

# Standard Operating Procedure (SOP) #14

## *Managing Photographic Images*

Version 1.03 (March 15, 2022)

### Change History

| New Version # | Revision Date | Author                            | Changes Made                                                                                                                                                                                                                                                                                                                | Reasons for Change                                                                                                                                                                                             | Previous Version # |
|---------------|---------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1.01          | 11/24/2009    | Kelly Kozar                       | Updated workspace setup for images and YSI files linked to database.                                                                                                                                                                                                                                                        | To reflect updates for files linked to database.                                                                                                                                                               | 1.0                |
| 1.02          | 2/26/2021     | Kelly Kozar<br><br>Kim Weisenborn | Updated workspace setup for images linked to database. Updated name of software for processing images.<br><br>Updated file structure setup, downloading images from camera, processing and renaming images sections; updated to NRR formatting; renumbered SOP from #16 to #14; updated SOP references throughout this SOP. | To reflect updates for image files linked to database, and current software used.<br><br>Some content was outdated; formatting needed to be applied; some SOPs were removed or renumbered within the protocol. | 1.01               |
| 1.03          | 3/15/2022     | Kim Weisenborn                    | Updated content to refer to new PACN I&M SharePoint. Updated figures to reflect change.                                                                                                                                                                                                                                     | PACN data is no longer stored on a networked server (I:\ drive) and is now stored on the PACN I&M SharePoint site.                                                                                             | 1.02               |
|               |               |                                   |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                |                    |
|               |               |                                   |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                |                    |

Only changes in this specific SOP will be logged here. Version numbers increase incrementally by hundredths (e.g., version 1.01, version 1.02) for minor changes. Major revisions should be designated with the next whole number (e.g., version 2.0, 3.0, 4.0). Record the previous version number, date of revision, author of the revision, changes made, and reason for the change along with the new version number.

### Purpose

This SOP describes how to download and process photographic images collected by project staff or volunteers during the course of conducting Pacific Island Inventory and Monitoring Network (PACN I&M) Water Quality Monitoring. Images that are acquired by other means—e.g., downloaded from a website or those taken by a cooperating researcher—are not project records and should be handled separately.

The standards described herein pertain specifically to all digital photographs related to Water Quality Monitoring. In this SOP, digital photograph refers to any photo in electronic format regardless of acquisition by scanner or digital camera. Most photos acquired and used by PACN I&M personnel should fit into one of the general categories.

1. *Library Photos*: These photos are final products that have been edited, documented, reviewed, and added to the photo archive in the [Pacific Island Inventory and Monitoring Network \(PACN\) Monitoring Archive Library](#)<sup>1</sup> in the [PACN I&M SharePoint site](#)<sup>2</sup>. These photos are representative, unique, and instructive and can be used for multiple purposes by a variety of staff.
2. *Data Photos*: Data photos are photos collected as data. Care should be taken to distinguish data photos from incidental or opportunistic photos taken by project staff. Data photos are those taken for at least one of the following reasons, to:
  - Document a particular feature or perspective for the purpose of site relocation
  - Capture site habitat characteristics and possibly to indicate gross structural changes over time
  - Document a species detection that is also recorded in the data

Data photos may be linked to specific records within the database and are stored in a manner that permits the preservation of those database links. Other photos (e.g., of field crew members at work, or photos showing the morphology or behavior of certain species) may also be retained but are not necessarily linked with database records.

3. *Misc Photos*: Miscellaneous photos are photos taken during monitoring but that do not record data. Such photos, such as crew members at work or unknown species photos are miscellaneous photos.

## Image Management Workflow

Effectively managing hundreds of photographic images requires a consistent method for downloading, naming, editing, and documenting. The general process for managing photos proceeds as follows:

1. File structure setup
2. Image acquisition
3. Download files
4. Process camera image files using GeoJot+ Core® software
5. Rename the image files according to convention

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<sup>1</sup> PACN Monitoring Archive Library, [https://doimsp.sharepoint.com/sites/nps-PWR-PACNIM/monitoring\\_archive](https://doimsp.sharepoint.com/sites/nps-PWR-PACNIM/monitoring_archive) (accessed 15 March 2022).

<sup>2</sup> PACN I&M SharePoint Site, <https://doimsp.sharepoint.com/sites/nps-PWR-PACNIM> (accessed 15 March 2022).

6. Review and edit or delete the photos
7. Move into appropriate folders for storage
8. Establish database links
9. Document the photos
10. Final storage

## File Structure Setup

Prior to data collection for any given year, data management staff will set up new folders under the “[Images](#)” folder (Figure SOP 14.1) in the [Water Quality Monitoring project workspace](#) in SharePoint. Folder structures will be set up as follows:

### [Images](#)

|              |                                                                                                                   |
|--------------|-------------------------------------------------------------------------------------------------------------------|
| [YEAR]       | The appropriate year (e.g., 2021, 2022, etc.; Figure SOP 14.1)                                                    |
| _Ricoh_memos | Memos to be loaded onto the Ricoh GPS camera                                                                      |
| [PARK]       | Arrange files by 4-letter park code (e.g., HAVO, KAHO, etc.; Figure SOP 14.2)                                     |
| Data         | Data images arranged by date (Figure SOP 14.3)                                                                    |
| Misc         | Non-data images taken by project staff and arranged by date (Figure SOP 14.3)                                     |
| Originals    | Data images that are downloaded from a Ricoh or non-Ricoh field camera and arranged by the date (Figure SOP 14.3) |

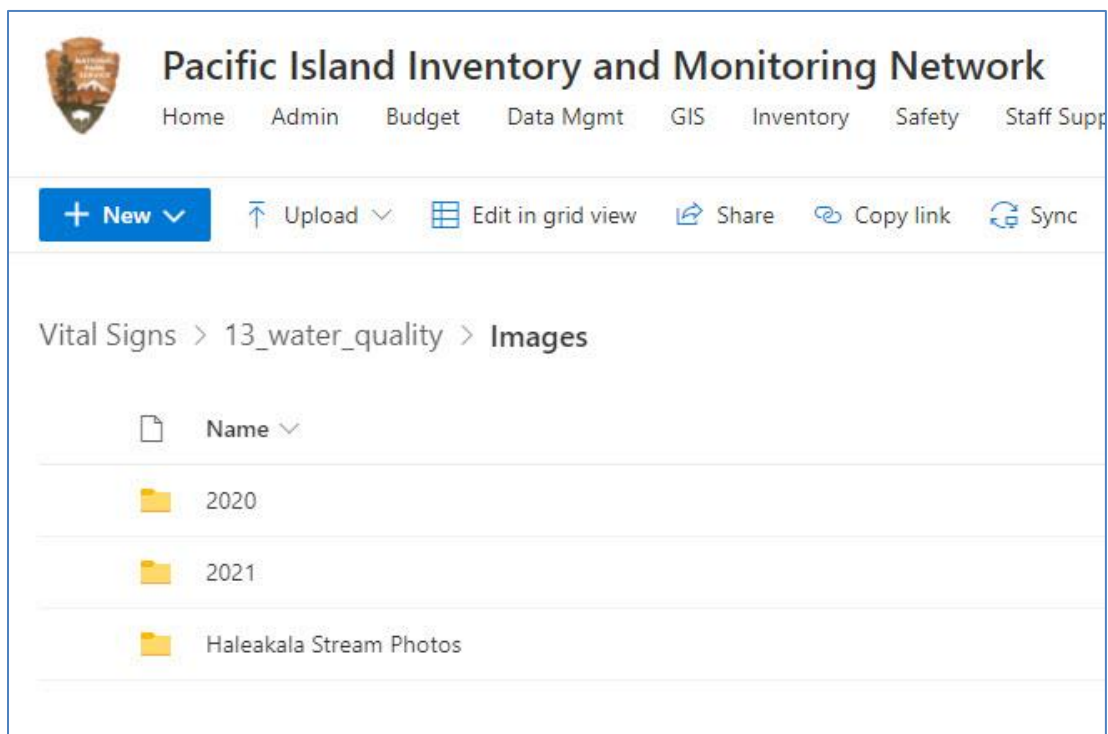


**Figure SOP 14.1.** File structure for “Images” folder within the Water Quality Monitoring project workspace in SharePoint.

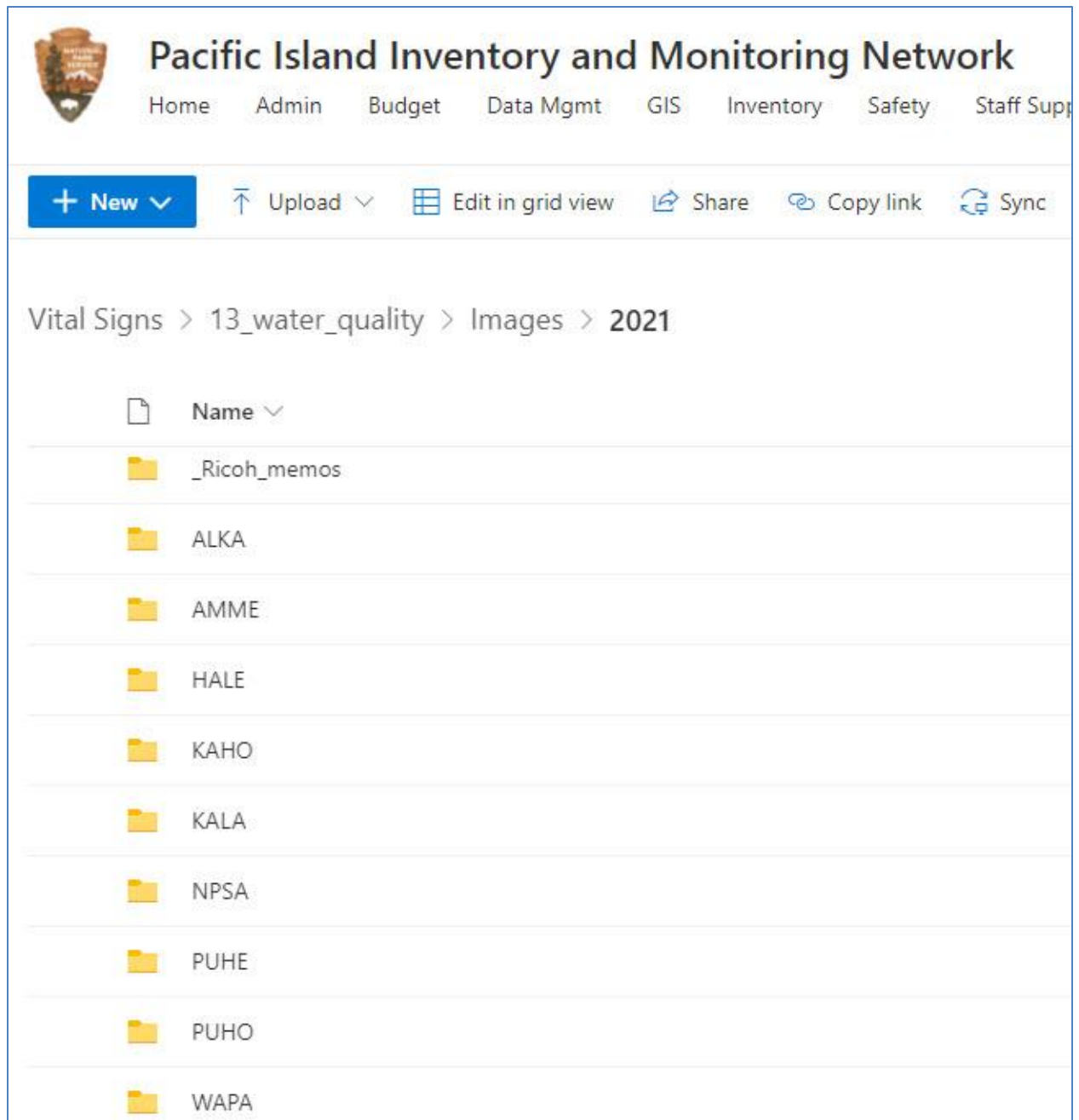


**Figure SOP 14.2.** Example of where to place Water Quality images for each park for a sampling year within the Water Quality Monitoring project workspace in SharePoint.

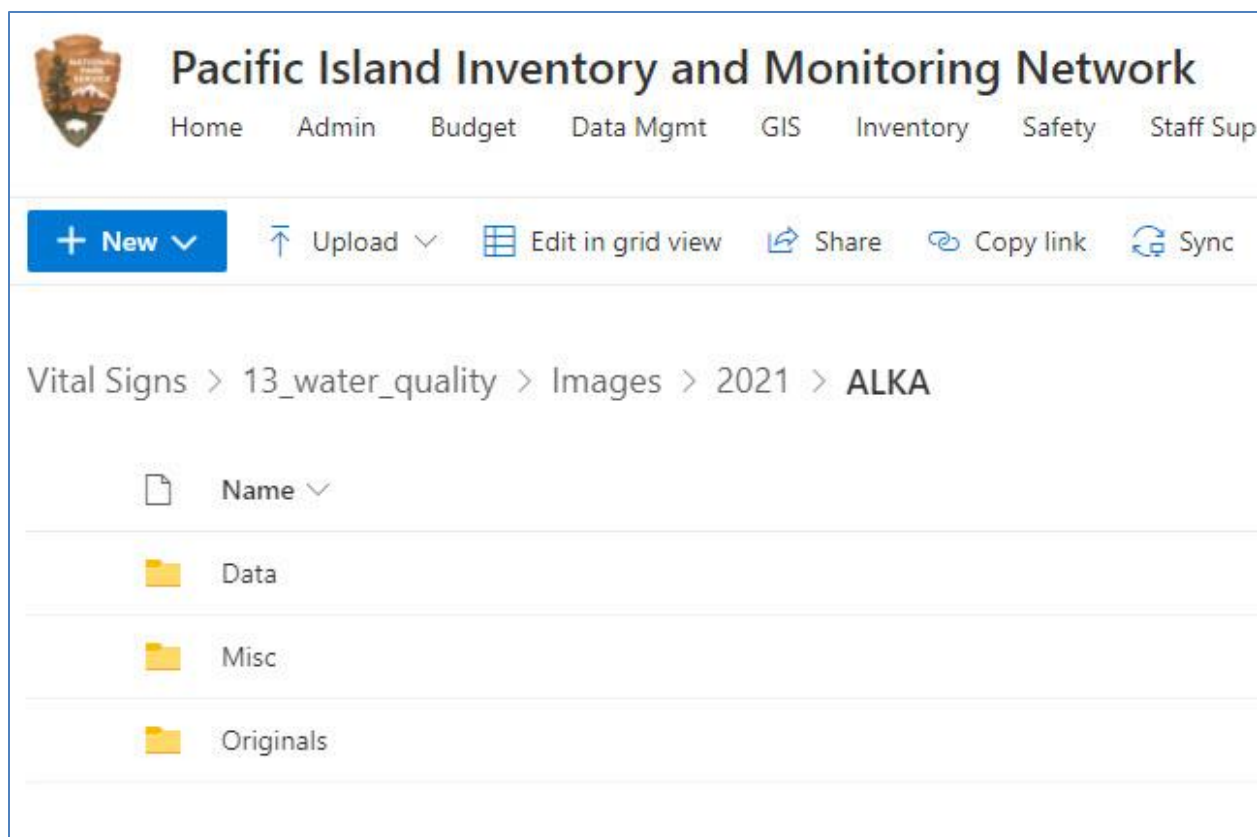


**Figure SOP 14.3.** Example of file structure for each park folder for a sampling year within the Water Quality Monitoring project workspace in SharePoint.

This folder structure permits data images to be stored and managed separately from miscellaneous images collected during the course of the project. It also provides separate space for storage of original images. For additional information about the project workspace, refer to [SOP #12 Workspace Setup and Project Records Management](#).

### ***Folder Naming Standards***

In all cases, folder names should follow these guidelines:

- No spaces or special characters in the folder name
- Use the underscore (“\_”) character to separate words in folder names
- Try to limit folder names to 20 characters or fewer
- Dates within folder names should be formatted as YYYYMMDD<sup>3</sup> (for better sorting)

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<sup>3</sup> YYYYMMDD = 4-digit year, 2-digit month, 2-digit day

Within the “Data” and “Originals” folders, additional folders should be created for each sampling event in the format YYYYMMDD. **When a sampling event is multiple days long, use the first date of the sampling event for folder name.** All data images for a sampling event should go in the appropriate sampling event folder.

## **Image Acquisition**

Digital photographs should be captured at a resolution and quality setting appropriate for the highest detail intended use. As a general rule, images destined for printing or publication should be of a higher quality and resolution than images that will be used for email or internet use. If the camera will allow, the resolution should be set at 1760 x 1168 or higher. The quality should be set for “super fine” or “high”. Uncompressed TIFF files retain the greatest amount of image information, but the trade-off for the highest image quality is that these image files are large, and fewer images can be saved to any single memory card.

Publication quality photos should be taken at a minimum of 5 megapixels. Because the destination of a photo is unknown at the time it is taken, all photos should be taken with this resolution, or for lower resolution cameras, the highest resolution possible. Any resizing or file compression should be done during post processing using image editing software.

Though most digital cameras can digitally imprint the date and time directly onto the photo image, this feature usually should not be used. Date and time data are automatically recorded in the EXIF metadata by most digital cameras. If the image is being cataloged and documented, it has value – imprinting the image reduces the image quality and hence the image value.

Different brands of digital cameras name photos differently. Some cameras will have several file naming options that may include:

- Sequential numbering which resets each time a memory card is formatted, or a new card is put in.
- Sequential numbering which loops from 0001 to 9999.
- Numbering based on date-photo sequence.

As a general rule, the most useful setting is a date-photo sequence, then the 0001-9999 loop and the least useful is the card-based sequence. Projects must carefully review the naming options of the project cameras for the most useful convention. Projects must also ensure the same convention is used by all cameras collecting data photos. Photos will be renamed later following the naming conventions described below.

## **Downloading and Processing Image Files**

When returning from the field, images must be downloaded from the camera, placed in the appropriate folders, and processed as soon as possible. For detailed information on these steps, refer

to the [SOP Processing Images with GeoJot+ Core® Software](#), located in the [Data Management SOP Documents](#) folder in SharePoint.

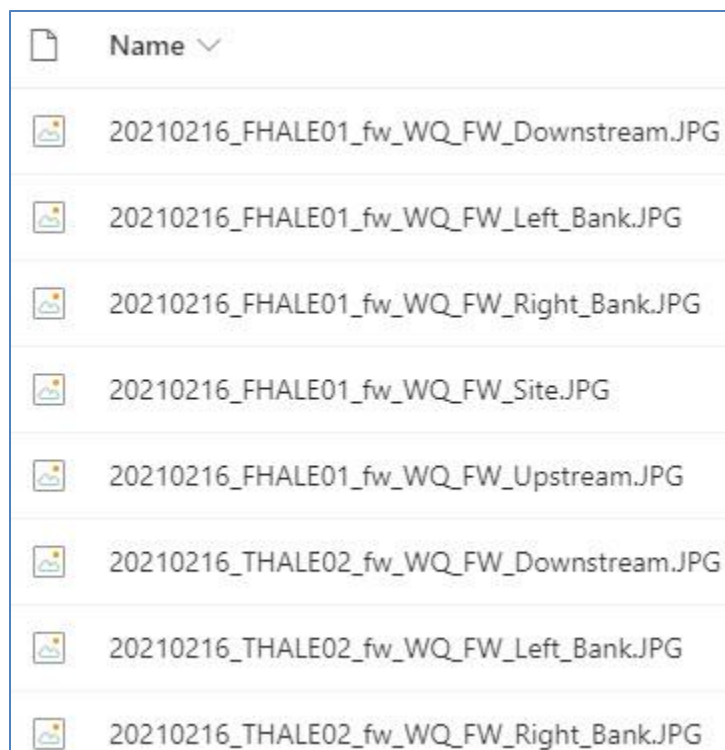
## Rename Image Files

All data photos will be renamed during image processing with GeoJot+ Core® software and should be named in the following format (Figure SOP 14.6):

**[YYYYMMDD]\_[Station\_ID]\_[type]\_WQ\_[TYPE]\_[Direction]<sup>4</sup>.jpg.**

The software will automatically update the file names during processing based on the applied memos. For renaming image filenames correctly, refer to the following sections in the [SOP Processing Images with GeoJot+ Core® Software](#):

1. “Rename Photos” under “6. Shared Output Settings”
2. “Renaming Watermarked Image Files”



|    | Name ▾                                   |
|-------------------------------------------------------------------------------------|------------------------------------------|
|    | 20210216_FHALE01_fw_WQ_FW_Downstream.JPG |
|   | 20210216_FHALE01_fw_WQ_FW_Left_Bank.JPG  |
|  | 20210216_FHALE01_fw_WQ_FW_Right_Bank.JPG |
|  | 20210216_FHALE01_fw_WQ_FW_Site.JPG       |
|  | 20210216_FHALE01_fw_WQ_FW_Upstream.JPG   |
|  | 20210216_THALE02_fw_WQ_FW_Downstream.JPG |
|  | 20210216_THALE02_fw_WQ_FW_Left_Bank.JPG  |
|  | 20210216_THALE02_fw_WQ_FW_Right_Bank.JPG |

**Figure SOP 14.6.** Example of image file naming standards for HALE 2021 Water Quality Monitoring images.

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<sup>4</sup> Refer to “Appendix B: Abbreviation Key for File Naming Conventions” in the most recent version of the [SOP Processing Water Quality Sampling Event Files](#) located in the [Water Quality Database Documentation](#) in SharePoint.

If data photos were taken with a non-Ricoh camera, it is likely that you will need to add memos to the photos during processing. There are several resources that can be used in order to determine the correct memos for a photo:

- Scanned or hard-copy datasheets –
  - Photo information may be noted in the Digital Photograph Information section of the datasheet for a station.
  - Compare data/time information on the datasheet to the data/time information associated with the image files.
- Rite in the rain logbook

Refer to the “3. Data Editor” section in the [SOP Processing Images with GeoJot+ Core® Software](#), which will go over the method used to add missing memos during processing.

### **Review and Edit Image Files**

Delete any poor-quality photos, repeats, blurred or otherwise unnecessary photos. Low quality photos might be retained if the subject is highly unique, or the photo is an irreplaceable data photo. Edit the photos by doing any of the following if needed:

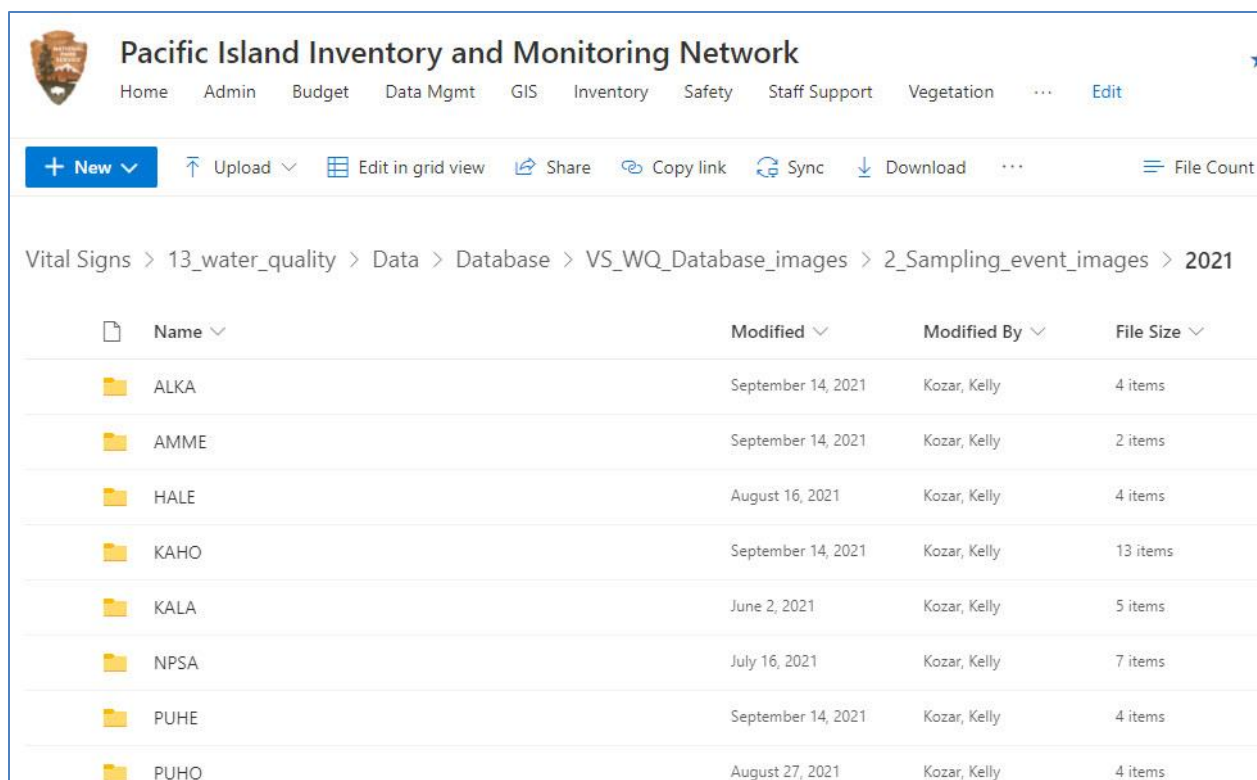
- Rotate the image to make the horizon level.
- Photos of people should have ‘red eye’ glare removed.
- Photos should be cropped to remove edge areas that grossly distract from the subject.

Photos can be edited using any approved software – e.g., Photos®, Paint®, SnagIt®, and GeoJot+ Core® (refer to the “4. Photo Editor” section in the [SOP Processing Images with GeoJot+ Core® Software](#) for more information).

### **Organize Image Files**

Once data images have been edited, reviewed, and renamed, the data images can be copied to the “Data” folder for the correct year and park. Any other miscellaneous images should be moved to the “Misc” folder for the correct year and park (Figure SOP 14.3). Images that are to be linked to the database will need to go into the “[VS WQ Database images](#)” folder for the correct year and park (Figure SOP 14.7).

Specific procedures for organizing images can be found in the “Uploading Processed Image Files to SharePoint” section in the [SOP Processing Images with GeoJot+ Core® Software](#).



| Name | Modified           | Modified By  | File Size |
|------|--------------------|--------------|-----------|
| ALKA | September 14, 2021 | Kozar, Kelly | 4 items   |
| AMME | September 14, 2021 | Kozar, Kelly | 2 items   |
| HALE | August 16, 2021    | Kozar, Kelly | 4 items   |
| KAHO | September 14, 2021 | Kozar, Kelly | 13 items  |
| KALA | June 2, 2021       | Kozar, Kelly | 5 items   |
| NPSA | July 16, 2021      | Kozar, Kelly | 7 items   |
| PUHE | September 14, 2021 | Kozar, Kelly | 4 items   |
| PUHO | August 27, 2021    | Kozar, Kelly | 4 items   |

**Figure SOP 14.7.** Example of where to place 2021 images that will be linked to the database.

Photos of interest to a greater audience will be copied to the PACN Monitoring Archive Library in SharePoint by the PACN Data Manager. Generally, these images are high quality, high resolution, but lower quality images may be included if the subject matter has broad appeal and is special, rare, or unique.

### Establish Database Links

Images for the Water Quality Monitoring protocol can be directly linked to the data in the Water Quality Monitoring Database. During data entry and processing, the database application will provide the functionality required to establish a link between each database record and the appropriate image file(s). To establish the link, the database prompts the user to indicate the root project workspace directory path and the specific file name. This way, the entire workspace may be later moved to a different directory (i.e., the PACN Monitoring Archive Library) and the links will still be valid after changing only the root path. Refer to [SOP #12 Workspace Setup and Project Records Management](#), and [SOP #16 Data Entry and Verification](#) for additional details on setting up the database images structure and establishing these links.

**Note:** It is important that the files keep the same name and location once these database links have been established. Users should not rename or reorganize the directory structure for linked image files without first consulting with the PACN Data Manager.

The procedures for linking images to the Water Quality Monitoring Database can be found in [Water Quality Monitoring Database User Guide](#), located in the “[Database Documentation](#)” folder in SharePoint.

### **Final Storage**

At the end of the season, and once the year’s data are certified, data images for the year will be moved to the PACN Monitoring Archive Library in SharePoint for archival. Before data is certified all data images should be checked for completeness and linked to the database. Since the project images are on the network server, simply inform the PACN Data Manager that the images are ready to be archived. These files will be loaded into the PACN Monitoring Archive Library in SharePoint, and the database links to data images will be updated accordingly.