The WMA WRET Migration:

Evaluating Success Six Months After Launch

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Quick Summary:

- Six Drupal sites were launched on April 11, 2019, consolidating 15 WMA-managed domains into one unified WMA web presence. The total project budget for migration staff in FY18 and FY19 was $983,715 This total does not include the in-kind time and resources provided by knowledge owners across the WMA (and some WSCs) during the migration of their content.

- Since launch, the WMA Drupal site has had over 448,000 total sessions, with an average of 2,000 users per day, and over half of them have been new users. This is equal to or slightly exceeding traffic to the former WMA NatWeb site. WMA-managed sites account for approximately 15% of all USGS Drupal traffic.

- The most popular WMA Drupal pages are the WMA homepage, navigational landing pages for WMA Science, Data & Tools, and Maps sections; StreamStats, water use, flood information, and MODFLOW. The WMA homepage and StreamStats are among the top 10 most popular USGS Drupal pages overall.

- The move to Drupal and the implementation of a formal web dissemination process by IIDD WCB has provided additional benefits: improved discoverability of WMA content in external search engine results, provided more oversight over the information WMA delivers, increased compliance with FSP, and improved coordinated promotion of WMA content across communication outlets.

- **WMA EC ACTION REQUESTED:** In order to successfully maintain and improve the WMA Drupal presence in the future, the WCB has several outstanding needs that are not met with the current Drupal system and associated tool. **We request that WMA Leadership elevate these priority requests to the OCAP WRET team and ensure follow through to meet WMA needs.**

The Migration from NatWeb to Drupal

The goal of the Drupal migration was to launch an updated Water Resources Mission Area (WMA) web presence that is mobile-ready and designed for the general public and Congress. The migration of static web content into the Office of Communications and Publishing (OCAP) Web-Reengineering Team (WRET)-maintained national Drupal system was a Bureau-wide mandate to ensure consistent USGS website structure and user experience. Updating, archiving, and deleting out-of-date content was also part of the WMA migration process.

The Integrated Information Dissemination Division (IIDD) Web Communications Branch (WCB) began assessing the WMA web presence in late summer of 2017 -- mostly targeting content in the old water.usgs.gov website (hosted on NatWeb) -- and planning our new Drupal presence. On April 11, 2019, we launched six Drupal sites (the main WMA site, four Budget Program sites, and a revamped Water Science School site). Equivalent (legacy) NatWeb content was redirected to Drupal that same day, however some NatWeb content remains live because of Drupal functionality limitations or organizational delays.

The results of the Drupal migration include:

- The creation of over **400 unique Drupal items** (and counting), including 200 project pages/items

- **15 WMA-managed domains consolidated** into one Drupal web presence (including water.usgs.gov)

- More than 100 **WMA or WSC Knowledge Owners** (project leads, website owners, scientists, etc.) collaborated with the IIDD WCB to ensure WMA science was accurately migrated and updated.

Measuring success

Web Analytics

In preparation for the migration to Drupal, the WMA NatWeb site analytics (water.usgs.gov) were monitored, and access to WRET's Drupal analytics was granted upon launch on April 11. Both sites continue to be monitored today. Web analytics can be complicated to both monitor and interpret and there are many caveats and limitations – too many to document here – but a few important clarifications are noted below.

TRAFFIC. From April 11 to November 25, 2019, the WMA Drupal site had **over 448,160 sessions** (visits which could include multiple pages), where users spent an average of **2 minutes 49 seconds** on WMA Drupal site content (fig. 1). 1

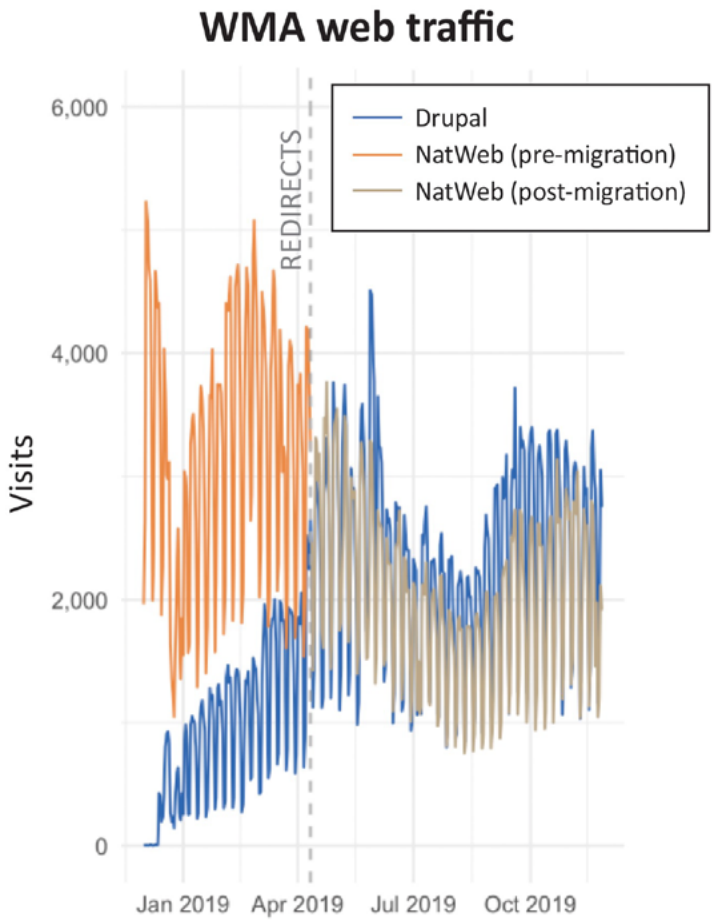

Figure 1. *Chart showing Drupal traffic (blue), pre-migration NatWeb traffic (orange), and post-migration NatWeb traffic (taupe).*

It is too early for a year-to-year comparison between NatWeb and Drupal usage, but based on web analytics to date, **total visits to the WMA website were consistent before and after the migration, and initial data indicates that traffic in the fall of 2019 is outpacing pre-migration traffic.**

Comparison to USGS-wide Drupal traffic. From April 11 to Nov. 25, 2019, the portion of WMA-managed USGS Drupal web traffic averaged about 14.8%. The bulk of this is Water Science School traffic.

	Number of Sessions	Percent of Total USGS Sessions
Entire USGS Drupal web presence	22,064,286	100.0%
WMA + WSS Drupal site	3,263,002	14.8%
WMA Drupal site	448,160	2.0%
WSS Drupal site	2,814,842	12.8%

USERS. Since launch, the overall number of WMA Drupal site users has remained constant, averaging around **2,000 users per day**. Between **50% to 75% of users each day are new users**. (fig. 2)2 Looking at the period after the typical summer drop-off (from Aug 15 – Nov. 25, 2019), the **average number of users shows a slight upward trend** currently over 2,250 users per day.

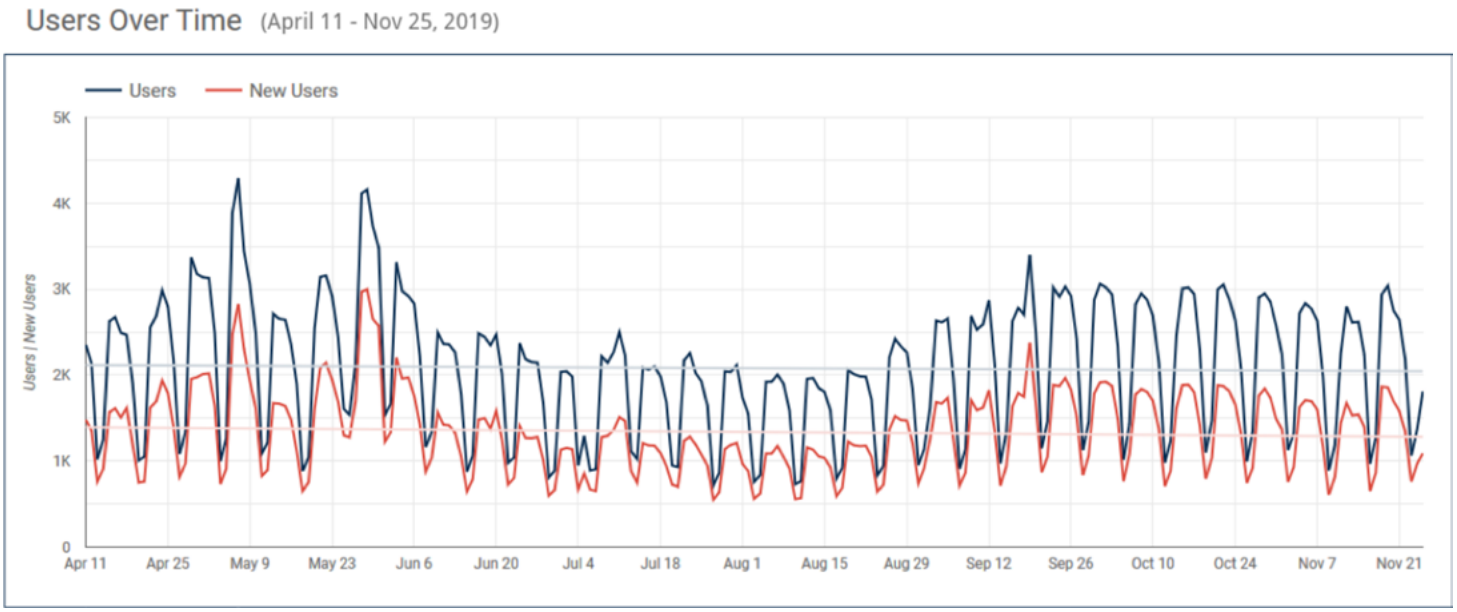

Figure 2. *Chart showing WMA Drupal users from April 11 to Nov. 27, 2019.*

Internal vs external users: USGS employees account for a little over 6% of the total WMA Drupal site traffic. Additionally, comparing pre-migration NatWeb traffic and post-migration Drupal traffic, USGS employees are using the WMA Drupal site more than they did the WMA NatWeb site (fig 3).3

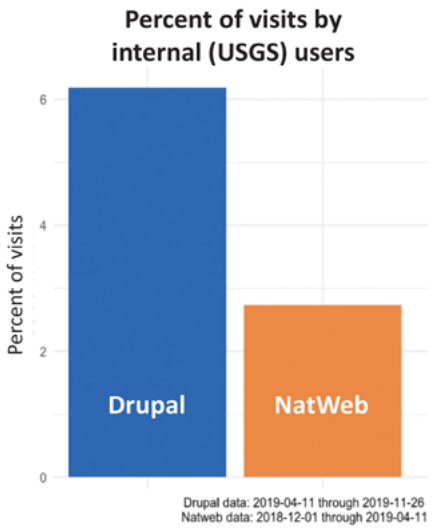

Figure 3. Chart showing the percentage of visits by internal (USGS) users.

Mobile users: Despite migrating most WMA static content to the Drupal mobile-responsive design, mobile usage has not changed significantly since launch (table 1).

Table 1. *Percentage of users accessing the WMA Drupal by type of device.*

	NatWeb, Pre-Migration	Drupal, Post-Launch
Desktop	73%	75%
Mobile	22%	20%
Tablet	5%	4%

MOST POPULAR CONTENT. Analytics data for the top 10 pages were compiled (table 2). **Two Water Mission Area pages were also in the top 10 most popular pages of the entire USGS Drupal web presence** for May 2019 (noted in orange below): the WMA homepage (#7 overall), and StreamStats (#9 overall).

Table 2. *Top 10 most-trafficked pages for Drupal, pre-migration NatWeb, and post-migration NatWeb.*

Rank	NatWeb, pre-migration (Dec. 1, 2018 to April 11, 2019)	Drupal, post-launch (April 11, 2019 to Nov 2019)	NatWeb, post-launch (April 11, 2019 to Nov 2019)
1	WMA Maps and GIS Data	**WMA homepage**	Science in Your Watershed: Locate your watershed by HUC*
2	Science in Your Watershed: Locate your watershed by HUC*	**StreamStats homepage**	WQ information: Water Hardness and Alkalinity*
3	WQ information: Water Hardness and Alkalinity	USGS Flood Information	Principal Aquifers in the U.S.*
4	Hydrologic Unit Maps homepage Water Use homepage*+	Water Use homepage	DOTABLES (software)*
5	Water Use homepage	WMA Maps (left nav section)	Science in Your Watershed*
6	Principal Aquifers in the U.S.*	WMA Data & Tools (left nav section)	Hydrologic Unit Maps homepage*+
7	DOTABLES (software)*	WMA Science (left nav section)	Boundary Descriptions and Names of Regions, Subregions, Accounting Units, and Cataloging Units*+
8	Groundwater data	MODFLOW homepage	Interactive Hydrologic Unit Map*+
9	Groundwater information	Total Water Use	Hydrologic data tips*
10	Science in Your Watershed*	Flood Inundation Mapping	Groundwater Atlas*

* cannot be migrated into Drupal without loss of functionality
+ in analytics, page name displays as "About USGS Water Resources"
* redirected to Drupal during post-launch time period

Additional analytics reporting, including statistics on the Water Science School, WMA Programs and priorities, can be found in **this online report**[4]. Web analytics for the WMA Drupal and NatWeb sites will continue to be monitored moving forward.

GS Answers and USGS Pop-Up Survey Feedback

USGS Office of Communications and Publishing (OCAP) Science Information Services (SIS) maintains two additional sources of data that could be used to assess the success of the WMA migration. GS Answers, or "Ask USGS", are the first responders for most public inquiries. Learning more about common water-related questions and issues, or hearing anecdotal information about our website, could help improve our web presence and develop needed content. The SIS also manages the pop-up web survey (formerly the Foresee survey) that randomly samples USGS web visitors. We have requested access to these data, but SIS has not provided any information yet.

Other benefits of the move to Drupal

Beyond measuring website usage and satisfaction, the migration to Drupal has provided some additional benefits and successes:

- OCAP WRET has implemented external search engine optimization for the Drupal system, and anecdotal evidence demonstrates **increased discoverability for all WMA Drupal content in online search engines** like Google and Bing, with WMA Drupal content showing very high in search results. Informal feedback indicates USGS staff satisfaction with improved search engine returns and rankings, especially when it comes to discoverability of staff profiles.

- With the move to Drupal, IIDD WCB has implemented a formal review and approval process. This means that **all Drupal web content now follows the appropriate FSP process** and undergoes thorough scientific and technical review – providing a much **higher level of control of and confidence** in the information we release.

- Having a standard web content process also means that USGS Water is much more knowledgeable about the entirely of our web presence – staff and scientists no longer can publish un-reviewed content. **USGS Water is now able to organize and promote content in a strategic and timely way, and present a single, unified WMA branding and voice.**

Challenges

During the migration, some challenges arose that delayed or complicated the process:

- **Knowledge Owner challenges**: typically overcome with increased one-on-one communication.
  - The starting knowledge of WRET migration expectations by WMA Knowledge Owners was lower than expected
  - Knowledge Owner interest in and skills for web communication was extremely varied. Some had difficulty looking beyond their traditional technical audiences.

- **A lack of communication strategies to optimize public facing web content and communications efforts** within and across Centers, Mission Areas, and OCAP makes content control and timely, coordinated cross-promotion difficult. IIDD WCB is working improve this with a Water External Community of Practice (WEC CoP; more on this below).

- **Limitations of the Drupal system**: since WRET continues to update and improve the Drupal system, some issues others remain.
  - All interactive and dynamically generated content must be hosted outside Drupal, making it hard to expose and feature dynamic data and real-time resources within Drupal.
  - The flat, rigid Drupal item structure and navigational design limits the ability to migrate in large, complex projects and websites.
  - The USGS site search function does not return meaningful or relevant results, despite implementing OCAP WRET's guidance for optimizing our web content in the Drupal search engine. (Multiple Mission Areas and Centers have recently ramped up complaints about this, and OCAP WRET is launching a collaborative investigation which WMA will participate in.)
  - OCAP WRET is overloaded with bugs, feature requests, etc., and doesn't always prioritize the updates WMA wants. OCAP WRET is also not great at understanding the implications of or communicating the changes or features that they roll out, although this is also improving.

REQUEST FOR EXECUTIVE COUNCIL ACTION: Although OCAP WRET has ongoing efforts to improve the Drupal system, there are several outstanding technical limitations that are crucial to an effective and successful WMA web presence. The requests relate to **improved content management and support of FSP**, **assessing and improving site usability**, and the **function and structure of the Drupal site**. **We request that WMA Leadership elevate these priority requests to the OCAP WRET team and ensure follow through to meet WMA needs.**

Without these needed improvements, the WMA will remain unable to improve internal efficiency which causes undue burden on back-end content managers; unable to review some content types prior to deploying to public-facing production systems; unable to monitor key aspects of site analytics; and lacking awareness of real users' experiences with the site.

Moving Forward

With the bulk of the migration effort complete, the IIDD Web Communications Branch continues to build on our goals of improving, updating, and strengthening our web presence.

- The priority in FY20 is to **finish up the remaining Drupal migration tasks**, including a few Labs and special topic sites. The **water.usgs.gov NatWeb space requires inventory clean up**, including some public and internal archiving, and updating a few sites with the current visual identity.

- The WCB plans to recreate some dynamic content using newer web technologies in order to retire legacy (but popular) NatWeb content, such as the Locate Your Watershed tool (**https://water.usgs.gov/wsc/map_index.html**).

- **An ongoing maintenance plan** has been developed to ensure the WMA web presence remains fresh and responsive to future content needs and priorities.

- The success of our external web presence will be continuously monitored, with an eye for opportunities for improvement.

- Finally, WCB is developing plans for how to support the WMA external web presence (**see here for additional information**) including:
  - Coordinating with WMA social media accounts and campaigns
  - Work with other Centers, Mission Areas, OCAP, and other stakeholders to develop integrative web content that supports WMA science and priorities.
  - Create innovative web solutions and applications to communicate and deliver WMA science and data to a range of audiences.
  - Launch and support the **Water External Communications Community of Practice (WEC CoP)**, a joint Water Mission Area/Science Center group focused on sharing information and resources and on creating a collaborative network of water communicators (but will not create or enforce communication policies).