

## Harvard University Library, Library Digital Initiative

Digital Imaging Specifications: animal specimens, building exteriors, hand-drawn map, glass slides, Final  
Western China and Tibet, Arnold Arboretum

### Contacts

Arnold Arboretum

Sue Kriegsman, [suzanne\\_kriegsman@harvard.edu](mailto:suzanne_kriegsman@harvard.edu), 495-3724

Sheila Connor, [sconnor@arnarb.harvard.edu](mailto:sconnor@arnarb.harvard.edu), 617-524-1718

HCL DIG:

Bill Comstock, [william\\_comstock@harvard.edu](mailto:william_comstock@harvard.edu), 496-5241

David Remington, [david\\_remington@harvard.edu](mailto:david_remington@harvard.edu), 496-9346

### Project Summary of Imaging and DRS Services

	HCL-DIG imaging costs			DRS costs (\$5/GB/year)		
	\$ per image*	# files	subtotal	size (MB)	total MB	subtotal
<b>Building exteriors, grayscale</b>						
archival_master	8-bit TIFF \$ 20.00	1	\$20.00	4.07	4	\$0.02
delivery, screen-sized	JPEG/JFIF <i>included</i>	1		0.12	0	\$0.00
		<b>2</b>	<b>\$20.00</b>		<b>4</b>	<b>\$0.02</b>
<b>Building exteriors, color</b>						
archival_master	24-bit TIFF \$ 20.00	2	\$40.00	13.02	26	\$0.13
delivery, screen-sized	JPEG/JFIF <i>included</i>	2		0.12	0	\$0.00
		<b>4</b>	<b>\$40.00</b>		<b>26</b>	<b>\$0.13</b>
<b>Bird specimens*</b>						
archival_master	24-bit TIFF N/A	6	\$0.00	7.32	44	\$0.21
delivery, screen-sized	JPEG/JFIF <i>included</i>	6		0.14	1	\$0.00
		<b>12</b>	<b>\$0.00</b>		<b>45</b>	<b>\$0.22</b>
<b>Rick Ree, PCD images</b>						
archival_master	PCD \$ 8.00	177	\$1,416.00	4.64	821	\$4.01
archival_production	24-bit TIFF	177		16.89	2,990	\$14.60
delivery, screen-sized	JPEG/JFIF <i>included</i>	177		0.14	25	\$0.12
		<b>531</b>	<b>\$1,416.00</b>		<b>3,835</b>	<b>\$18.73</b>
<b>Rick Ree, digital camera images</b>						
archival_master	JPEG/JFIF \$ 8.00	184	\$1,472.00	0.88	162	\$0.79
archival_production	24-bit TIFF	184		5.50	1,012	
delivery, screen-sized	JPEG/JFIF <i>included</i>	184		0.14	26	\$0.12
		<b>552</b>	<b>\$1,472.00</b>		<b>1,199</b>	<b>\$0.92</b>
<b>Glass-mounted color transparencies</b>						
archival_master	24-bit TIFF \$ 50.00	11	\$550.00	84.46	929	\$4.54
delivery, screen-sized	JPEG/JFIF <i>included</i>	11		0.14	2	\$0.01
		<b>22</b>	<b>\$550.00</b>		<b>931</b>	<b>\$4.54</b>
<b>Joseph Rock hand-drawn maps*</b>						
archival_master	24-bit TIFF \$ 15.00	10	\$150.00	155.65	1,556	\$7.60
delivery, screen-sized	JPEG/JFIF <i>included</i>	10		0.14	1	\$0.01
delivery, detailed	JPEG/JFIF <i>included</i>	10		1.63	16	\$0.08
		<b>30</b>	<b>\$150.00</b>		<b>1,574</b>	<b>\$7.69</b>
<b>Specification development and sample preparation*</b>						
	\$ 300.00	2	\$600.00			
<b>Grand Totals</b>		<b>1,153</b>	<b>\$4,248.00</b>		<b>7,615</b>	<b>\$32.24</b>
					<b>DRS storage =</b>	<b>7.4 GB<sup>+</sup></b>

<sup>+</sup> 1,024 MB = 1 GB

archival_master images	Building exterior, grayscale		
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, high-quality reprints		
File Format	TIFF, 8-bit, uncompressed		
Resolution	300 dpi		
Enhancements	none		
Cropping	none		
Tone Reproduction	none		
Content (in frame)	original image, plus narrow border		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	6 MB x	1	= 0.0 GB
adjusted (project final)	4.07 MB x	1	= 0.0 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8
compression	1
photointerp	1
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	last modified date
optres	3072x2048
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	2
source	
system	CreoScitex;Leaf Volare; Leaf Colorshop 6.x
targetnotes	
xres	300
yres	300

archival_master images	Building exteriors, color		
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, high-quality reprints		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution	300 dpi		
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	original image, plus narrow border		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	17 MB x	2	= 0.0 GB
adjusted (project final)	13.02 MB x	2	= 0.0 GB
Disposition	deposit to DRS		

image metadata

bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	
modified	last modified date
optres	3072x2048
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	2
source	
system	CreoScitex;Leaf Volare; Leaf Colorshop 6.x
targetnotes	
xres	300
yres	300

## Birds methodology

Digital images for the Rock Bird Specimen component of the Harvard University Library Digital Initiative (LDI) project "Western China and Tibet: Hotspot of Diversity" were created by the Harvard College Library Digital Imaging Group in 2000. Material was selected for this project with the aim of representing the diversity of samples Rock collected in his travels. The imaging specification was designed to produce a moderately detailed "Archival Master" images that are suitable for identifying the subject matter. Samples were photographed with a Nikon D1 digital SLR camera using lighting system consisting of a Calumet Elite 1200 power supply with two heads and two umbrellas. Images in this collection were batch processed using a Photoshop Action script. Color and tonal corrections were made using Adobe Photoshop 6.xx and 7.xx. Files were viewed on a calibrated Barco Reference Calibrator V monitor. Editing was performed in an ISO 3664 compliant proofing environment. Image files were corrected and archived as tiff files in the Adobe RGB 1998 color-space. Derivative jpeg files intended for electronic delivery on the Web were converted to the sRGB color-space. All files were saved with embedded ICC compliant color-space profiles.

archival_master images	Bird specimens		
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching; images intended only to demonstrate the variety of specimens collected by Joseph Rock		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution			
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	Specimen on black background		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	7 MB	x 6	= 0.0 GB
adjusted (project final)	7.32 MB	x 6	= 0.0 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	See: <a href="http://dig.harvard.edu/projects/aa/meth/bird_specimen_methodology.txt">http://dig.harvard.edu/projects/aa/meth/bird_specimen_methodology.txt</a>
modified	datetime file was saved
optres	2,000 x 1,312
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	1
source	
system	Nikon D1
targetnotes	
xres	
yres	

## Rick Ree Kodak Photo CD Methodology

Digital images contributed by Richard H. Ree (rree@post.harvard.edu) to the Harvard University Library Digital Initiative (LDI) project "Western China and Tibet: Hotspot of Diversity" were processed by the Harvard College Library Digital Imaging Group in August 2002. Ree's PhotoCD format images were processed using Adobe Photoshop 6.xx and 7.xx. The PhotoCD files were imported into Photoshop as 16 bit RGB TIFF files using the built-in import module with the "universal E-6" film term. Each image was individually processed to compensate for any obvious color casts and to achieve, to the extent possible, natural tone and color. Files were viewed on a calibrated Barco Reference Calibrator V monitor. Editing was performed in an ISO 3664 compliant proofing environment. Three versions of each image were deposited to DRS: 1) the unedited PCD images submitted by Ree; 2) the edited TIFF version of each image; and 3) the delivery JPEG format image, derived from the edited TIFF. Rationale: the PCDs submitted by Ree were saved for security, and to demonstrate provenance and the results of image editing; the TIFFs were saved as the preferred edited version that could be used for the production of subsequent generations of delivery images. The TIFF format images were tagged with the ICC conformant Adobe RGB 1998 colorspace profile. These edited TIFF format images were used to produce derivative JPEG files intended for electronic delivery on the Web. All JPEG images were converted to the sRGB colorspace and tagged with an ICC conformant colorspace profile.

archival_master images	Rick Ree PhotoCD images		
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching		
File Format	PCD		
Resolution			
Enhancements	none		
Cropping	none		
Tone Reproduction			
Content (in frame)	image as originally scanned		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	5 MB x	178	= 0.9 GB
adjusted (project final)	4.64 MB x	177	= 0.8 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8 8 8
compression	Image Pac
photointerp	6
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	<modified />
optres	3072x2048
orientation	
producer	Boston Photo Imaging, Inc.
prosoftware	
resunit	2
source	
system	<system />
targetnotes	
xres	
yres	

<u>production_archival images</u>	generated from Rick Ree's PhotoCD images			
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching			
File Format	TIFF 24bit, uncompressed			
Resolution	2540 dpi			
Enhancements	edited to optimize tone and contrast			
Cropping	cropped to frame edge			
Tone Reproduction	edited to optimize tone and contrast			
Content (in frame)	image as originally scanned			
Quality Control	visual inspection, MD5 checksum for 100% of images			
File Sizes	<i>per image</i>		<i>total # files</i>	<i>total</i>
est. (prelim spec) P.	20	MB x	178	= 3.5 GB
adjusted (project final)	16.89	MB x	177	= 2.9 GB
Disposition	deposit to DRS			

image metadata	
bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	Curves, Levels, HSL
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	last modified date
optres	5000x5000
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x, 7.x
resunit	2
source	
system	CreoScitex; Eversmart Supreme; oXYgen Open 1.x
targetnotes	
xres	2540
yres	2540

## [Rick Ree Digital Camera Image Methodology](#)

Digital images contributed by Richard H. Ree (rree@post.harvard.edu) to the Harvard University Library Digital Initiative (LDI) project "Western China and Tibet: Hotspot of Diversity" were processed by the Harvard College Library Digital Imaging Group in August 2002. Ree's digital camera images were converted from JPEG to TIFF format, and were then individually edited to compensate for any obvious color casts and to achieve, to the extent possible, natural tone and color. Three versions of each image were deposited to DRS: 1) the unedited JPEGs submitted by Ree; 2) the edited TIFF images; and 3) the delivery JPEG format images, derived from the edited TIFFs. Rationale: the JPEGs submitted by Ree were saved for security, and to demonstrate provenance and the results of image editing. Files were viewed on a calibrated Barco Reference Calibrator V monitor. Editing was performed in an ISO 3664 compliant proofing environment. Both the TIFF format and delivery JPEG images were versions were tagged with an ICC conformant sRGB colorspace profile.

archival_master images	Rick Ree's digital camera images		
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching		
File Format	JPEG		
Resolution	n/a		
Enhancements	none		
Cropping			
Tone Reproduction			
Content (in frame)	unedited image, as photographed		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	0.88 MB	x 165	= 0.1 GB
adjusted (project final)	0.88 MB	x 184	= 0.2 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	<modified />
optres	1600x1200
orientation	
producer	Richard H. Ree
prosoftware	
resunit	2
source	
system	Olympus; C-2020 Zoom
targetnotes	
xres	
yres	

<b>production archival images</b>	generated from Rick Ree's digital camera images
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching
File Format	TIFF, 24-bit, RGB (color), uncompressed
Resolution	n/a
Enhancements	edited to optimize tone and contrast
Cropping	none
Tone Reproduction	none
Content (in frame)	image as photographed
Quality Control	visual inspection, MD5 checksum for 100% of images
File Sizes	<i>per image</i> <i>total # files</i> <i>total</i>
est. (prelim spec)	5.5 MB x 165 = 0.9 GB
adjusted (project final)	5.5 MB x 184 = 1.0 GB
Disposition	deposit to DRS

image metadata	
bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	curves, HSL, levels
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	date file last modified
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x, 7.x
resunit	2
source	
system	CreoScitex; Eversmart Supreme; oXYgen Open v1.x
targetnotes	
xres	
yres	

<b>delivery images, 800 pixels in the long dimension</b>	
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, compressed to minimize file size without introducing obvious artifacts
File Format	JPEG/JFIF with "visually lossless" compression
Resolution	800 pixels in the long dimension
Enhancements	Photoshop unsharp mask
Cropping	none
Tone Reproduction	embedded ICC color profile
Content (in frame)	original image, plus narrow border
Quality Control	visual inspection of sample, MD5 checksum for 100% of images
File Sizes	<i>per image</i> <i>total # files</i> <i>total</i>
est. (prelim spec)	142      KB    x      352      = 0.05 GB
adjusted (project final)	174      KB    x      352      = 0.06 GB
Disposition	deposit to DRS

<b>image metadata</b>	
bitspersample	8 8 8
compression	6
photinterp	2
displayorient	
enhancements	Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x, 7.x
resunit	1
source	
system	
targetnotes	
xres	TBD, images sized to 800 pixels in long dimension
yres	TBD, images sized to 800 pixels in long dimension

delivery images, fit within 600 x 800 pixel limit	
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, compressed to minimize file size without introducing obvious artifacts
File Format	JPEG/JFIF with "visually lossless" compression
Resolution	fit within 600 x 800 pixel limit
Enhancements	Photoshop unsharp mask
Cropping	none
Tone Reproduction	embedded ICC color profile
Content (in frame)	original image, plus narrow border
Quality Control	visual inspection of sample, MD5 checksum for 100% of images
File Sizes	<i>per image</i> <i>total # files</i> <i>total</i>
est. (prelim spec)	142      KB    x      10      = 0.00 GB
adjusted (project final)	174      KB    x      10      = 0.00 GB
Disposition	deposit to DRS

image metadata	
bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x, 7.x
resunit	1
source	
system	
targetnotes	
xres	
yres	

<b>delivery images, 1500 pixels in the long dimension</b>	
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, compressed to minimize file size without introducing obvious artifacts
File Format	JPEG/JFIF with "visually lossless" compression
Resolution	1500 pixels in the long dimension
Enhancements	Photoshop unsharp mask
Cropping	none
Tone Reproduction	embedded ICC color profile
Content (in frame)	original image, plus narrow border
Quality Control	visual inspection of sample, MD5 checksum for 100% of images
File Sizes	<i>per image</i> <i>total # files</i> <i>total</i>
est. (prelim spec)	575      KB    x      11      = 0.01 GB
adjusted (project final)	563      KB    x      11      = 0.01 GB
Disposition	deposit to DRS

<b>image metadata</b>	
bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x, 7.x
resunit	1
source	
system	
targetnotes	
xres	
yres	

---

delivery images, 150 dpi

---

Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, compressed to minimize file size without introducing obvious artifacts		
File Format	JPEG/JFIF with "visually lossless" compression		
Resolution	150 dpi		
Enhancements	Photoshop unsharp mask		
Cropping	none		
Tone Reproduction	embedded ICC color profile		
Content (in frame)	original image, plus narrow border		
Quality Control	visual inspection of sample, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	1669.12 KB x	10	= 0.02 GB
adjusted (project final)	1670.144 KB x	10	= 0.02 GB
Disposition	deposit to DRS		

---

image metadata

bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	
targetnotes	
xres	150
yres	150

---

## Lantern Slide Methodology

Digital images for the Rock Lantern Slide component of the Harvard University Library Digital Initiative (LDI) project "Western China and Tibet: Hotspot of Diversity" were created by the Harvard College Library Digital Imaging Group in 2002. The imaging specification was designed to produce highly detailed "Archival Master" images that, to the extent possible, reproduce the full range of tone, color, and level of detail present in the original film. Each image in this collection was individually edited for tone and color using the original transparency as a reference. Corrections were made for cases where the transparency exhibited obvious exposure or color balance problems. Stains, scratches, and other defects due to age and handling were not altered. Color and tonal corrections were made using Adobe Photoshop 6.xx and 7.xx. Files were viewed on a calibrated Barco Reference Calibrator V monitor. Original transparencies were illuminated with a GTI Soft-View 5000k light source. Editing was performed in an ISO 3664 compliant proofing environment. Image files were corrected and archived as tiff files in the Adobe RGB 1998 color-space. Derivative jpeg files intended for electronic delivery on the Web were converted to the sRGB color-space. All files were saved with embedded ICC compliant color-space profiles.

archival_master images	Glass-mounted transparencies		
Functional Requirements	quality must be sufficient to generate: - detailed on-screen images for study and teaching; publication-quality reprints		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution	2200 dpi		
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	original image, plus narrow border		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	84.45 MB x	11	= 0.9 GB
adjusted (project final)	84.46 MB x	11	= 0.9 GB
Disposition	deposit to DRS		

#### image metadata

bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	datetime file was saved
optres	5000 x 5000
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	2
source	
system	CreoScitex; Eversmart Supreme; oXYgen Open 1.x
targetnotes	
xres	2200
yres	2200

archival_master images	Joseph Rock hand-drawn map		
Functional Requirements	quality must be sufficient to generate: - detailed on-screen images for study and teaching; high-quality reprints		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution	300 dpi		
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	original image, plus narrow border		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	155.65 MB x	10	= 1.5 GB
adjusted (project final)	155.65 MB x	10	= 1.5 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from file header
imagewidth	number of pixels, as extracted from file header
methodology	TBD
modified	datetime file was saved
optres	8000x10660
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	2
source	
system	Betterlight; Super 8k-2; ViewFinder 5.x
targetnotes	
xres	300
yres	300

### Reformatting Specifications

Western China and Tibet: Hotspot of Diversity  
 Arnold Arboretum of Harvard University

**Revision**

Final  
 October 4, 2002

**Contacts**

Sheila Connor	617-524-1718	sconnor@arnarb.harvard.edu
Bill Comstock	6-5241 or 6-9346	william_comstock@harvard.edu
Mingtao Zhao	6-9346	mzhao@fas.harvard.edu
David Remington	6-9346	david_remington@harvard.edu

**Project Summary** (details for each category on following pages)

Categories 1a, 2, 3, 4	product	type	\$ per unit	total #	total \$	total MB	
Rock's Typescript Letters; Unpublished Manuscript; Bulletin of the MCZ; Journal of the AA	image processing	archival_master	\$1.00	691	\$691.00	14	
		archival_prod	n/a				
		delivery_1	n/a				
		delivery_2	n/a				
	metadata	for pages	\$0.00	n/a	\$0.00	n/a	
		for object	\$5.00	216	\$1,080.00	n/a	
	full text		\$0.00	691	\$0.00	2	
	storage			n/a		16	
	SUBTOTALS				1,598	\$1,771.00	31

Category 1	product	type	\$ per unit	total #	total \$	total MB
Handwritten Manuscript Letters	page images	archival_master	N/A*	600		9,000
		archival_prod	n/a			0
		delivery_1	\$0.00	600	\$0.00	8
		delivery_2	n/a			0
	metadata	for pages	n/a	n/a	\$0.00	n/a
		for object	\$5.00	137	\$685.00	n/a
	full text		n/a	n/a		n/a
	storage			n/a		9,008
SUBTOTALS				1,337	\$685.00	18,016
<b>GRAND TOTALS</b>				2,935	\$2,456.00	18,047

**DRS Annual Storage Cost \$180.96** (current rate = \$20.50/GB ... 1,024MB = 1GB)

\* Scanning charges are calculated on a previous imaging specification for categories, 1, 6, 7, 11

# Western China and Tibet: Hotspot of Diversity

Categories 1a, 2, 3, 4 Rock's Typescript Letters; Unpublished Manuscript; Bulletin of the MCZ; Journal of the AA

*brief description of source material*

# of Source Items 713

### Page Image Products

- N/A
- archival\_master
- archival\_production
- delivery\_primary
- delivery\_secondary

### Metadata and Full-Text Products

- N/A
- page-specific structural metadata
- object metadata (MOA2 or other)
- full text for indexing (OCR/keyed)
- machine-readable text for display

### Page Image Specifications *archival\_master*

Functional requirements	quality must be sufficient to generate 1:1 black & white reprints, on -screen images for study and teaching, source images for OCR
File format	TIFF, 1-bit, black & white, Group 4 compressed
Resolution	600 dpi
Tone reproduction	none
Enhancements	image processing: deskew, noise reduction, character completion & smoothing
Content in frame	page image
Cropping	none
Quality control	visual inspection, MD5 checksum for 100% of images
Estimated number	691
Est. average file size (MB)	0.02
Repository (destination)	DRS

### Page Image Specifications *archival\_production*

Functional requirements	
Enhancements	
Resolution	
Tone reproduction	
Enhancements	
Content in frame	
Cropping	
Quality control	
Estimated number	
Est. average file size (MB)	
Repository (destination)	

### Page Image Specifications *delivery\_primary*

Functional requirements	
File format	GIF created on-the-fly by PDS
Resolution	
Tone reproduction	
Enhancements	
Content in frame	
Cropping	
Quality control	
Estimated number	
Est. average file size (MB)	
Delivery system	

**Page Image Specifications** *delivery\_secondary*

Functional requirements	
File format	
Resolution	
Tone reproduction	
Enhancements	
Content in frame	
Cropping	
Quality control	
Estimated number	
Est. average file size (MB)	
Delivery system	

**METADATA**

**Structural Metadata for Each Page Image** (check all that apply)

Filename syntax	<a href="#">Item Control Number, page sequence, tif extension (e.g., rif19_1_0001.tif)</a>
Sequence number	<input checked="" type="checkbox"/>
Page numbering syntax	<input type="checkbox"/> no pagination
	<input checked="" type="checkbox"/> Arabic numbers, all pages
	<input type="checkbox"/> Roman numerals, all pages <a href="#">[lower-case, upper case]</a>
	<input type="checkbox"/> syntax varies for front matter, body, end matter: <a href="#">[provide details]</a>
Page label	<input type="checkbox"/> no page label
	<input checked="" type="checkbox"/> same label, all pages: <i>Page</i>
	<input type="checkbox"/> syntax varies for front matter, body, end matter: <a href="#">[provide details]</a>
Feature code	<input checked="" type="checkbox"/> none
	<input type="checkbox"/> from following project list, as applicable: <a href="#">[list feature codes here]</a>

**Structural Metadata for Digital Object** (check all that apply)

<b>MOA2 XML file</b>	<input checked="" type="checkbox"/> simple <i>(specification provided by library in separate document)</i>
	<input type="checkbox"/> complex <i>(specification provided by library in separate document)</i>
Total number	216
<b>Other</b>	
Repository (destination)	DRS

**Full Text for Indexing** (check all that apply)

<b>OCR</b>	<input type="checkbox"/> uncorrected ("raw OCR")
	<input checked="" type="checkbox"/> all pages: all low-confidence text (as identified by the OCR software) will be reviewed for correction. No claims are made as to overall accuracy. selected pages = or > ___ % <a href="#">[character, word, search]</a> accuracy per page <a href="#">All words identified by OCR software as low confidence "suspects" , will be reviewed by DIG technician. No claims of percent-accuracy are made.</a>
Additional requirements	<a href="#">[e.g., join words split by end-of-line hyphens]</a>
Text format (output)	ASCII
Number of text files (output)	713
Indexing system	ABBYY FineReader 5.x
<b>Keyed text</b>	meet or exceed ___ % <a href="#">[character, word]</a> accuracy per page
Additional requirements	
Text format (output)	
Indexing system	

## DEPOSIT TO DRS

### Batch XML (base metadata) (category-specific elements only)

relationshipMap	<input type="checkbox"/>
relationship	<input type="checkbox"/>
urnMap	<input checked="" type="checkbox"/> MOA2 files only
urnmask	<input checked="" type="checkbox"/> nrs:ARB.JPLIB:{n}
access	P
<objectData>	
ownerSuppliedName	TIFF = Item Control Number, page sequence, file extension (e.g., rif19_1_0001.tif); MOA2 = DIG supplied
role	
purpose	
quality	
fileFormat	ASCII text
createDate	<input type="checkbox"/>
access	P
signature	MD5 checksum

### Page Image Metadata (<imageMetadata>)

bitspersample	1
compression	4
photointerp	0
xres	600
yres	600
resunit	2
imagewidth	number of pixels, as extracted from header
imageheight	number of pixels, as extracted from header
orientation	
modified	datetime file was saved (by HCL DIG)
targetnotes	
history	
source	
system	Fujitsu M3097DG; PixView 3.x
producer	Harvard College Library Digital Imaging Group
optres	400
prosoftware	TMS Sequoia; ScanFix 4.x
enhancements	deskew, noise reduction, character completion & smoothing
methodology	TBD

### INTERIM STORAGE

media	
number of copies	
signature	
metadata	

# Western China and Tibet: Hotspot of Diversity

## Category 1 Handwritten Manuscript Letters

*brief description of source material*

**# of Source Items** 198 letters, 533 pages

### Page Image Products

- n/a
- archival\_master
- archival\_production
- delivery\_primary
- delivery\_secondary

### Metadata and Full-Text Products

- n/a
- page-specific structural metadata
- object metadata (MOA2 or other)
- full text for indexing (OCR/keyed)
- machine-readable text for display

### Page Image Specifications *archival\_master*

Functional requirements	quality must be sufficient to generate: on-screen images for study and teaching, 1:1 publication-quality reprints
File format	TIFF, 24-bit RGB, uncompressed
Resolution	~233ppi, other resolutions TBD based on size of source material
Tone reproduction	Embedded ICC profile, associated DIG composite colorbar, grayscale, ruler
Enhancements	hue/saturation, curves, and unsharp mask
Content in frame	Letter Page, narrow border that reveals a black background; image aligned to page
Cropping	
Quality control	visual inspection, MD5 checksum for 100% of images
Estimated number	600
Est. average file size (MB)	15.00
Repository (destination)	DRS

### Page Image Specifications *archival\_production*

Functional requirements	
Enhancements	
Resolution	
Tone reproduction	
Enhancements	
Content in frame	
Cropping	
Quality control	
Estimated number	
Est. average file size (MB)	
Repository (destination)	

### Page Image Specifications *delivery\_primary*

Functional requirements	legible on-screen, delivered using PDS
File format	JPEG, color, low-compression to minize both filesize and compression artifacts
Resolution	100dpi
Tone reproduction	embedded ICC profile
Enhancements	unsharp mask
Content in frame	same as archival_master
Cropping	none
Quality control	visual inspection, MD5 checksum for 100% of images
Estimated number	600
Est. average file size (MB)	0.014
Delivery system	IDS

**Page Image Specifications** *delivery\_secondary*

Functional requirements	
File format	
Resolution	
Tone reproduction	
Enhancements	
Content in frame	
Cropping	
Quality control	
Estimated number	
Est. average file size (MB)	
Delivery system	

**METADATA**

**Structural Metadata for Each Page Image** (check all that apply)

Filename syntax	<a href="#">image files = Item Control Number, page sequence, file extension (e.g., 19_1_0001.tif); MOA2 = DIG supplied</a>
Sequence number	
Page numbering syntax	<input checked="" type="checkbox"/> no pagination
	<input type="checkbox"/> Arabic numerals, all pages (derived from page-image sequence)
	<input type="checkbox"/> Roman numerals, all pages <a href="#">[lower-case, upper case]</a>
	<input type="checkbox"/> syntax varies for front matter, body, end matter: <a href="#">[provide details]</a>
Page label	<input type="checkbox"/> no page label
	<input checked="" type="checkbox"/> same label, all pages: <i>Page</i>
	<input type="checkbox"/> syntax varies for front matter, body, end matter: <a href="#">[provide details]</a>
Feature code	<input type="checkbox"/> none
	<input type="checkbox"/> from following project list, as applicable: <a href="#">[list feature codes here]</a>

**Structural Metadata for Digital Object** (check all that apply)

<b>MOA2 XML file</b>	<input type="checkbox"/> simple <i>(specification provided by library in separate document)</i>
	<input checked="" type="checkbox"/> complex <i>(specification provided by library in separate document)</i>
Total number	137
<b>Other</b>	
Repository (destination)	DRS

**Full Text for Indexing** (check all that apply)

<b>OCR</b>	<input type="checkbox"/> uncorrected ("raw OCR")
	<input type="checkbox"/> all pages = or > ___ % <a href="#">[character, word, search]</a> accuracy per page
	<input type="checkbox"/> selected pages = or > ___ % <a href="#">[character, word, search]</a> accuracy per page
	<a href="#">[explain "selected pages" here]</a>
Additional requirements	<a href="#">[e.g., join words split by end-of-line hyphens]</a>
Text format (output)	
Number of text files (output)	
Indexing system	
<b>Keyed text</b>	meet or exceed ___ % <a href="#">[character, word]</a> accuracy per page
Additional requirements	
Text format (output)	
Indexing system	

## DEPOSIT TO DRS

### Batch XML (base metadata) (category-specific elements only)

relationshipMap	<input checked="" type="checkbox"/>
relationship	<input checked="" type="checkbox"/>
urnMap	<input checked="" type="checkbox"/> MOA2 files only
urnmask	<input checked="" type="checkbox"/> nrs:ARB.JPLIB:{n}
access	P
<objectData>	
ownerSuppliedName	DIG supplied (I.e., filename less extension)
role	
purpose	
quality	
fileFormat	ascii text
createDate	<input type="checkbox"/>
access	archival_master = N; delivery = P
signature	MD5 checksum

### Page Image Metadata (<imageMetadata>)

bitspersample	archival_master = 8 8 8; delivery = 24
compression	archival_master = 1; delivery = 6
photointerp	archival_master = 2; delivery = 2
xres	TBD, based on size of original
yres	TBD, based on size of original
resunit	archival_master = 1; delivery = 2
imagewidth	number of pixels, as extracted from header
imageheight	number of pixels, as extracted from header
orientation	
modified	datetime file was saved (by HCL DIG)
targetnotes	
history	
source	
system	CreoScitex; Leaf Volare; Leaf ColorShop 6.x
producer	Harvard College Library Digital Imaging Group
optres	3072x2048
prosoftware	archival_master = n/a; delivery = Photoshop 6.x
enhancements	delivery = unsharp mask
methodology	TBD

## INTERIM STORAGE

media	
number of copies	
signature	
metadata	

Harvard University Library, Library Digital Initiative  
 Digital Imaging Specifications: HUH 35mm slides  
 Western China and Tibet, Arnold Arboretum

**Contacts**

Arnold Arboretum            Sue Kriegsman, suzanne\_kriegsman@harvard.edu, 495-3724  
                                       Sheila Connor, sconnor@arnarb.harvard.edu, 617-524-1718  
 HCL DIG:                        Bill Comstock, william\_comstock@harvard.edu, 496-5241  
                                       David Remington, david\_remington@harvard.edu, 496-9346

**Project Summary of Imaging and DRS Services\***

	HCL-DIG imaging costs			DRS costs (\$.02 per MB)			
	\$ per image*	# files	subtotal	size (MB)	total MB	subtotal	
<b>(8) HUH 35mm Slides</b>							
archival_master	24-bit TIFF	\$5.00	1,564	\$7,820.00	22.00	34,408	\$688.83
delivery image	JPEG/JFIF	<i>included</i>	1,564		0.20	305	\$6.12
			<b>3,128</b>	<b>\$7,820.00</b>		<b>34,713</b>	<b>\$694.95</b>
<b>Grand Totals</b>			<b>3,128</b>	<b>\$7,820.00</b>		<b>34,713</b>	<b>\$694.95</b>
						<b>DRS storage =</b>	<b>33.9 GB<sup>+</sup></b>

\* imaging = scanning, production of delivery images, image metadata, QC, deposit to DRS

DRS service = storage, preservation...and delivery services (IDS)

<sup>+</sup> 1,024 MB = 1 GB

---

**archival\_master images**

---

Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, high-quality reprints, up to 8"x10"		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution	2540		
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	complete slide film image		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	22 MB x	1,500	= 32.2 GB
adjusted (project final)	20.12 MB x	1,564	= 30.7 GB
Disposition	deposit to DRS		

---

**image metadata**

---

bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	
history	
imageheight	number of pixels, as extracted from TIFF header
imagewidth	number of pixels, as extracted from TIFF header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	
resunit	2
source	35mm color reversal film
system	CreoScitex; Eversmart Supreme; oXYgen 1.x
targetnotes	
xres	2540
yres	2540

---

---

delivery images -- derived from archival\_master images

---

Functional Requirements	quality must be sufficient to generate: - images optimized for legibility on-screen and to minimize scrolling; reprint quality not required		
File Format	JPEG/JFIF with "visually lossless" compression		
Resolution	variable, sized 800 pixels in long dimension		
Enhancements	Photoshop™ unsharp mask		
Cropping	none		
Tone Reproduction	hand-adjusted during scanning at discretion of technician; embedded ICC color profile		
Content (in frame)	complete slide film image		
Quality Control	visual inspection of sample, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	200 KB	x 1,500	= 0.29 GB
adjusted (project final)	0 KB	x 0	= 0.00 GB
Disposition	deposit to DRS		

---

image metadata

bitspersample	24
compression	6
photinterp	2
displayorient	
enhancements	Photoshop™ unsharp mask
history	
imageheight	number of pixels, as extracted from JPEG header
imagewidth	number of pixels, as extracted from JPEG header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	
targetnotes	
xres	TBD, images sized to 800 pixels in long dimension
yres	TBD, images sized to 800 pixels in long dimension

---



## Photo Methodology for Batch009

Digital images of photographs from the Harvard-Yenching Library were created for the Harvard University Library Digital Initiative (LDI) project, "Western China and Tibet: Hot spot of Diversity", in October and November of 2001 by the Harvard College Library Digital Imaging Group. The imaging specification was designed to produce archival\_master images capable of producing high-quality reprints at a 1:1 scale. The imaging specification for "delivery" images was designed to produce images optimized for viewing within VIA, on the Web.

Archival\_master images were created by digitally photographing 8"x10" photographic contact sheets made from 4"x5" copy negatives. As contact prints, produced by grouping 4 negatives per 8"x10" sheet, the prints are not careful renderings of the individual negatives. The process of printing multiple negatives with a single exposure necessitated a compromise which rendered some of the reproductions too dark and some too light. To compensate for these deficiencies in the prints, our camera exposure and contrast curve were varied (as needed) based on the density of each photographic image. Images produced at the camera were first exported as 16-bit RGB files; this allowed for subsequent image processing to be performed on the richest possible data set (i.e., image file). Using Adobe Photoshop, an automatic adjustment curve using white, black, and middle gray values of 235, 118, and 32 was applied, followed by the application of a second curve that slightly opened the deep shadows. Archival\_master files were then saved as 8 bit, grayscale TIFF images.

Following photography, delivery images were created in batches by processing the archival\_master files using a set of Adobe Photoshop "Actions". The Adobe Photoshop Action-set produced JPEG delivery images with horizontal dimensions of less than or equal to 800 pixels, and vertical dimensions of less than or equal to 600 pixels, that were sharpened using an unsharpmask.

Harvard University Library, Library Digital Initiative  
Digital Imaging Specifications: Photographic Negatives, Final  
Western China and Tibet, Arnold Arboretum

**Contacts**

Arnold Arboretum      Sue Kriegsman, [suzanne\\_kriegsman@harvard.edu](mailto:suzanne_kriegsman@harvard.edu), 495-3724  
                                 Sheila Connor, [sconnor@arnarb.harvard.edu](mailto:sconnor@arnarb.harvard.edu), 617-524-1718  
HCL DIG:                 Bill Comstock, [william\\_comstock@harvard.edu](mailto:william_comstock@harvard.edu), 496-5241  
                                 David Remington, [david\\_remington@harvard.edu](mailto:david_remington@harvard.edu), 496-9346

---

[archival\\_master images, negatives](#)

---

Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching, 1:1 publication-quality reprints		
File Format	TIFF, 8-bit, uncompressed		
Resolution	approximately 700dpi		
Enhancements	none		
Cropping	none		
Tone Reproduction	embedded ICC profile		
Content (in frame)	complete slide film image		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	6.4 MB x	7	= 0.0 GB
adjusted (project final)	6.4 MB x	7	= 0.0 GB
Disposition	deposit to DRS		

---

image metadata

bitspersample	8
compression	1
photointerp	1
displayorient	
enhancements	Curves, Levels, Layer Blending
history	
imageheight	number of pixels, as extracted from TIFF header
imagewidth	number of pixels, as extracted from TIFF header
methodology	
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	1
source	Silver Gelatin Negative
system	CreoScitex; EverSmart Supreme; Oxygen Scan 1.x
targetnotes	
xres	
yres	

---

## Plant Specimen Methodology

Plant type specimens were digitized for the Harvard University Library Digital Initiative (LDI) project, "Western China and Tibet: Hot spot of Diversity", in April of 2002 by the Harvard College Library Digital Imaging Group. The imaging specification was designed to produce archival\_master images capable of producing high-quality reprints, up to 8x10 inches. The imaging specification for "delivery" images was designed to produce images optimized for viewing on the Web.

Archival\_master images were created by digitally photographing the specimens at a copystand. The specimens were surrounded on four sides by vertical white cardstock walls, and were illuminated from above, left and right, by diffused 72 watt (36 watt times 2 lamps per bank), 5000K florescent lamps. Based on reviewing a sample of the specimens, "Curve" and "Hue/Saturation" adjustments were developed in Photoshop and subsequently applied to all the images in order to attain a closer match to the originals. Archival\_master images have been embedded with an ICC color profile (Adobe RGB (1998)).

Delivery images were created in batches by processing the archival\_master files using a set of Adobe Photoshop "Actions" that resized and sharpened the images using an unsharpmask filter. All delivery images have been converted to the sRGB IEC61966-2.1 colorspace and embedded tagged with the ICC color profile.

**Digital Imaging Specifications, Category 13, *Rock Herbarium Specimens***  
Western China and Tibet: Hotspot of Diversity,  
Arnold Arboretum of Harvard University

Contacts

Project Manager: Sheila Connor, [sconnor@arnarb.harvard.edu](mailto:sconnor@arnarb.harvard.edu), 617-524-1718  
 Vendors(s): Bill Comstock, HCL DIG, [comstock@fas.harvard.edu](mailto:comstock@fas.harvard.edu), 617-496-5241 or 6-9346  
 David Remington, HCL DIG, [david\\_remington@harvard.edu](mailto:david_remington@harvard.edu), 617-496-9346

**SUMMARY**

<b>Project Summary of Imaging and DRS Services</b>							
	<b>HCL-DIG imaging costs</b>			<b>DRS costs (anticipated FY03)*</b>			
	\$ per image	# files	subtotal	size (MB)	total GB	subtotal	
<b>(category 13) Boufford Herbarium Specimens</b>							
archival_master	24-bit TIFF	\$8.00	201	\$1,608.00	16.80	3	\$16.49
lg. delivery image	JPEG/JFIF	<i>included</i>	201		0.23	0.04	\$0.22
med. delivery image	JPEG/JFIF	<i>included</i>	201		0.07	0.01	\$0.07
sm. delivery image	JPEG/JFIF	<i>included</i>	201		0.00	0.00	\$0.00
			<b>804</b>	<b>\$1,608.00</b>	<b>17</b>	<b>3</b>	<b>\$16.78</b>
Specification development and sample preparation				<b>\$300.00</b>			
<b>Grand Totals</b>			<b>804</b>	<b>\$1,908.00</b>		<b>3</b>	<b>\$16.78</b>

**SPECIFICATIONS**  
**CATEGORY 13, ROCK HERBARIUM SPECIMENS**

<a href="#">archival_master images</a>			
Functional Requirements	quality must be sufficient to generate: - on-screen images for study and teaching; high-quality reprints, up to 8"x10"		
File Format	TIFF, 24-bit, RGB (color), uncompressed		
Resolution	approximately 172dpi		
Enhancements	tone and color adjusted in batches to match originals		
Cropping	none		
Tone Reproduction	embedded ICC profile: Adobe RGB (1998); associated tone and scale reference		
Content (in frame)	complete specimen card plus narrow black border		
Quality Control	visual inspection, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	17 MB	x 238	= 4.0 GB
adjusted (project final)	16.8 MB	x 201	= 3.3 GB
Disposition	deposit to DRS		

image metadata	
bitspersample	8 8 8
compression	1
photointerp	2
displayorient	
enhancements	tone and color adjusted in batches to match originals
history	
imageheight	number of pixels, as extracted from TIFF header
imagewidth	number of pixels, as extracted from TIFF header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	CreoScitex; Leaf Volare; Leaf Colorshop 6.x
targetnotes	
xres	TDB
yres	TBD

---

### CATEGORY 13, ROCK HERBARIUM SPECIMENS:

[large delivery images -- derived from archival\\_master images](#)

---

Functional Requirements	quality must be sufficient to generate: - highly detailed on-screen images for study		
File Format	JPEG/JFIF, compressed to minimize file size without introducing obvious artifacts		
Resolution	approximately 172 dpi		
Enhancements	Adobe Photoshop unsharp mask		
Cropping	none		
Tone Reproduction	embedded ICC color profile: sRGB IEC61966-2.1		
Content (in frame)	complete specimen card plus narrow black border		
Quality Control	visual inspection of sample, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	1000 KB x	238	= 0.23 GB
adjusted (project final)	0 KB x	0	= 0.00 GB
Disposition	deposit to DRS		

---

#### image metadata

bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	Adobe Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from JPEG header
imagewidth	number of pixels, as extracted from JPEG header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	
targetnotes	
xres	TBD
yres	TBD

---

---

medium delivery images -- derived from archival_master images	
Functional Requirements	quality must be sufficient to generate: - detailed on-screen images for study
File Format	JPEG/JFIF, compressed to minimize file size without introducing obvious artifacts
Resolution	50% of full resolution version (approximately 1000 pixels in short dimension)
Enhancements	Adobe Photoshop unsharp mask
Cropping	none
Tone Reproduction	embedded ICC color profile: sRGB IEC61966-2.1
Content (in frame)	complete specimen card plus narrow black border
Quality Control	visual inspection of sample, MD5 checksum for 100% of images
File Sizes	<i>per image</i> <i>total # files</i> <i>total</i>
est. (prelim spec)	300      KB      x                      238      =      0.07      GB
adjusted (project final)	0        KB      x                      0        =      0.00      GB
Disposition	deposit to DRS

image metadata	
bitspersample	8 8 8
compression	6
photointerp	2
displayorient	
enhancements	Adobe Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from JPEG header
imagewidth	number of pixels, as extracted from JPEG header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	
targetnotes	
xres	TBD
yres	TBD

---

---

small delivery images -- derived from archival\_master images

Functional Requirements	quality must be sufficient to generate: - thumbnail reference images		
File Format	JPEG/JFIF, compressed to minimize file size without introducing obvious artifacts		
Resolution	sized to 150 pixels in short dimension		
Enhancements	Adobe Photoshop unsharp mask		
Cropping	none		
Tone Reproduction	embedded ICC color profile: sRGB IEC61966-2.1		
Content (in frame)	complete specimen card plus narrow black border		
Quality Control	visual inspection of sample, MD5 checksum for 100% of images		
File Sizes	<i>per image</i>	<i>total # files</i>	<i>total</i>
est. (prelim spec)	20 KB x	238	= 0.00 GB
adjusted (project final)	0 KB x	0	= 0.00 GB
Disposition	deposit to DRS		

image metadata

bitspersample	8 8 8
compression	6
photinterp	2
displayorient	
enhancements	Adobe Photoshop unsharp mask
history	
imageheight	number of pixels, as extracted from JPEG header
imagewidth	number of pixels, as extracted from JPEG header
methodology	[see <i>Note</i> at end of this Specification]
modified	datetime file was saved
optres	
orientation	
producer	Harvard College Library Digital Imaging Group
prosoftware	Adobe Photoshop 6.x
resunit	2
source	
system	
targetnotes	
xres	TBD
yres	TBD

---

AA project text scanning sample - category 1a: Typescript Letters - OCR - 1925/04/19 letter

05/30/2001

Hinchow, S. W\* Kansu April 19, 1925

My dear Prof .Sargent, Last I wrote to you was from Mienohow, Szechwan, and now I am writing you from Minchow, Kansu, where we all arrived safely. From Mienohow, Szechwan, we made our way to Chungpa, one stage north, and there I dismissed the exorbitant Zechman mule-caravan and engaged Kansu muletiers at just half the price and they are going to see me all the way to Hsining. Once we reach Pikow, the first sort of town in the extreme of Kansu, all our worries as to safety are over. From Chungpa in Szechwan we went to Chingchuan a little (one stage) east of Lunganfu. The latter place we did not visit as it would have been a round about way into Kansu and 130 Li longer. From Chingchuan which is not on any foreign maps, a caravan road leads over an easy pass (but over a terrific trail) into Kansu. It is three days from Chingchuan to Pikow in Kansu. The Szechwan border troops escorted us to a hamlet called Motzaping, the first village in Kansu, and there we were met by the Pikow Kansu border troops who escorted us to Pikow. The officials were all very courteous and very friendly. We collected a lot of plants enroute, but strange to say met with only one species of Rhododendron in flower. The season is here apparently rather late. All the trees are still bare and only a few show their buds now. The willows are the only trees now in foliage.

From Pikow on the Won Hsien ho (river) or Te Shui ho as it is on the maps, we followed that river 40 Li and thence turned up the Wutu or Xaichow ho (river) to Wutu or Kaichow, the latter being the old memo\*. This took five days. From Kaichow, where we stopped one day taking care of our collection, seeing officials, etc. we followed the Kaichow ho for four days and thence up the Hinchow ho to Minchow, a journey of usually six days but it took us seven days owing to trouble on the road. The country is

Minchow, S. W. Kansu April 19, 1925

My dear Prof .Sargent, Last I wrote to you was from Mienohow, Szechwan, and now I am writing you from Minchow, Kansu, where we all arrived safely. From Mienohow, Szechwan, we made our way to Chungpa, one stage north, and there I dismissed the exorbitant Zechman mule-caravan and engaged Kansu muletiers at just half the price and they are going to see me all the way to Hsining. Once we reach Pikow, the first sort of town in the extreme of Kansu, all our worries as to safety are over. From Chungpa in Szechwan we went to Chingchuan a little (one stage) east of Lunganfu. The latter place we did not visit as it would have been a round about way into Kansu and 130 Li longer. From Chingchuan which is not on any foreign maps, a caravan road leads over an easy pass (but over a terrific trail) into Kansu. It is three days from Chingchuan to Pikow in Kansu. The Szechwan border troops escorted us to a hamlet called Motzaping, the first village in Kansu, and there we were met by the Pikow Kansu border troops who escorted us to Pikow. The officials were all very courteous and very friendly. We collected a lot of plants enroute, but strange to say met with only one species of Rhododendron in flower. The season is here apparently rather late. All the trees are still bare and only a few show their buds now. The willows are the only trees now in foliage. From Pikow on the Won Hsien ho (river) or Te Shui ho as it is on the maps, we followed that river 40 Li and thence turned up the Wutu or Xaichow ho (river) to Wutu or Kaichow, the latter being the old memo. This took five days. From Kaichow, where we stopped one day taking care of our collection, seeing officials, etc. we followed the Kaichow ho for four days and thence up the Minchow ho to Minchow, a journey of usually six days but it took us seven days owing to trouble on the road. The country is absolutely bare and barren - only rocks, rocks and rocks. I could have counted the trees on the whole way up from Pikow. My boys, used to