too hard to simplify most any form. Most web sites don't have a lot of data-entry forms.
(o) A method shall be provided that permits users to skip repetitive navigation links.	**WHAT IT IS** (o) Repetitive navigation links are more of a nuisance than a hindrance to access. Navigational buttons are often placed at the top left of Web pages. But for a blind user listening to a reader browser, it can be slow and annoying to have to wait while the browser reads through the same list of navigation buttons on each Web page. Therefore users need to know when and how to skip top-page navigation links. There isn't one standard method for telling users how to do this, but for EPA staff there are several suggestions posted on EPA's intranet at http://intranet.epa.gov/accessibility/web_16rules.htm and click on Number 15. **HOW MUCH TO WORRY ABOUT IT: SOME.** Navigation links are usually copied to each page on a Web site but if you address the problem once, it may be fixed everywhere.
(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.	**WHAT IT IS** (p) Web pages can be designed so that the page disappears or "expires" if a response is not received within a specified amount of time. This technique may be used for security reasons or to reduce demand on the host computer. So if a data entry page times-out before a user who reads or moves slowly can complete the data entry, then the user needs a way to be able to indicate that more time is required. **HOW MUCH TO WORRY ABOUT IT: LITTLE.** Because situations requiring a timed response just don't happen very often on EPA Web sites.

Appendix A

SUMMARY OF SUGGESTED WORRY PRIORITIES

HOW MUCH TO WORRY ABOUT IT:

LOTS

(a) A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content).

(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.

(e) Redundant text links shall be provided for each active region of a server-side image map.

(f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.

(k) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.

(m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with 1194.21 (a) through (l).

HOW MUCH TO WORRY ABOUT IT:

SOME

(d) Documents shall be organized so they are readable without requiring an associated style sheet.

(g) Row and column headers shall be identified for data tables.

(h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.

(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.

(n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

(o) A method shall be provided that permits users to skip repetitive navigation links.

HOW MUCH TO WORRY ABOUT IT:

LITTLE

(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.

(i) Frames shall be titled with text that facilitates frame identification and navigation.

(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.