

DIGITAL IMAGING WORKFLOW

Part #5

This workflow is *one* approach in the creation of images for the internet or for printing by an ink jet printer, not for a commercial CMYK printer. It is meant to be a guideline to processing images, not a set of rules to be strictly followed. Many alternative techniques are equally valid and in some cases, are a better approach than detailed here for a specific image.

Basic Workflow:

- Camera Image File + Modifications and Adjustments => Master Image File (psd format).
- Master Image File + versions 1...n of the image's final size, resolution, sharpening & file format => Output Image File versions 1...n.
- Backup your data

Step 4: Output File(s) Creation

Create an output file for each output configuration.

Terminology

- **ppi - pixels per inch:** the resolution of a digital image. Input devices and monitors are rated in ppi; Macintosh monitors are usually 72 ppi, PC monitors are usually 96 ppi.
- **dpi - dots per inch:** the resolution of a printing device. A Epson R800 printer can print at 1440 dpi.

Hint: for optimum quality, print at an integral divisor of the printer resolution, e.g., $1440 \text{ dpi} / 4 = 360 \text{ ppi}$ or $1440 \text{ dpi} / 6 = 240 \text{ ppi}$.

- **Physical Size (inches) = Number of Pixels / Image Resolution (ppi)**

How big is 800 pixels?

- For a 360 ppi print, $800/360 = 2.22''$
- For a 240 ppi print, $800/240 = 3.33''$
- On a 96 dpi PC monitor => $800/96 = 8.33''$
- On a 72 dpi Mac monitor => $800/72 = 11.11''$

How do I get a 10" Image?

- For a 360 ppi Print, $10 \times 360 = 3600 \text{ pixels}$
- For a 240 ppi Print, $10 \times 240 = 2400 \text{ pixels}$
- On a 96 ppi PC Monitor, $10 \times 96 = 960 \text{ pixels}$
- On a 72 ppi Mac Monitor, $10 \times 72 = 720 \text{ pixels}$

Resampling occurs anytime you add or delete pixels.

- $4 \times 5 @ 300 \text{ dpi} (5.15\text{MB}) \Rightarrow 8 \times 10 @ 300 \text{ dpi} (20.6\text{MB})$ is UP-Sampling
- $4 \times 5 @ 300 \text{ dpi} (5.15\text{MB}) \Rightarrow 4 \times 5 @ 150 \text{ dpi} (1.29\text{MB})$ is DOWN-Sampling
- $4 \times 5 @ 300 \text{ dpi} (5.15\text{MB}) \Rightarrow 8 \times 10 @ 150 \text{ dpi} (5.15\text{MB})$ is NOT Resampling

1) Create an Output File

- a. Layers > Flatten Image or Layers Palette Menu > Flatten Image
- b. Image > Mode > 8 Bits / Channel
- c. Save the Output File (Note: file naming mentioned below is just a suggestion)

1. For a **print created by a desktop inkjet printer**,

- Resize and crop image to the final print size at 240 to 360 pixels/inch
- File > Save As "file_name 10x8.psd"; don't use the same file name as the Master file

2. For a **print to be made by Costco** (see later section),

- Resize and crop image to final print size at 320 pixels/inch
- Edit > Convert to Profile > {specific Costco printer and paper profile}
- Image > Canvas Size > {the exact size of the Costco paper}
- File > Save As "file_name.jpg"

3. For a **digital projector**,

- Perform the final image crop
- File > Automate > Fit Image to constrain image within 1024 pixels wide by 768 pixels high
- Edit > Convert to Profile > sRGB
- File > Save As "file_name proj.jpg" (or as defined by camera club rules)

4. For **e-mail**,

- Perform the final image crop
- Edit > Convert to Profile > sRGB
- Crop image to constrain the longest dimension to 600 to 800 pixels at 72 or 96 pixels/inch
- File > Save As "file_name mail.jpg"

5. For the **Web**,

- Resize and crop image to final image size at 72 or 96 pixels/inch
- File > Save for Web to optimize storage > File Format = jpg

6. For **image programs** such as data base or slide show programs,

- Edit > Preferences > File Handling > set Maximize PSD and PSB File Compatibility

7. For a **page layout program** and **service bureaus**,

- Resize, flatten, and crop image to final image size at 300 pixels/inch, or as instructed
- Check on specific color management settings
- File > Save As "file_name.tif" or

"file_name.eps"

8. For sending images to a **client** to be reviewed,
 - Resize and crop image to final image size at the clients requested resolution
 - File > Automate > PDF Presentation

2) Soft-Proof the Output Colors

- a. View > Proof Setup > Custom > {printer/paper profile or sRGB}; select the Rendering Intent between,
 - Relative Colorimetric for most images, especially portraits
 - Perceptual if many colors out-of-gamut, if print banding occurs, or for landscapes and vivid colors
 - Black Point Compensation = set
- b. View > Proof Colors
- c. If any colors are out-of-gamut, edit image (reduce saturation especially) to correct the gamut, if possible
- d. View > Reset Proof Colors

3) Noise Reduction

- a. Could have performed Noise Reduction for a RAW image in the RAW Processor
- b. PS CS2: perform Noise Reduction with Filter > Noise > Reduce Noise
 - Consider Noise Ninja from PictureCode
- c. PS CS: try Noise Reduction with repetitive use of Filter > Noise > Despeckle (may soften image)

4) Sharpen Output Image

- a. Sharpen image with Smart Sharpen, Hi-Pass, or LAB
 - Consider PhotoKit from Pixel Genius
 - If you do use the Unsharp Mask, try
 - Amount: 100% to 300%
 - Radius: 0.4 to 1.0 if high detail, 1.0 to 1.5 for normal, 2 to 3 for low detail
 - Threshold: 0 to 4 if high detail, 8 to 12 if low detail
- b. Perform selective sharpening as needed

5) Final Evaluation

- a. Correct any small imperfections but if anything major, correct the Master Image File and recreate the Output File
- b. Save the Output File

6) Send the Output File to a Desktop Printer

- a. File > Print with Preview > Color Management >
 - CS2: Print = Document
 - CS2: Color Handling = Let Photoshop Determine Colors
 - Printer Profile = {Printer and Paper Profile}
 - Rendering Intent = Relative Colorimetric for most images or Perceptual if many colors out-of-gamut

- b. Disable desktop printer color management in its printer driver (i.e., No Color Adjustment)

Step 5: File Archival

Safeguard your files as all hardware will fail at some time.

1) Archive at least two copies of the following files

- a. Original camera image file: raw or jpg
 - Don't have to save a jpg camera file if the Master Image File contains this data unaltered
- b. Master Image File: psd
- c. An Output file for each output configuration at its final resolution, size, format, and sharpening (psd, jpg, tif)
 - Don't have to save if you will never have to reprint or if output file is simple to reconstruct
- d. Use Bridge to verify the archived files are OK

2) Store the two copies of the archived files on different media and in different locations

- a. Different media protects against defective media
- b. Different locations protects against a fire or other disaster in one location
- c. Consider file recovery software, e.g., PhotoRescue from DataRescue, www.datarescue.com, \$29
- d. Consider SyncToy from Microsoft for file backup

Costco (Goleta) Prints

Costco, Camino Real Marketplace, Goleta, CA 93117; 10 am to 8:30 pm, Mon-Fri, until 6 pm on weekends

Direct phone to photo department: 805-685-8481

- **Note:** This lab has multiple printers. For best results, follow these instruction to have prints made on the Noritsu 3111 printer (the machine to the right).

- Prints use Fuji Crystal Archive Paper in paper sizes **4x6, 5x7, 8x12, and 12x18** and paper types **Glossy and Lustre**.

Example: to get a 8x10 print, use the 8x12 paper and later trim the paper to 8x10.

Before you make prints at Costco,

1. Familiarize yourself with color management in Photoshop
2. Calibrate your monitor and create a monitor profile
3. Download the latest ICC profile for Glossy and Lustre papers from www.drycreekphoto.com under Digital Printer Profiles > California > Goleta > Costco #474
These profiles are updated periodically so check back with Dry Creek Photo occasionally.
4. To install the Costco Goleta printer ICC profiles,
 - Windows: right-click on profile, Install Profile
 - Mac: store the profile in System Folder/ColorSync Profiles
 and restart Photoshop. For additional details, see drycreekphoto.com/Frontier/using_printer_profiles.htm.

Create the Master Photoshop file:

1. Edit the image to your satisfaction
2. Save this Photoshop Master file, e.g., "my_picture.psd"

Create the Printer Output file to be printed at Costco:

1. **Flatten** the layers and if needed, convert to **8-bits per channel**.
2. **Resize** to the desired print size at **320 ppi**, e.g., Crop tool: Width = 10 in, Height = 8 in, Resolution = 320 pixels/inch

Note: the printer will slightly enlarge the image and cut off pixels near the image border. Expect to lose from 0.05" to 0.15" on a 4x6 print to 0.2" on a 12x18 print. If you wish a white border, you must take that dimension into account.

3. **Embed the Costco color profile** for the selected paper type, e.g.,
 - CS2: Edit > Convert to Profile > Costco-CA-Goleta-Lus (Noritsu 3111): {date}
 - CS: Image > Mode > Convert to Profile > Costco-CA-Goleta-Lus (Noritsu 3111): {date}

4. **Soft proof** to visualize how the print will look:
 - View > Proof Setup > Custom > <printer ICC profile>, e.g., "Costco-CA-Goleta-Lus (Noritsu 3111): {date}"
 - Set Proof Colors and edit the image to your satisfaction
 - View > Gamut Warning to determine if many colors are beyond the range of the printer (i.e., out-of-gamut)
5. **Sharpen** the image to your taste
6. **Set image canvas size** to the exact size of the Costco paper, e.g., Image > Canvas Size > {a Costco paper size}. Example,

Final Print Size	Use Paper Size	Make Canvas Size
8x12	8x12	No Change
8x10	8x12	8x12 inches
10x8	8x12	12x8 inches
8x8	8x12	8x12 or 12x8 inches

7. **Save As** a Printer Output file:
 - File > Save As > file_name.jpg in a folder of images to be printed at Costco
If creating prints in one size only, place all files to be printed in one folder.
If creating prints in multiple sizes, place the files for each paper size within their own folder, e.g. in folders labeled "4x6", "5x7", "8x12", and/or "12x18". Note: to avoid confusion, use the lower dimension number first ("8x12", not "12x8").
If you want a mixture of glossy and lustre prints, create separate folders for each paper type, e.g., "8x12 lustre".
 - Format = JPEG; Color: check ICC Profile; Save *The JPEG Options window opens.*
 - Image Quality = Maximum; Format Options = Baseline ("Std")

Transfer the Printer Output files to Costco

- If bringing the files into the Costco store for printing:
 - Copy your Printer Output files to a CD (for reliability, a CD-R disk is favored over a CD-R/W)
 - If creating prints in one size and one paper type, transfer all files to be printed to the CD's main folder (i.e., the root folder)
 - If creating prints in multiple sizes and/or paper types, transfer the files for each paper size and type within their own folder
- Obtain a photo order envelope at the Costco Photo counter, place the CD within the order envelope, and enter the following info:
 - Box 1 and 2: Name and Phone
 - Box 6 (finish): **Glossy** or **Lustre** (or both, if applicable)
 - Box 9 (digital prints): check
 - Special Instructions: write **Use Noritsu 3111, Do Not Auto-Correct**

- Special Instructions: if you don't want the file name printed on the back of the print, write **No Back Printing**
- Special Instructions: if multiple prints of specific images are desired, list the **quantities and file names** (if this is extensive, enclose a sheet of paper with the quantities and file names)
- Alternative: use the terminal at the Costco photo counter to transfer your pictures and define your options (for pro photographers, they prefer to have you leave a CD)

4x6 and 5x7 prints are usually ready in an hour or two; larger prints are usually ready the following morning.

- If sending your image files to Costco via the internet:
 - Create a Costco photo account at costco.com by selecting Photo Center (see top of web-page)
 - Read the Uploading Photos and Ordering Prints sections
 - Upload the image files for printing during store hours
 - Enter your Costco membership number, select the Goleta Costco store for delivery, and select the finish and quantity
- Note: selecting a 8x10 print means 8x10, not 8x12, even though the paper size is still 8x12. A 8x12 does not work via the internet.*
- At "Review and Place Order", select Options and select a back printing option and check the box, "**Do Not Auto Correct**"
 - After 5 to 10 minutes, call the Costco photo department, **685-8481**, and give the photo personnel your name and instructions for your job to, "**Use Noritsu 3111**".
 - You will receive an e-mail when the job is completed.