

## An “Angel Project” of Dinosaur Proportions<sup>2</sup>

### BACKGROUND

“Angel Projects,”<sup>3</sup> traditionally held in conjunction with the American Institute for Conservation (AIC) annual meetings, provide local collections in need of conservation assistance with exposure to conservators interested in contributing their expertise. This version of an “Angel Project,”<sup>4</sup> a modified version organized to coincide with the Society of American Archivist’s (SAA) annual meeting, served as a pilot to work out and demonstrate a proposed procedure for the processing, rehousing, and reformatting of an important collection of historic scientific illustrations (fig. 1).

### INTRODUCTION

To cope with the enormous number of materials in their holdings, some archivists and collection managers, in the past, occasionally invoked a well meaning rule for ranking

collections in need of care: original materials that had been published (i.e. had been made accessible through reproduction) might be ranked lower, with respect to preservation priority, than those that have not. There appears to have been times when this guideline was advocated for the sake of storage or short term cost benefit, with the unfortunate consequence that published materials were allowed to be discarded. The view that objects that have been reproduced are potentially expendable is not new, as there is even an interesting medieval precedence.

To scholars of Icelandic history and culture, the *Sturlunga sagas*, a large compilation of sagas named after an influential Icelandic family in the thirteenth-century, provide rich insight into the social and economic forces that were present in medieval Iceland.<sup>5</sup> In the late fourteenth century, there were produced two vellum copies of this manuscript. When the 13th century original was lost, the 14th century vellum copies were, in effect, regulated to the status of “archival originals” (i.e. the oldest surviving examples). However, in the seventeenth century, to further increase access, the vellum copies were themselves transcribed into books made from inexpensive imported paper. After the information on the older vellum manuscripts had been transferred to the more accessible and easily read paper substrates, the “outdated” vellum codices were considered relatively valueless by the contemporary population. One of the copies was, for instance, cut up into a pattern for making clothes!<sup>6</sup>

Although it is fortunate that the stories detailed on those vellum folios were preserved for future use, it is highly unfortunate that all of the information inherent to the bound

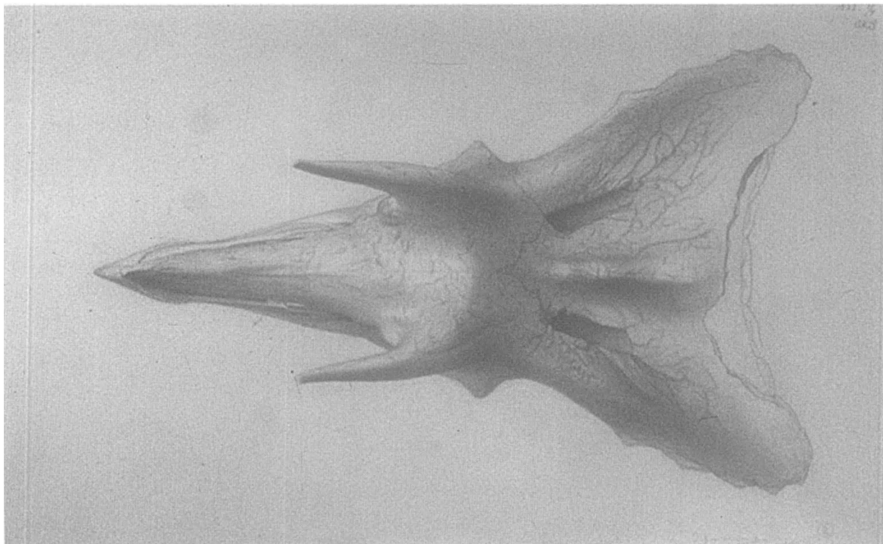


Fig. 1a. Top view of a Triceratops skull (Yale University specimen). Published as lithographs in *The Ceratopsia*, 1907

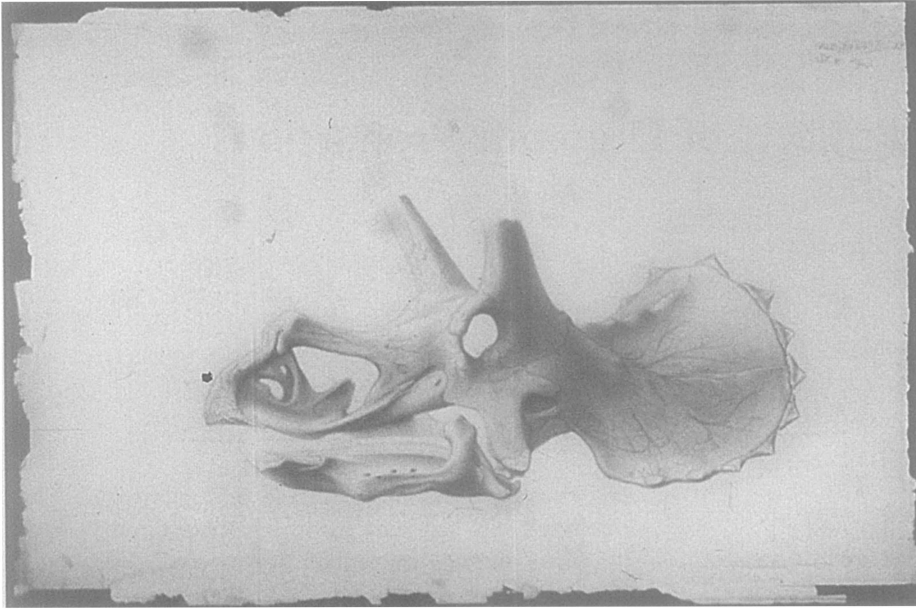


Fig. 1b. Side view of a Triceratops skull (Yale University specimen). Published as lithographs in *The Ceratopsia*, 1907

vellum volumes can no longer be accessed by modern day scholars of Icelandic history. As the seventeenth-century Icelanders viewed access as a viable means of preserving the information that was important to their cultural heritage, over two hundred years later some collection caretakers have, at times, embraced a similar line of reasoning. One case in point involves the preservation of scientific illustration collections, which, due to the very nature of their production (for the purpose of publication) makes them an ideal example of the rule: what is published soon may perish.

ACCESS: THE FREEDOM OR ABILITY TO READILY PROVIDE AND/OR RECEIVE INFORMATION.

An increased demand for access to accurate scientific illustration in the 19th century was met by an explosion of new color and graphic techniques, such as the application of hand coloring to the then standard monochrome copper engraving and, in 1818, intaglio colored prints.<sup>7</sup> Although these techniques offered an increased amount of visual clarity, they were only available in limited editions and thus could not meet the great need for volumes. In 1822, lithog-

raphy was introduced to the scientific community in that year's volume of the *American Journal of Science and Art*.<sup>8</sup> The lithographic medium proved to be particularly well suited to the needs of scientific illustration. Not only did the process allow the illustrator an increased amount of participation in the printing of the illustration, an act that was not possible with engraving techniques, but the product could also be produced on a much larger scale, thereby providing the necessary volumes that were desired.<sup>9</sup>

After the information has been made accessible through publication or reproduction, original illustrations and other related sketches and materials, noted and valued for their beauty by scientists

and curators, have sometimes been used as decorative art (fig. 2). Other times, they have been thrown away or left in piles to deteriorate unnoticed. This fate almost befell one of the most famous collections of drawings produced in the late nineteenth-century, the dinosaur type specimen illustrations of the O.C. Marsh Collection, portions of which are now at the Smithsonian Institution (SI).<sup>10</sup>

Paleontologist Othniel Charles Marsh, under the auspices of the U.S. Geological Survey and Yale University,

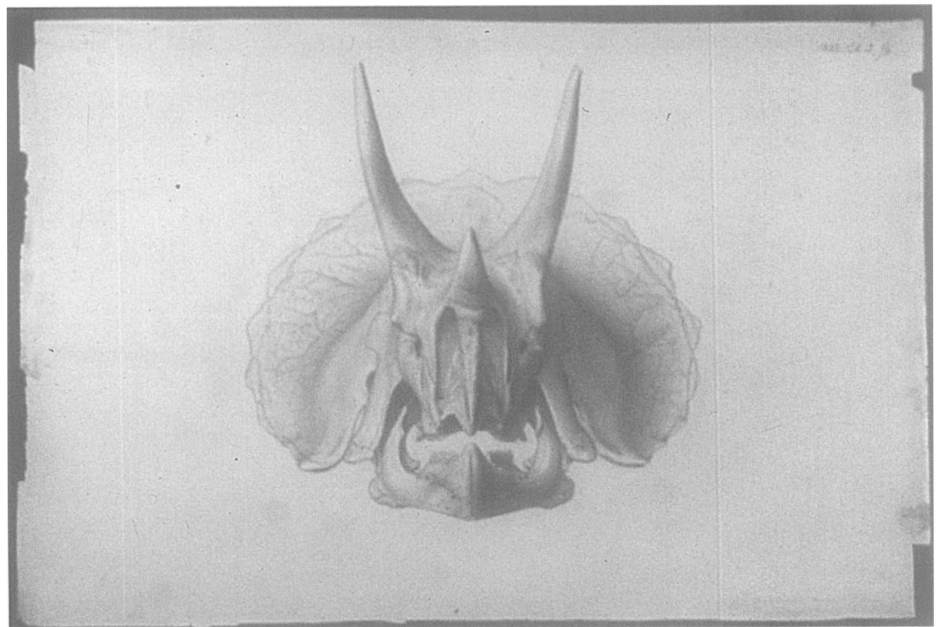


Fig. 1c. Front view of a Triceratops skull (Yale University specimen). Published as lithographs in *The Ceratopsia*, 1907



Fig. 2. Original type specimen illustrations are often used to decorate walls, leading to loss of research value as they fade and yellow from light exposure

was responsible for discovering and naming many of the dinosaurs that are household names today, such as Triceratops and Brontosaurus (now known as Apatasaurus). The immense collection he amassed in the late nineteenth-century now forms the core of the dinosaur collection in the Division of Vertebrate Paleobiology at the National Museum of Natural History (NMNH), SI. In the 1980's, the original drawings of the specimens, prepared under the direction of Marsh for use in a series of important monographs (fig. 3) that were to provide the first details as to the orders and families of ver-

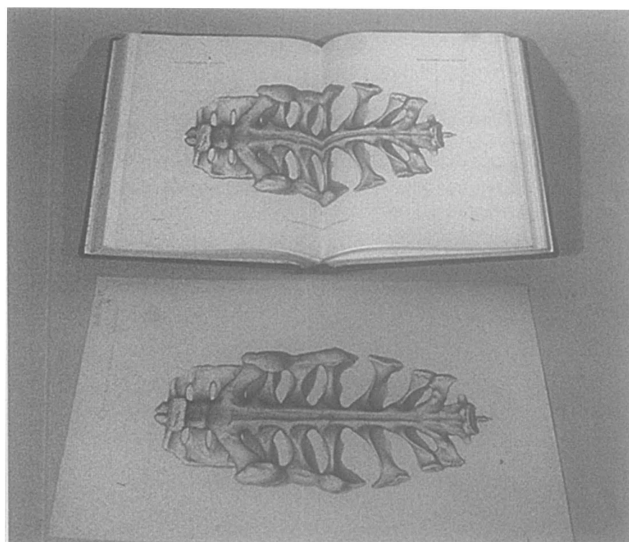


Fig. 3. Original drawing of a Triceratops sacrum with the corresponding lithographic print found in *The Ceratopsia*, 1907

tebrates while “illustrating them in the most artistic manner,”<sup>11</sup> were unearthed by a museum specialist who was investigating water damaged objects stored on the tops of cabinets in the department’s type specimen room.

The Smithsonian’s collection holds approximately 1,700 of these drawings, preparatory sketches and tracings found organized in folders that identify the specimen and the view that is depicted in the drawing, as well as identifying the drawings as having been either a wood-cut<sup>12</sup> or a lithograph (fig. 4).

When the Marsh illustration collection was located, its continuing historic and scientific value was assessed by some members of the department as being extremely high, despite the fact that it had been published. The drawings

were offered to an archives that, due to their policies, were unable to accept them. Indeed, they reiterated the early principal of attributing a low preservation value to published materials.

PRESERVATION: A SYSTEMATIC PROGRAM ON A REPOSITORY-OR COLLECTION-LEVEL BASIS FOR EXTENDING THE LIFE OF THE CARRIERS OF INFORMATION TO SERVE THE PURPOSE FOR WHICH THE CARRIERS AND THE INFORMATION THEY CONTAIN WERE ACQUIRED. DAVID B. GRACY II<sup>13</sup>

In July of 1995, approximately ten years after the rediscovery of the illustrations, the Conservation Analytical Laboratory’s (CAL) Paper Conservation Lab, SI, was notified about the collection, its current housing (the drawings had been moved from the cabinet tops into wooden storage drawers in the department’s type specimen room), and its relative condition. CAL, in collaboration with the Society of American Archivists (SAA), the Office of the Smithsonian Institution Archives (OSIA) and the Division of Vertebrate Paleobiology, NMNH, and with supporting materials and advice from the Library of Congress (LC) the National Archives and Records Administration (NARA) and the National Park Service (NPS), organized an “Angel Project.”

An integrated approach to the preservation of the collection was devised to reduce incidents of physical contact with the illustrations found within the collection (fig. 5). The process began with the completion of a Preservation

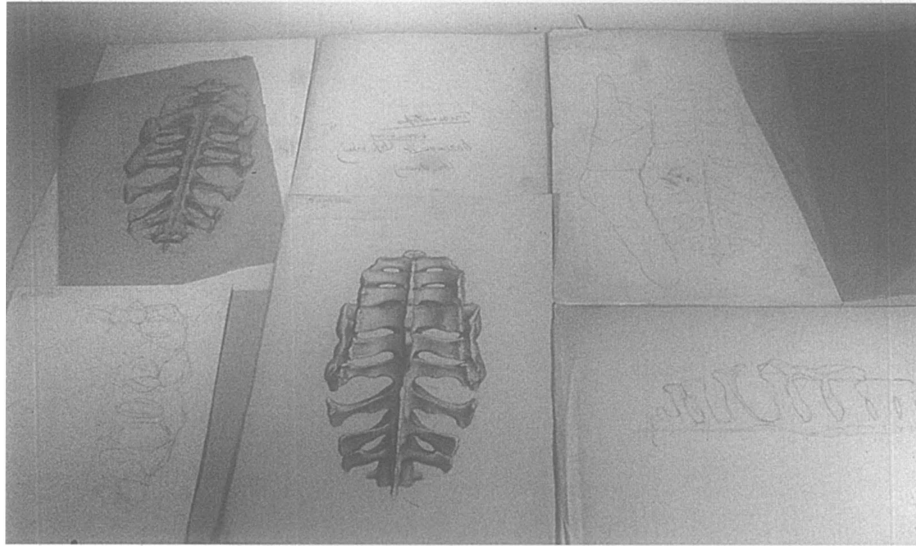


Fig. 4. The contents of the folder labeled "Triceratops sacrum 1/4 (top view):" the final drawing, 6 preparatory sketches, and the final tracing that was used to transfer the image to the lithographic stone

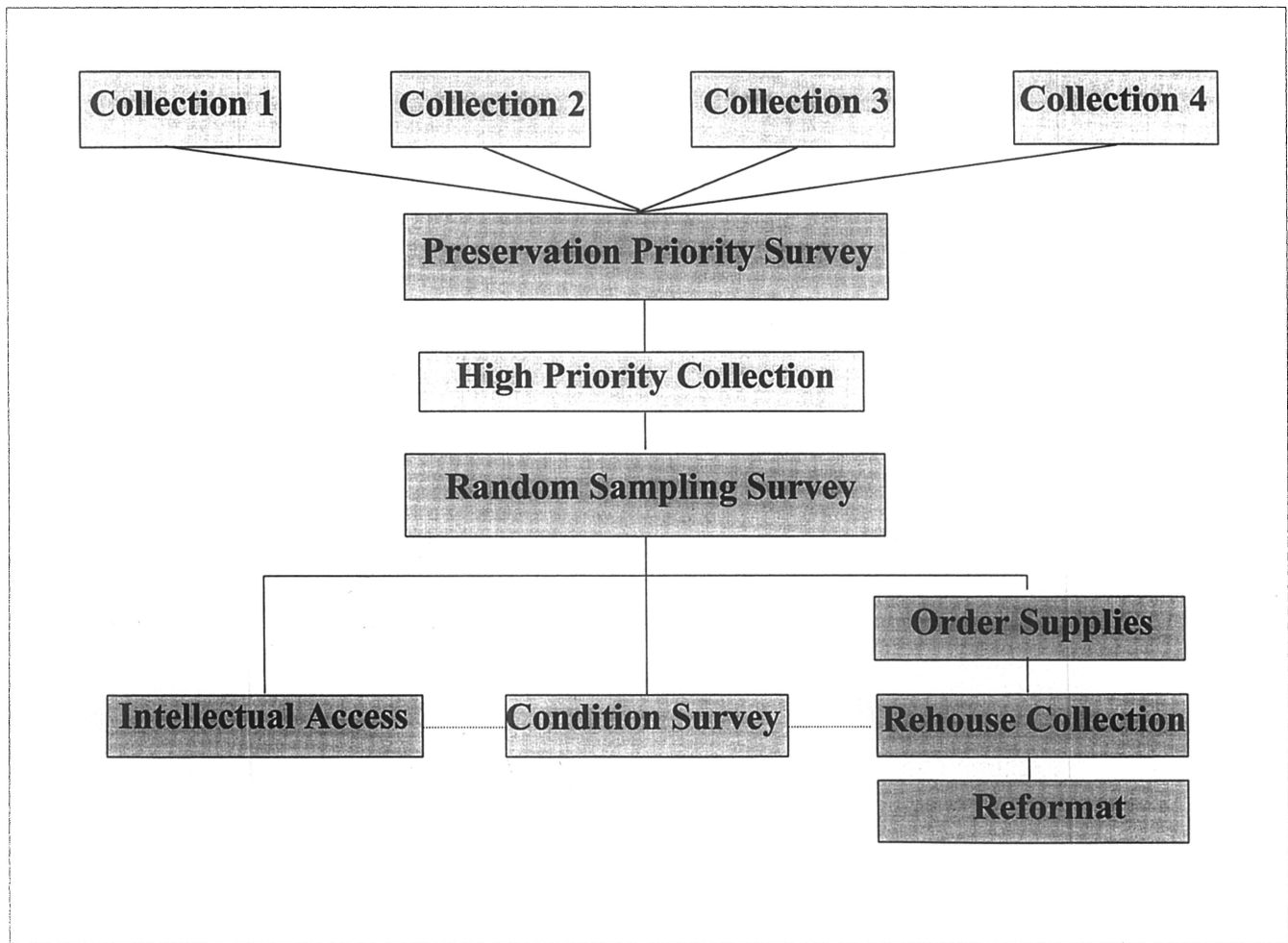


Fig. 5. The integrated approach for the preservation of this collection, as demonstrated at the SAA "Angel Project." The amount of handling of an object, as well as labor costs, can be reduced by processing, assessing condition, rehousing and reformatting at the same time

**PRESERVATION PRIORITY WORKSHEET**

Priority Score (1=high, 9=low: 1)

INSTITUTION: Smithsonian BUREAU: NMNH

DIVISION: Paleobiology REPORT # 1

Series/Collection Name: O.C. Marsh Drawings

Location: Paleobiology Bulk Dates: 19th Century

Collection Size - number of items:

number of linear feet: number of cubic feet:

Originals/copies (format: Pencil Wash Drawings)

Surveyor(s): D. van der Reyden Survey Dates: Aug 29, 1995

Current Housing: Appropriate materials, techniques and orientation? (circle all that apply and indicate percent of collection):

**Furniture:**

**Containers:**

**Container/Item Sizes:**

shelves (open/closed)

boxes (record/document/print/phased/box)

letter

drawers (vertical/horizontal) 100%

older envelopes (group/individual) 100%

legal

racks (vertical/horizontal/roll)

enclosures (plastic/paper/mats)

oversize

**Part I of Preservation Selection – Value Assessment of the Records**

1. Do the records relate to the:

*Mission Statement* of the institution in terms of

The topics that are being documented (i.e. what are the topics)

Yes  No

The stated purpose? (i.e. what is the purpose)

Yes  No

The institution's users? (i.e. who are the users?)

Yes  No

*Collection Policy* of the institution in terms of

The general and specific functions/topics that are of interest?

Yes  No

The relationship of the repository goals to the goals of other repositories?

Yes  No

The relationship of the known world of related documentation of the functions/topics

Yes  No

If the answer to most of the above is Yes, proceed to question #2 below

If the answer to most of the above is No, then choose one of the following four options:

- a. Do not accept the records.
- b. Refer the records to another institution.
- c. Deaccession the records.
- d. If the records are retained, do not take preservation action.

2. Does the institution have legal custody of the records or the expectation of obtaining legal custody?

Yes  No

Are the records accessible to users without excessive restrictions or hinderances?

Yes  No

Are there resources to preserve and maintain the records or the expectations of obtaining resources?

Yes  No

(resources = policy, environmental control & space, storage furniture & supplies, staff, training, time & funds)

If the answers to all of the above is Yes, proceed to question #3 below.

If the answer to any of the above is No, defer preservation action until remedied.

3. Are the records of importance to the institution primarily:

Because of their value to researchers?

Yes  No

If Yes, plot evidential vs. informational value on Matrix 3 below.

To meet its operational needs or the operational needs of other creating institutions?

Yes  No

If Yes, plot evidential vs. informational value on Matrix 2 below.

For both operational purposes and for research value to others?

Yes  No

If Yes, plot evidential vs. informational value on Matrix 1 below.

In using the matrices below, keep in mind that:

Evidential value pertains to the administrative, fiscal, legal or institutional significance of the records.

Informational value pertains to research value for historical, educational, genealogical reasons, or use in public programs.

Intrinsic value pertains to the artificial, monetary, symbolic, or sentimental value.

Determine whether the evidential and informational value as defined above is High, Moderate, or Low.

Plot the evidential vs. informational value on the appropriate matrix to determine the overall value.

Consider deferring analysis of low value materials until after analysing high or moderate value materials.

If the Overall Value is High proceed to Part II; if Low, stop further analysis - take no action.

Matrix	Evidential Value			Matrix	Evidential Value			Matrix	Evidential Value				
1	A	B	C	2	A	B	C	3	A	B	C		
Infor- mational Value	A	A	B	Infor- mational Value	A	A	B	Infor- mational Value	A	A	B		
	B	A	C		B	A	B		C	B	A	B	C
	C	A	C		C	A	C		C	C	C	C	C

Fig. 6a. The completed Preservation Priority Form (recto) for the Marsh Drawing Collection assigns a numerical value to the needs of the collection

PRESERVATION PRIORITY WORKSHEET

Series/Collection Name: D.C. Marsh Drawings

Priority Score: A  
Location: Paleobiology

Bulk Dates: 19th century

Part II of Preservation Selection -- Risk Assessment

1. Holdings Maintenance Need

Raw Score: Many = 1, Some = 5, Few = 10, None = 15

	Raw Score	+	Weighting Factor	=	Sum
Q1. Housing Needed	1	+	1	=	2
Q2. Inappropriate Housing	1	+	3	=	4
Q3. Poor Positioning of Records	1	+	5	=	6
Q4. Difficult Formats/Sizes	1	+	7	=	8
Q5. Damaging Attachments	10	+	10	=	20
<b>Total Score</b>					<b>40</b>

Holdings Maintenance Need Score

- (A) High (31-55) (house)
- B = Moderate (56-80)
- C = Low (81-101)

2. Level of Use

Q6. Evidence of Past Use A  
Q7. Estimate of Future Use A  
A=High, B=Moderate, C=Low

Use Matrix

Anticipated Use

(A) High B-Mod. C-Low

Past/Current Use	(A) High	(A)	A	B
	B-Mod.	A	B	C
	C-Low	B	C	C

Use Score

- A = High
- B = Moderate
- C = Low

3. Level of Exposure

A measure of Holding Maintenance and Use

Exposure Matrix

Use Code

(A) High B-Mod. C-Low

Holdings Maintenance Needs Score	(A) High	(A)	A	B
	B-Mod.	A	B	C
	C-Low	A	C	C

Exposure Score

- A=High (duplicate)
- B = Moderate
- C = Low

4. Physical Condition

Structural soundness in terms of the ability to be used.

Q8. Amount of damage or deterioration: A  
Q9. Amount of highly unstable materials: A  
(A=High, B=Moderate, C=Low)  
Emergency: wet, volatile, flaking, mold ... C  
High: 2/3rds rolled, etc.

Condition Matrix

Anticipated Use

(A) High B-Mod. C-Low

Amount of Highly Unstable Materials	(A) High	(A)	A	B
	B-Mod.	A	B	B
	C-Low	A	B	C

Condition Score

- A = Poor (treat)
- B = Moderate
- C = Good

5. Level of Risk

A measure of Exposure and Condition

Risk Matrix

Use Code

(A) High B-Mod. C-Low

Condition Code	(A) High	(A)	A	B
	B-Mod.	A	B	C
	C-Low	B	C	C

Risk Score

- A = High (treat, house, dupl.)
- B = Moderate
- C = Low

Part III of Preservation Selection -- Preservation Priority

1. Overall Value Score as determined from Part I: A

A measure of Evidential Value and Informational Value.

(Intrinsic value to the artifactual, monetary, symbolic, or sentimental value of the record; If intrinsic value is also high, decide if the Final Overall Value Score should be adjusted one higher.)

Final Overall Value Score

- A = High
- B = Moderate
- C = Low

2. Preservation Priority Score

A measure of Value and Risk

Preservation Matrix

Risk Code

(A) High B-Mod. C-Low

Overall Value Code	(A) High	(1)	2	5
	B-Mod.	3	4	6
	C-Low	7	8	9

Priority Score

- A = High (1-3)
- B = Moderate (4-6)
- C = Low (7-9)

Note: The following information influences treatment, housing and duplication needs; so please note percentage where applicable:

Formats:	single/sets of sheets 100%	bound volumes	tapes	disks	other
Substrate:	acidic paper/board 70%	tracing 30%	coated	photograph	colored
Media:	acidic friable 90%	fugitive	flaking	soluble 90%	graphic image
Condition:	mold	pests	rolled/folded	p.s.tapes	dirt 100%
			torn 80%		

Fig. 6a. The completed Preservation Priority Form (verso) for the Marsh Drawing Collection assigns a numerical value to the needs of the collection

Priority Worksheet that was originally developed by the SAA in collaboration with the Research Libraries Group and the Commission on Preservation and Access in October, 1993 (Appendix I).<sup>14</sup> This survey tool utilizes a numerical ranking system and easily-followed matrices to plot the overall value, exposure, and risk of a collection, allowing for unbiased comparison among many different types of collections. Since there were three additional collections of illustrations and other related materials besides the Marsh Collection housed in the Division of Vertebrate Paleobiology,<sup>15</sup> this quick survey allowed the staff an opportunity to rank and compare the overall values, problems and needs of each of the collections. The data generated by the survey was then entered onto a Preservation Priority Data Base so that the general collection needs could be easily evaluated in order to determine which collection within the repository should be targeted for treatment, rehousing and/or reformatting. The Marsh Drawing Collection was chosen for the SAA pilot project based upon its number one priority ranking coupled with its great holding maintenance need, where the lower the number the greater the need (Figs. 6-7).

Once a preservation priority survey has identified a collection as a priority and targeted its general needs (such as the need to be rehoused), staff time and energy can be allocated to prepare for future preventive conservation initiatives. In the case of large collections, the next step might be a Random Sampling Survey<sup>16</sup> of individual items within the collection to determine specific needs, such as types of housing. For instance, by surveying ten percent of the collection (noting size, condition, medium, etc.) using a randomly generated numerical system to designate specific objects within the collection, the housing needs of the collection can be quantified and necessary supplies determined and ordered. Done correctly, this technique allows a detailed and statistically accurate assessment of extremely large collections in a very short amount of time (for instance, a collection of 5,000 objects in one week by one surveyor).

After appropriately surveying the collection, one can begin to gain intellectual control over the collection. For this "Angel Project," an OSIA archivist outlined the procedures of this important step. Folder lists were created that would aid in the future retrieval of objects by providing specific information about the contents of each individual folder, as well as the collection as a whole. Information that was derived from the collection and knowledge pertaining to the history of the collection, as well as the technology that was used in the production of the published images, was helpful for the completion of the lists. Curators from the Division of Graphic Arts, National Museum of American History (NMAH) gave advice as to the order in which the illustrations could have been produced. It was verified at this time that the collec-

tion held a relatively complete series exemplifying the lithographic transfer process, beginning with preparatory sketches of the fossils and finishing with the tracings that were utilized in the transfer of the drawing to the lithographic stone.<sup>17</sup>

Proper housing and reformatting, two integral components in the preservation of a collection, are the next steps in this systematic approach. By providing a protective barrier between the illustrations and the environment (or researchers who may be studying at the collection), and by enabling access to the images without handling of the original illustration (which could remain in storage), these actions promote the continued care of the collection.

In devising proto-type housing for the collection, decisions were based on the sensitivity of the media and the fragility of the substrate. For example, custom-sized polyester L-welds (for thin tracings) and flush folders (for the friable graphite drawings) were used for this project.<sup>18</sup> Table I, which illustrates housing options for various paper-based items, can be utilized in this step. It was recommended that the collection be relocated from their current housing in wooden drawers to museum quality storage, like closeable map cases of fused powder-coated chromium-plated steel or anodized aluminum, to further protect the illustrations from fluctuating environmental conditions and other unplanned disasters.<sup>19</sup>

The reformatting of the collection takes place after the illustrations have been stabilized through the rehousing efforts. Selection criteria for determining reformatting options (such as preservation photocopies, microfilm, large format roll or sheet film or transparencies, or digital scanning) should be made in advance, based on the needs of the collection, financial limitations, the technology and time available, as well as staff training (fig. 8).<sup>20</sup>

#### PRESERVATION AND ACCESS

Once the collection has been processed, the document types identified, selections made for enclosures (such as mats, polyester sleeves and folders, containers, and furniture) and the collection reformatted (fig. 9), the accessibility (and consequently the value) of the collection will logically increase. This fact—that easier access to a collection leads to its increased value as a holding—should have dictated in the beginning that the preservation of this collection, and others like it, should never have been considered inconsequential.

The advent of the Internet, and the concurrent explosion in the demand for information, has the potential for increasing this problem of "publish, then perish." As more and more funds are diverted to digital imaging programs, additional funds must be slated to insure that original materials, and the chemical and physical information that can in no way be fully reproduced by even the most

Sub- series	Collection	Housing Need	Poor Housing	Poor Positioning	Difficult Formats	Damaging Attachments	Holdings Misled, Need (\$us)	Use	Expo- sure	Amount of Damage	Amount of unstable material	overall Condition	Risk	Value	Preservation Priority Score	
N I S H	Fish Ill.	2	4	6	12	11	35 = A	A	A	B	A	A	A	A	1	
	X-Ray File	11	13	15	22	20	81 = C	A	B	C	C	B	C	A	5	
	Ichthyologists	2	4	10	10	15	41 = A	A	A	C	B	B	B	A	1	
	Evans Ill.	2	4	6	12	20	44 = A	A	A	A	B	A	A	A	1	
	Mease Ill.	2	6	15	8	25	56 = B	A	A	B	C	B	A	A	1	
	Hughes Ill.	2	4	6	17	11	40 = A	C	A	C	A	A	A	A	1	
	Framed Ill.	2	4	6	8	15	35 = A	A	A	A	A	A	A	A	1	
	ACee Blue Eagle	2	4	7	8	23	44 = A	B	A	B	B	A	A	A	1	
	Dv. Archeological Map	2	5	15	9	15	46 = A	A	A	A	A	C	A	A	1	
	Numbered Mats.	3	5	10	12	11	41 = A	A	A	A	A	B	A	A	1	
	River Basin Surveys	2	4	6	8	20	40 = A	C	B	C	C	C	C	C	B	6
	BAE Map coll.	16	5	20	20	15	76 = B	A	A	A	A	A	A	A	A	1
D I N O	Marsh Dwgs	2	4	6	8	20	40 = A	A	A	A	A	A	A	A	1	
	Marsh Archives															
	US Geological survey															
	Gilmore Archives															

Fig. 7. Transcribing numbers to a data base worksheet allows easy comparison with other collections within a repository



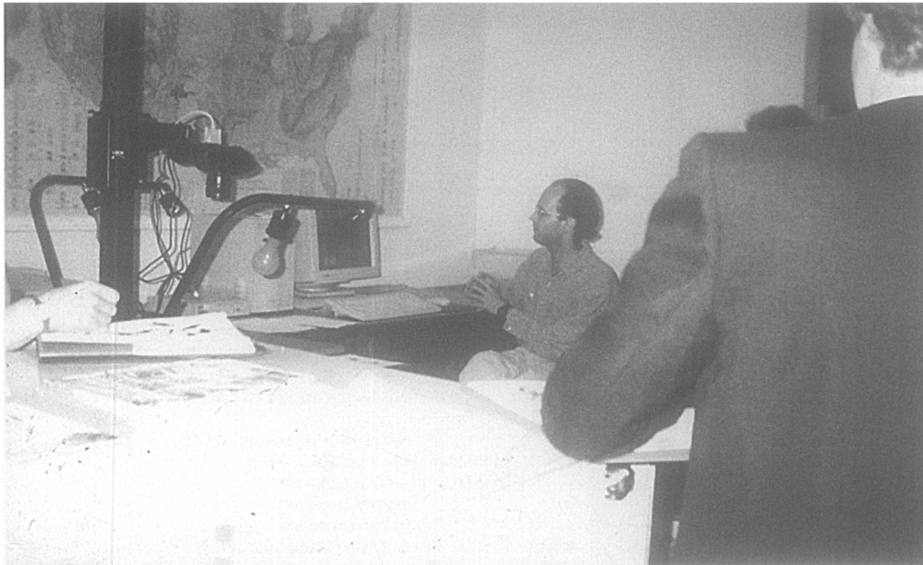


Fig. 8. Andrew Robb, CAL Post-Graduate Intern in Photography Conservation, demonstrates a digital imaging program for the SAA "Angel Project."

advanced reformatting techniques, are stabilized by proper care and storage, rather than allowed to degrade.

Through the collaborative efforts of museum professionals, conservators, and a new breed of information managers, simple solutions, like the integrated approach outlined in this "Angel Project," can be advocated to preserve the original materials and the evidence inherent in them.

#### ACKNOWLEDGMENTS

The authors would like to give their thanks to Mike Brett-Serman and the staff of the Department of Paleobiology, NMNH, SI; Paul Theerman, Tammy Peters and the staff of OSIA, SI; Elaine Hodges; Andrew Robb, Holly Anderson and the staff and supervisors at the Conservation Analytical Laboratory, SI; the SAA "Angels;" and Alice Tangerini. Also, we would like to thank Lisa Mibach, for inspiring the "Angel Project," and Sarah Wagner and Karen Garlick, for information pertaining to the Preservation Priority Worksheet.

#### NOTES

1. Author to whom correspondence should be addressed.
2. Presented as "Publish, then Perish: The Reclamation of a Collection of Scientific Illustrations" at the 1996 AIC Annual Meeting in Norfolk, VA
3. The "Angel Project" was originally conceived and organized by Lisa Mibach, a conservator in private practice, in 1988.
4. The idea of sponsoring an "Angel Project" has been used by other individuals. For example, Elizabeth Morse, Paper

Conservator at the Harvard University Library, organized one to aid in the execution of a large survey.

5. J.L. Byock. *Medieval Iceland: Society, Sagas, and Power* (Berkeley: University of California Press, 1988)
6. J. Helgason. *Handritaspjall* (Reykjavik: Mal og menning, 1958)
7. C. Wood III. "Prints and Scientific Illustration in America" *Prints in and of America*. John D. Morse, ed. (Charlottesville: University Press of Virginia, 1970)
8. Ibid.
9. Ibid.
10. The bulk of the collection can be found at Yale University, one of the institutions that funded the expeditions.
11. Henry F. Osborn. "For the Monograph on Vertebrate Paleontology" introduction to *The Ceratopsia*, J.B.

Hatcher, O.C. Marsh and R. Lull (Monographs of the U.S.G.S. volume XLIX, 1907)

12. It is believed that when the term "wood-cut" was used here it actually refers to wood engraving.

13. D.B. Gracy II. "Don't Swat the Skunk: The Preservation Imperative" *Advances in Preservation and Access Volume 2*. ed. B.B. Higginbotham (Medford, NJ: Learned Information, Inc., 1995)

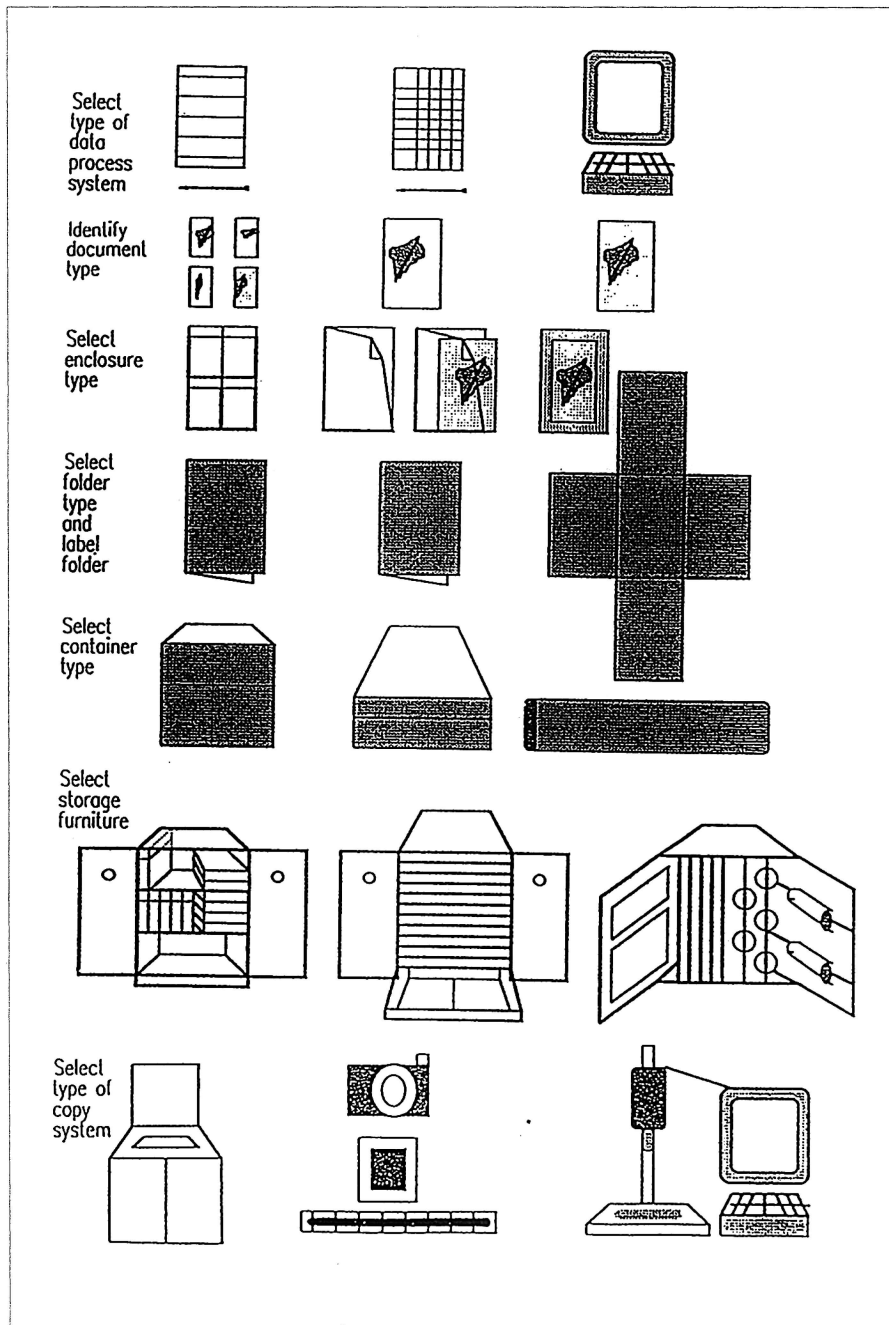
14. The Commission on Preservation and Access Task Force on Archival Selection. "Preservation Priority Survey" (Washington, D.C.: The Commission on Preservation and Access, 1993)

15. These collections are currently labeled as the "Gilmore Archives" (14 envelopes housing approximately 470 drawings and photographs), the "Marsh Archives" (approximately 300 prints, grouped together with metal fasteners), and the "U.S. Geological Survey" (approximately 640 prints and drawings).

16. See D. van der Reyden. "Case Studies in Photography Conservation at the Smithsonian Institution, Including a Survey of 15,000 Photographs" *The Imperfect Image: Photographs, their Past, Present and Future*. Conference Proceedings for the Center for Photographic Conservation April 6-10, 1992. Windermere, Cumbria, England, United Kingdom

17. The tracing paper exhibits a whitish outline that follows the contours of the corresponding drawing, characteristic of the scoring that would be seen in the engraving process of the lithographic transfer. C.W. Hackleman. *Commercial Engraving and Printing: a manual of practical instruction and reference covering commercial illustration and printing by all processes*. (Indianapolis, IN: Commercial Engraving and Publishing Company, 1921)

18. For housing options, see D. van der Reyden. "Paper Documents," *Storage for Natural History Collections: A Preventive Conservation Approach*. eds. C.L. Rose, C.A. Hawks and H.H.



HEATHER TENNISON,  
 DIANNE VAN DER REYDEN,  
 FEI WEN TSAI, AND MARY  
 PARRISH  
 Smithsonian Institution  
 Washington, D.C. 20560

Fig. 9. Steps, with options, for the processing, rehousing, and reformatting of a paper-based collection

Genoways (Pittsburgh, PA: Society for the Preservation of Natural History Collections)

19. Ibid.

20. For an example of cost benefit analysis for photographic collections, see S. Puglia. "The Preservation of Acetate Film Materials: A Cost-Benefit Analysis for Duplication and Cool/Cold Storage" *Topics in Photographic Preservation* volume six (1995)

**PRESERVATION PRIORITY WORKSHEET**

Priority Score (1=high, 9=low): \_\_\_\_\_

<b>INSTITUTION:</b>	<b>BUREAU:</b>	<b>DIVISION:</b>	<b>REPORT #:</b>
<b>Series/Collection Name:</b>	<b>Location:</b>	<b>Bulk Dates:</b>	
<b>Collection Size - number of items:</b>	<b>number of linear feet:</b>	<b>number of cubic feet:</b>	
<b>Originals/copies (format):</b>	<b>Surveyor(s):</b>	<b>Survey Dates:</b>	
<b>Current Housing: Appropriate materials, techniques and orientation? (circle all that apply and indicate percent of collection):</b>			
<b>Furniture:</b>	<b>Containers:</b>	<b>Container/Item Sizes:</b>	
shelves (open/closed)	boxes (record/document/print/phased/box)	letter	
drawers (vertical/flat)	folders/envelopes (group/individual)	legal	
racks (vertical/horizontal/roll)	enclosures (plastic/paper/mats)	oversize	

**Part I of Preservation Selection – Value Assessment of the Records**

1. Do the records relate to the:

- Mission Statement* of the institution in terms of:
- the topics that are being documented? (i.e. what are the topics?) Yes \_\_\_ No \_\_\_
  - the stated purpose? (i.e. what is the purpose?) Yes \_\_\_ No \_\_\_
  - the institution's users? (i.e. who are the users?) Yes \_\_\_ No \_\_\_
- Collection Policy* of the institution in terms of:
- the general and specific functions/topics that are of interest? Yes \_\_\_ No \_\_\_
  - the relationship of the repository goals to the goals of other repositories? Yes \_\_\_ No \_\_\_
  - the relationship of the known world of related documentation of the functions/topics Yes \_\_\_ No \_\_\_

If the answer to most of the above is Yes, proceed to question #2 below.

If the answer to most of the above is No, then choose one of the following four options.

- a. Do not accept the records.
  - b. Refer the records to another institution.
  - c. Deaccession the records.
  - d. If the records are retained, do not take preservation action.
2. Does the institution have legal custody of the records or the expectation of obtaining legal custody? Yes \_\_\_ No \_\_\_
- Are the records accessible to users without excessive restrictions or hinderances? Yes \_\_\_ No \_\_\_
- Are there resources to preserve and maintain the records or the expectation of obtaining resources? Yes \_\_\_ No \_\_\_
- (resources = policy, environmental control & space, storage furniture & supplies, staff, training, time & funds)

If the answers to all of the above are Yes, proceed to question #3 below.

If the answer to any of the above is No, defer preservation action until remedied.

3. Are the records of importance to the institution primarily:
- because of their value to researchers? Yes \_\_\_ No \_\_\_
  - If Yes, plot evidential vs. informational value on Matrix 3 below.
  - to meet its operational needs or the operational needs of other creating institutions? Yes \_\_\_ No \_\_\_
  - If Yes, plot evidential vs. informational value on Matrix 2 below.
  - for both operational purposes and for research value to others? Yes \_\_\_ No \_\_\_
  - If Yes, plot evidential vs. informational value on Matrix 1 below.

In using the matrices below, keep in mind that:

- evidential value pertains to the administrative, fiscal, legal or institutional significance of the records.
- informational value pertains to research value for historical, educational, genealogical reasons, or use in public programs.
- intrinsic value pertains to the artifactual, monetary, symbolic, or sentimental value.

Determine whether the evidential and informational value as defined above is High, Moderate, or Low.

Plot the evidential vs. informational value on the appropriate matrix to determine the overall value.

Consider deferring analysis of low value materials until after analysing high or moderate value materials.

If the Overall Value is High proceed to Part II; if Low, stop further analysis - take no action.

Matrix	Evidential Value			Matrix	Evidential Value			Matrix	Evidential Value					
1	A-High B-Mod. C-Low			2	A-High B-Mod. C-Low			3	A-High B-Mod. C-Low					
<b>Infor- mational Value</b>	A-High	A	A	B	<b>Infor- mational Value</b>	A-High	A	A	B	<b>Infor- mational Value</b>	A-High	A	A	B
	B-Mod.	A	B	C		B-Mod.	B	B	C		B-Mod.	A	B	C
	C-Low	B	C	C		C-Low	B	C	C		C-Low	C	C	C

Enter the Value Score in the space provided in Part III-1. on the next page.

Proceed to Part II - Risk Assessment of the Records.

**PRESERVATION PRIORITY WORKSHEET**

Priority Score : \_\_\_\_\_

Series/Collection Name \_\_\_\_\_ Location: \_\_\_\_\_ Bulk Dates: \_\_\_\_\_

**Part II of Preservation Selection -- Risk Assessment**

**1. Holdings Maintenance Need**

Raw Score: Many = 1, Some = 3, Few = 10, None = 15

	Raw Score	+	Weighting Factor	=	Sum
Q1. Housing Needed	_____	+	1	=	_____
Q2. Inappropriate Housing	_____	+	3	=	_____
Q3. Poor Positioning of Records	_____	+	5	=	_____
Q4. Difficult Formats/Sizes	_____	+	7	=	_____
Q5. Damaging Attachments	_____	+	10	=	_____
				Total Score	_____

**Holdings Maintenance Need Score**

- A = High (31-55) (house)
- B = Moderate (56-80)
- C = Low (81-101)

**2. Level of Use**

Q6. Evidence of Past Use \_\_\_\_\_  
 Q7. Estimate of Future Use \_\_\_\_\_  
 A=High, B=Moderate, C=Low

**Use Matrix**

**Anticipated Use**  
A-High B-Mod.C-Low

**Use Score**  
A = High  
B = Moderate  
C = Low

Past/Current Use	A-High	A	A	B
B-Mod.	A	B	C	
C-Low	B	C	C	

**3. Level of Exposure**

A measure of Holding Maintenance and Use

**Exposure Matrix**

**Use Code**  
A-High B-Mod.C-Low

**Exposure Score**  
A = High (duplicate)  
B = Moderate  
C = Low

Holdings Maintenance Needs Score	A-High	A	A	B
B-Mod.	A	B	C	
C-Low	B	C	C	

**4. Physical Condition**

Structural soundness in terms of the ability to be used.

Q8. Amount of damage or deterioration: \_\_\_\_\_  
 Q9. Amount of highly unstable materials: \_\_\_\_\_  
 (A=High, B=Moderate, C=Low)  
 Emergency: wet, volatile, flaking, mold ... \_\_\_\_\_  
 High: 2/3rds rolled, etc.

**Condition Matrix**

**Existing Deterioration**  
A-High B-Mod.C-Low

**Condition Score**  
A = Poor (treat)  
B = Moderate  
C = Good

Amount of Highly Unstable Materials	A-High	A	A	B
B-Mod.	A	B	B	
C-Low	A	B	C	

**5. Level of Risk**

A measure of Exposure and Condition

**Risk Matrix**

**Exposure Code**  
A-High B-Mod.C-Low

**Risk Score**  
A = High (treat, house, dupl.)  
B = Moderate  
C = Low

Condition Code	A-High	A	A	B
B-Mod.	A	B	C	
C-Low	B	C	C	

**Part III of Preservation Selection -- Preservation Priority**

**1. Overall Value Score as determined from Part I: \_\_\_\_\_**

A measure of Evidential Value and Informational Value.

*(Intrinsic value pertains to the artifactual, monetary, symbolic, or sentimental value of the record. If intrinsic value is also high, decide if the Final Overall Value Score should be adjusted one higher.)*

**Final Overall Value Score**  
A = High  
B = Moderate  
C = Low

**2. Preservation Priority Score**

A measure of Value and Risk

**Preservation Matrix**

**Risk Code**  
A-High B-Mod.C-Low

**Priority Score**  
A = High (1-3)  
B = Moderate (4-6)  
C = Low (7-9)

Overall Value Code	A-High	1	2	5
B-Mod.	3	4	6	
C-Low	7	8	9	

Note: The following information influences treatment, housing and duplication needs; so please note **percentage** where applicable.

Formats:	single/sets of sheets	bound volumes	tapes	disks	other
Substrate:	acidic paper/board	tracing	coated	photograph	colored
Media:	acidic friable	fugitive	flaking	soluble	graphic image
Condition:	mold pests	rolled/folded	torn	p.s.tapes	dirt



**The Following is taken from the Commission on Preservation and Access Report of Task Forces on Archival Selection**

The five holding maintenance needs are:(p.29)

1. primary or secondary physical protection- examples include containers, boxes, filing cabinets, or secondary enclosures such as folders;
2. inappropriate materials used for physical protection- examples include acidic folders or boxes, poor quality plastic sleeves, paperboard boxes to store magnetic media instead of non-debris forming plastic containers with hubs, rusty film cans;
3. poor positioning of records within containers, on shelves or in enclosures- examples include containers which are overstuffed or underfilled without adequate rigid support to prevent shumping; documents misaligned within boxes or enclosures; magnetic tape or motion picture film improperly wound (too loose/too tight) or unevenly wound so that the edges are not all aligned across the reel; records requiring either horizontal or vertical shelving shelved otherwise, such as magnetic tapes that are shelved horizontally instead of vertically, motion picture that is shelved vertically instead of horizontally, glass plates and audio disks that are stacked horizontally instead of rigidly supported vertically on their long edges;
4. format related problems- examples include inflexible or brittle documents which are folded or rolled, oversized documents, fragile materials, unspooled magnetic tapes or motion picture film, papers folded and stuffed into tape enclosures/containers; (ROLLED MATERIALS MUST BE HUMIDIFIED)
5. damaging attachments- examples include rusting fasteners, rubber bands, oozing or brittle pressure sensitive tapes, heavy twine, acidic wrappers or mounts, improperly applied or inappropriate leader labels attached to magnetic tape, motion picture, or microfilm.

Definition of Evaluative Terms for Existing Damage/Deterioration(p.33)

High level of damage/deterioration means that the majority of the materials have significant structural damage so that they cannot be safely handled at all or to any useful degree in their current condition. The materials are in poor condition. Preservation attention is required for safe handling of the materials.

Moderate level of damage/deterioration means that the majority of the materials have some structural damage, but they can be safely handled in their current state. The materials are in moderate/fair condition. However safe handling may require extra precautions and care. Preservation attention is required, but it can be postponed in the short term.

Low level of damage/deterioration means that the majority of the materials are structurally sound and can be safely handled. The materials are in good condition. Preservation attention is not required or can be postponed for the long term.

Selected Examples of Evaluative Terms

High Level of Damage/Deterioration (Poor Condition)(p.33-34)

1. Wet or damp materials, especially those with active mold (powdery, fuzzy, and/or colored growths); (EMERGENCY)
2. Extremely brittle materials with or without extensive breaks, tears, and/or losses; (REHOUSE)
3. Distorted, rolled, or folded materials that are inflexible, extremely weak, or brittle so that they cannot be safely opened or flattened without conservation treatment; (HUMIDIFY)
4. Materials that are stuck together due to previous water damage, damaging attachments (such as oozing pressure sensitive tapes), or some other cause; (CONSERVATION TREATMENT)
5. Materials with severe media deterioration, such as highly acidic writing inks that have perforated the documents, severe flaking of photographic emulsions, delamination or "oxide shedding" of magnetic tape layers, severe shrinking of motion picture film, etc; (REHOUSE)
6. With photographic media: in addition to any of the above problems; severe film base deterioration (bubbling/channelling or shrinkage of

acetate film, severe staining and embrittlement of nitrate film), extensive breakage of glass plates, etc; (EMERGENCY)

7. With bound materials: in addition to any of the above problems; multiple detached pages, sections, or mounted materials in scrapbooks or albums; and extensive broken sewing; (HOUSE IN BOX)
8. With magnetic media: in addition to any of the above problems; oxide layer shedding exists throughout the length of the tape rendering the tape unusable/unreadable, tape lubricants have evaporated to the extent that the tape cannot be moved through a tape drive. (EMERGENCY)

Moderate Level of Damage/Deterioration (Moderate Condition)(p.34)

1. Materials with previous water damage, but not currently damp, musty (indicating active mold), moldy or stuck together;
2. Distorted, rolled or folded materials with some inflexibility, but can be safely opened or flattened with care and without conservation treatment;
3. Materials (except those that are extremely brittle) with some tears and/or losses that are not extensive enough to impede safe handling;
4. With photographic media: in addition to any of the above, film base materials with a slight odor and/or minor dimensional changes such as warping, minor edge flaking of emulsions;
5. With bound materials: in addition to any of the above, loose or minor breaks in sewing, detachment of a few pages or a few mounted materials in scrapbooks or albums;
6. With magnetic media: a moderate amount of oxide shedding may exist primarily at the ends of the tape, or the plastic carrier may be cupped or warped, minor evaporation of tape lubricants such as that the tape can be relubricated sufficiently for one-time playback, the tape may be usable/readable.

Low Level Damage/Deterioration (Good Condition)(p.35)

1. Flexible, strong materials, even if they are apparently of poor quality such as newsprint or poorly processed photographs and have the potential to deteriorate;
2. Rolled or folded materials that are flexible and strong and that can be opened safely using standard handling procedures;
3. Materials with minor edge tears and losses;
4. With photographic media: in addition to the above, film base materials with no discernable odor or dimensional changes/distortions;
5. With bound materials: in addition to the above, intact or slightly loose sewing, or slightly loose mounted materials in scrapbooks or albums;
6. With magnetic media: the tape pack may be dusty or dirty, there may be minor oxide shedding, the tape is usable/readable.

Definitions of Evaluative Terms for Inherently Unstable Materials(p.36)

High Amounts of unstable materials means that the majority of the materials (>2/3) are highly unstable, as defined above, even if the materials are currently in good condition.

Moderate Amounts of unstable materials means that a moderate amount of the materials (1/3 to 2/3) are highly unstable, as defined above, even if the materials are currently in good condition.

Low Amounts of Unstable Materials means that a low amount of the materials (<1/3) are highly unstable, as defined above, even if the materials are currently in good condition.

How to apply survey findings to grant requests supporting preservation activities \* Addition by Dianne van der Reyden

- A. If holdings maintenance score is high, need improvement in housing:
  1. item level survey to estimate supply types and amounts
  2. determine sources and cost of rehousing resources (funding, supplies, equipment, staff, time, space)
  3. Train staff in holdings maintenance procedures
- B. If exposure score is high (holdings maintenance vs use), may want to reformat material for use by researchers.
- C. If risk score is high (exposure vs physical condition), need to
  1. item level survey for material types and deterioration
  2. rehouse and/or reformat
  3. implement conservation treatment

**TABLE I: HOUSING OPTIONS FOR VARIOUS TYPES OF PAPER-BASED ITEMS\***

SUPPLIES		Type of Item												
		1 INK (not fri- able)	2 PENCIL	3 RELIEF OR INTAGLIO PRINT	4 PLANO- GRAPHIC PRINT	5 HAND- COLORED PRINT	6 WATER- COLOR	7 PHOTO- GRAPH	8 DOCUMENT OR MANU- SCRIPT SHEETS	9 NEWS- PRINT	10 PHOTO COPY	11 NEGA- TIVE, SLIDE	12 BOUND VOLUME	13 OTHER
POLY- ESTER	L-WELD	X			X			X		X		X		
	POCKETS	X			X			X		X		X		
	MATCH- BOOK WRAP	X			X			X				X		
	BOOK BAND												X	
	BOOK JACKET												X	
	POLY- ESTER BOOK									X			X	
	POLY- ETHY- LENE STRIPS													X
ACID- FREE FOLDER PAPER	FOLDER	X	X	X		X	X	X	X	X	X			
	FLUSH FOLDER	X	X	X		X	X	X	X	X				
	FOUR FLAP FOLDER	X	X	X		X	X	X	X			X		
ACID- FREE MAT- BOARD	WINDOW MAT	X	X	X	X	X	X	X						
	WINDOW MAT WITH WRAPPER	X	X	X	X	X	X	X						
	SLING MAT	X	X	X	X	X	X	X						
	SINK MAT	X	X	X	X	X	X	X						
	INSERT MAT	X	X	X	X	X	X	X						
	JAPANESE TISSUE HINGE (V OR T)	X	X	X	X	X	X	X						
	PHOTO- CORNERS	X	X	X	X	X	X	X						
HORI- ZONTAL BOX	PRINT BOX	X	X	X	X	X	X	X						
VERTI- CAL BOX	PHASE BOX (4 flap)								X	X	X		X	
	DOCU- MENT BOX								X		X			
	RECORD BOX								X		X			

NOTE: ALL MATERIALS ARE ACID-FREE OR BUFFERED UNLESS NEUTRAL IS REQUIRED FOR SENSITIVE MEDIA; ALL TECHNIQUES ARE NON-ADHESIVE UNLESS HINGING

Table I: Housing options for various types of paper-based items