



NATIONAL ENDOWMENT FOR THE

Humanities

DIVISION OF PRESERVATION AND ACCESS

Narrative Section of a Successful Application

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Preservation and Access Education and Training application guidelines at www.neh.gov/grants/preservation/preservation-and-access-education-and-training for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Preservation and Access staff well before a grant deadline.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title: Sustainable Preservation Practices for Managing Storage Environments

Institution: Rochester Institute of Technology

Project Director: Patricia Ann Ford

Grant Program: Preservation and Access Education and Training

Image Permanence Institute, Rochester Institute of Technology

Sustainable Preservation Practices for Managing Storage Environments—Series #3

Project Description – Statement of Significance and Impact

The Image Permanence Institute (IPI) received funding from the National Endowment for the Humanities Education & Training Grant program in 2009 for *Sustainable Preservation Practices for Managing Storage Environments*, and again in 2011 for *Series #2*. Both projects delivered an extremely successful series of workshops and webinars presented throughout the U.S. Because demand for the information remains high, we are requesting funding to continue with *Series #3*. The project is national in scope and impact and is available to and accessible by institutions and individuals in every geographical region and from every type of collecting institution. Participants in *Series #2* represent every state in the U.S. plus Puerto Rico and, to date, forty-four foreign countries. Interest in the webinar series alone has increased over 150% since the first series, with over 700 individuals registered for each presentation.

A third round of the *Sustainable Preservation Practices for Managing Storage Environments* series will allow IPI the opportunity to provide information about defining and achieving an optimal and sustainable preservation environment to hundreds more institutions around the country. Our goal is to provide up-to-date information on preservation research along with the tools and strategies that will enable staff in collecting institutions to make informed, strategic decisions regarding sustainability that result in responsible collections care, energy cost savings, and carbon footprint reduction. The concepts and processes to be presented are based on years of preservation research and field experience with energy saving strategies and environmental management methods.

For budgetary reasons and because of concern for climate change, collecting institutions that possess significant scholarly resources in the humanities are searching for ways to responsibly reduce energy consumption. Facilities managers in cultural institutions nationwide are being asked to make adjustments in HVAC operations in the name of saving energy. There is a continuing need to inform both facilities and preservation staff about the best options and practices to achieve sustainability while managing risks to collections.

Nearly 300 people registered for one of the four workshops in the second series and over 92% of survey respondents reported that the presentation expanded their knowledge in one or more subject areas. Only four of the nine *Series #2* webinars have taken place as of this writing, and response has been overwhelmingly positive. Surveys to date show that on average over 95% found the webinars informative, relevant, and understandable.

In order to have the greatest impact and reach a large number of institutions, *Series #3*, IPI will offer workshops in areas with the largest number of cultural institutions (in New York, NY, Boston, MA, Washington, DC, Fort Worth, TX, and Berkeley, CA). We will present nine webinars on environmental management topics that have proven to be of most interest to the field. *Series #3* will add a number of educational videos on topics covered in the series. Once again, IPI will receive collaborative support from regional preservation organizations to help publicize the presentations. Five museums and libraries will provide workshop venues that can accommodate 100 participants or more at minimal cost. No fees will be charged to attend any of the workshops, though participants will pay for their own travel and housing. There is no charge for the webinars and no limit to the number of individuals who can attend the presentations.

If funded, *Sustainable Preservation Practices for Managing Storage Environments—Series #3* will enhance the ability of hundreds of participating institutions to assess the preservation quality of their storage environment, understand the impact of local climate, match the environment to the needs of their collection materials, and understand the basics of HVAC operations. In addition, they will be able to identify opportunities and progressive strategies for energy cost reductions without sacrificing the preservation quality of collection environments.

PROJECT NARRATIVE

1. SIGNIFICANCE AND IMPACT

1.1 Overview

In 2011, the National Endowment for the Humanities provided funding to the Image Permanence Institute (IPI) for a second Education & Training series titled *Sustainable Preservation Practices for Managing Storage Environments—Series #2*. This series, based on the success of the initial project, funded by NEH in 2009, has had a significant impact in the field. Interest in the topics presented in the project workshops and webinars remains high. As before, we have received several requests to continue the series of presentations. This narrative outlines a third sustainability series designed to meet the continuing need for current information on environmental management and sustainable practice.

NEH funding has allowed IPI to present information about defining and achieving an optimal and sustainable preservation environment to hundreds of institutions around the country. As of this writing, Series #2 has reached individuals in every U.S. state and Puerto Rico, as well as forty-four foreign countries. Series #2 workshops drew 282 registrants—94% were new to the series and as of this writing, 1,070 individuals have registered for one or more webinars. Our primary goal for the sustainability series is to provide information, strategies, and tools that will enable staff in collecting institutions to make informed, strategic decisions regarding sustainability that result in responsible collections care, energy cost savings, and carbon footprint reduction. Survey results indicate that the vast majority of participants—92.6% on average—felt that the presentations expanded their understanding and knowledge of the subjects covered.

Cultural institutions with significant humanities research collections must maintain their collections for use by future generations. This responsibility for long-term preservation is primarily achieved through the maintenance of appropriate storage and display environments. Research has proven that air temperature and relative humidity have a significant impact on the rate at which materials deteriorate. Preservation standards that specify the appropriate ranges within which various collection materials should be held continue to evolve. Providing a suitable environment usually requires the use of mechanical systems that deliver heat, air conditioning, humidification, and dehumidification as needed. The continuous operation of these systems is one of the most expensive and energy-intensive elements in collecting institution budgets.

Cultural institutions will continue to look for ways to reduce energy use and lower the ever-increasing cost of heat and electricity. Institutions must balance this requirement with the need to provide a preservation-quality storage environment and reduce the risk of collection decay. Staff in cultural institutions—administrative, collection care, and facility management staff—remain interested in learning as much as they can in order to achieve these two important goals. This interest was reinforced by the March 5th, 2013 Smithsonian Institution Summit on the Museum Preservation Environment. Attended by over 250 individuals, and viewed by hundreds more on the web, this summit successfully presented an overview of the development of environmental standards, and current guidelines and best practices, all of which are in line with IPI's research, tools, publications, and presentations on environmental management. James Reilly, IPI Director, was a panelist and one of six primary speakers at the summit.

A risk-managed, holistic approach to environmental management is reflected in the British Publicly Available Specification, or PAS 198: 2012. This publication from the British Standards Institution details “Specifications for Managing Environmental Conditions for Cultural Collections.” As with IPI’s sustainability series, the objective is to help collecting institutions establish and maintain environmental conditions that preserve cultural collections in their care. No “ideal” standard is presented—the goal is to help users make their own judgments based on an understanding of the agents of deterioration, material vulnerabilities, local climates, building characteristics, mechanical system capabilities, and the move toward energy reduction and sustainable practices.

IPI is fully versed in the research on the preservation environment that has taken place at the Smithsonian’s Museum Conservation Institute, the Getty Conservation Center, the Canadian Conservation Institute, the National Museum of Denmark and other preservation research facilities. Decades of both laboratory research and field experience undertaken by IPI have helped us to define an "optimal" preservation environment and to outline the steps required to achieve it. The following definition guided the design of the workshops, webinars, and publications associated with the past two *Sustainable Preservation Practices Series*:

An optimal preservation environment is one that achieves the best possible preservation of collections at the least possible consumption of energy, and is sustainable over time.

Contact with the preservation field and the hundreds of institutions that have participated in the sustainability series have clarified and reinforced these facts:

- Environmental control is fundamental to collections preservation
- Best practices must be based on a number of factors including:
 - Evolving material-specific environmental standards
 - Building fabric and mechanical system capability
 - Available staff and resources, and
 - The growing impetus to reduce energy costs
- A collaborative approach involving a cross functional team of facilities, collection care and administrative staff is key
- Environmental monitoring and data analysis is essential, and
- Managing the environment for preservation is an ongoing process

Series #1 and #2 of IPI’s *Sustainable Preservation Practices* workshops and webinars presented this information to **over 2,000** individuals responsible for collection care and preservation, facility managers, administrators, and students so far. This audience remains deeply interested in the information, tools, and operational strategies presented. They are learning that the best solution for their institution is one that they have to figure out for themselves based on an understanding of a number of key factors.

A third Sustainable Preservation Practices series will allow us to reach more institutions and staff members as we continue to meet the goals outlined in the previous grant applications.

1.2 Project Goals

Project goals for Sustainable Preservation Practices—Series #3 remain primarily the same as they were for the first two series, with changes based on what we have learned as well as comments and suggestions made by the participants. We have reviewed each of the original goals to determine what was successful and what we need to do differently in the future. The goals for Series #3 include:

- GOAL** Provide participants with the latest research and field study from leading U.S. and European cultural institutions regarding the role of environment on material decay and long-term preservation. We will also present the latest knowledge of and techniques for sustainable practice.
- The accepted norm of one "ideal" storage climate demonstrated by a straight line, year round 70°F and 50% RH environment has evolved. Although the scientific evidence is plentiful and accessible, people want to better understand the research behind the move toward more realistic risk-managed guidelines for managing the storage environment.
 - The information provided on recent research and the development of new environmental standards was listed as one of the most valuable aspects of the workshop presentations. Post-workshop surveys showed that over 90% of participants said that the workshop expanded their understanding of the environmental needs of their collection. We will incorporate any new information available into Series #3, including the results of IPI's ongoing research on the effect on preservation quality in collection storage during temperature and RH setbacks and the consequences of short-term mechanical system shutdowns.
- GOAL** Educate both collections and facilities staff so that together they receive the training they need to define and achieve their own optimal and sustainable storage climates.
- Experience has shown that the combined effort of collection care, facility management, and administrative staff committed to achieving an optimal storage climate is the best approach.
 - Although several efforts were made to increase the number of facilities and administrative staff attending a workshop, the percentage of attendees from each of these areas remained the same as it was in the first series—70% collections care, 12% facilities, and 7% administrative staff.
 - Although it is difficult to get facilities and administrative staff to commit to two days away from their institutions unless they realize that the information is directly relevant to their concerns, we will continue to promote workshops and webinars to this target group.
 - For Series #3 we will add the creation of a number of free educational videos, particularly on subjects of interest to facility management and administrative staff. The video format will allow these individuals to view the information on or off line, alone or in groups, when they have the time available.
- GOAL** Provide a greater understanding of mechanical system functions, and identify areas where responsible energy-saving strategies are possible.

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- We will provide information that is relevant to a wide range of institutions, including small institutions and those that exist in historic buildings with limited mechanical control. They too are looking for environmental management information and practical suggestions for achieving the best environment they can, given their budget and equipment limitations.
- We will provide practical and understandable information on the basics of HVAC operation and clearly identify potential opportunities for more efficient system operation. IPI's environmental consulting work over the last few years has added considerably to our knowledge in this area. In Series #3 we will continue to provide a holistic approach to understanding mechanical systems, but will make the presentations less technical and will provide more information for small institutions with limited resources.

GOAL Suggest guidelines and methods which will enable participants to design a protocol for managing voluntary or mandated changes in temperature and relative humidity settings without reducing preservation quality in collection storage and display environments.

- The information we present on mechanical system functions is very well received and appreciated—in fact, this information was listed on our surveys as "most valuable" more often than any other topic. Post-workshop surveys showed that 97.5% of participants felt better prepared to evaluate suggested changes in T/RH settings and schedules, 87% felt better prepared to investigate or initiate opportunities for energy savings, and 78% said their environmental management methodology would change based on what they learned at the workshop.
- Facility management staff from each workshop venue participated in the workshop, providing their own perspective and experience, as well as tours of mechanical systems when possible. This proved beneficial and we will make every effort to incorporate it into each venue in Series #3.

GOAL Reach the widest number of interested individuals at a minimal cost by charging no fee to participate in workshops or webinars, presenting workshops in heavily populated locations around the country, taking advantage of free and wide-reaching publicity available through on-line distribution lists, and providing useful and informative documentation both in print and on-line.

- Many participants noted their gratitude for a free workshop of this caliber, particularly individuals in small institutions. Despite our best efforts, an average of 29% of registrants did not attend the workshop they registered for. To avoid any waste of hospitality funds in Series #3, we will eliminate catered lunches, and instead provide limited morning break food and beverages. We will choose workshop venues in locations that have nearby options for lunch and will allow participants enough time for lunch on their own.
- The free educational videos planned for Series #3 will allow us to expand outreach, particularly to facilities and administrative staff.

GOAL Present the latest tools and practices available for analyzing environmental data, quantifying preservation quality, and understanding collection deterioration risks.

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- Workshop participants were particularly interested in learning about the role of dew point in managing the storage environment, and the demonstration of IPI's *Dew Point Calculator* (www.dpcalc.com) as well as the explanation of IPI's Preservation Metrics™ and associated hardware and software for managing environmental data. Even so, since workshop presentation time is limited, the demonstration of IPI's hardware and software will be very brief. Instead, links to on-line or published information about these tools will be made available.

1.3 Response to Sustainable Preservation Practices Series #2, 2012—2013

The response to the second NEH-funded workshops and webinars presented in 2012-2013 was remarkable. While workshop participation remained stable, interest in the webinar series and access to archived presentations grew considerably.

Series #1 included five workshops with 354 registrants (an average of 70.8 per workshop). There were 282 registrants in Series #2, which presented four workshops (70.5 per workshop). The reduction in cultural institution funding overall and travel budgets in particular continues to have an effect. It was clear from the pre-workshop surveys that the topics to be covered were of great interest to the field and that individuals had very specific reasons for wanting access to the information to be presented. Some of the responses to "What do you hope to learn?" included:

I am responsible for monitoring environmental controls for the History of Medicine collections and I act as the liaison with other collection management staff in other divisions of the Library on collection management and spaces issues. This workshop will be invaluable to helping me make better decisions regarding the environment especially as we are planning a renovation of the stack area for our special collections."

(b) (6), National Library of Medicine, Bethesda, MD

Our campus may be renovating the library sometime in the near future and I would like to be up to date on current best practices on the environment's (HVAC, etc.) role in preservation. I would like to learn enough about preservation related issues as related to sustainable/green building and HVAC systems to be able to discuss them in a more knowledgeable manner with facilities staff and architects and to improve the climate for our library and archives materials. My institution has little funding for professional development so this is a rare opportunity for me to attend such an excellent workshop within driving distance (I am 220 miles from Denver).

(b) (6), Colorado Mesa University Library, Grand Junction, CO

I want to strengthen my partnership with our Director of Properties by understanding more about the possibilities and challenges of creating, improving, and maintaining a museum-quality environment. The more I know about the actual costs, resource requirements, and resource pay-offs, the more effective I can be in developing and advocating for a realistic plan for our institution.

(b) (6), Chicago History Museum, Chicago, IL

The workshop in Washington, DC drew the largest numbers—96 individuals registered. Chicago was second with 80 registrants, Denver third with 67, and Miami fourth with 39 registrants. Workshop attendees at these four venues came from 30 states and every region in the U.S.

Of the 282 individuals registered for workshops, 70% were collections care staff (38% from libraries, 34% from art museums, 20% from history museums, and 8% from other museums);

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12% were facilities staff, 11% were other (30% consultants and business people, 23% exhibit designers and developers, 20% architects, 20% students and professors, 7% research scientists) and 7% were administrators.

A total of 201 of the registered individuals attended the four regional workshops, and 82% of them completed the workshop survey that was provided. A summary of Series #2 survey results included the following statistics:

Overall, did you feel that the information presented was:	
• Clear and well organized	99.5% Yes
• Useful	99.5% Yes
• Easy to understand	91.5% Yes
• Relevant to your responsibilities	99.5% Yes
• Applicable to your institution	90.0% Yes
Did the workshop expand your understanding / knowledge of:	
• Appropriate conditions for collection storage environments	91.0% Yes
• The influence of environment on material decay	84.3% Yes
• The factors that influence the storage environment	94.0% Yes
• The functions of mechanical systems	95.3% Yes
Overall Impact:	
Will the Sustainability Guidebook be beneficial to you/your institution?	99.0% Yes
Do you feel better prepared to evaluate suggested T/RH setting changes?	97.5% Yes
Do you feel better prepared to investigate or initiate energy-saving opportunities?	87.0% Yes
Will your environmental management methodology change based on this workshop?	78.0% Yes

Quotes from Series #2 workshop surveys:

“Thank you for making this workshop available. The subsidized funding is making unprecedented departmental cooperation with my colleague in facilities possible.”

“This is one of the best workshops I’ve ever attended. It was outstanding in all ways: presentations, content (it’s great that the slides will be available shortly), location, food. Thank you!”

“This was a fantastic and thought-provoking workshop. Lots of great information to digest! Lots of sensible solutions for responsibly working toward sustainable preservation without damaging collections. I look forward to beginning the process. Thank you!”

During the first series, IPI developed a reference book titled *IPI’s Guide to Sustainable Preservation Practices for Managing Storage Environments*. Prior to the second series of presentations, this guidebook was completely updated. Text was reorganized and expanded (from 78 to 112 pages), more professional graphics and illustrations were incorporated and updated information on real-world examples of energy-saving initiatives and strategies for achieving optimal HVAC operation were included. An extensive bibliography was included as an appendix. Grant funds allowed us to provide a copy of the workbook to every workshop participant in each series.

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The guidebook was designed to supplement the workshop agenda, providing easy reference to the topics covered along with additional information associated with the subject. In addition, the workbook includes references and web links for additional reading, an exercise on investigating the local climate, HVAC system documentation instructions and worksheets, and suggestions for grant funding. Ninety-nine percent of survey respondents said that the guidebook would be beneficial to their institution. IPI printed additional copies of the sustainability guidebook and it was made available for sale on a cost recovery basis through our on-line shopping cart. As of this writing we have sold 227 copies to 177 institutions and individuals in the U.S. and abroad. We have received several very positive comments including:

“The careful, balanced, analytic work is what we need to transform our data gathering into useful information and action.”

“The guidebook could be a useful textbook for museum and library collection care classes.”

“It is very well organized and has a level of detail that is helpful and appropriate, both to supplement this workshop and to stand alone.”

Workshop survey responses

(b) (6) conservator and professor at the Museum Studies Programme, University of Toronto wrote *“I just wanted to thank you and the rest of the content team for your recent publication—Sustainable Preservation Practices—it is excellent. As a conservator who teaches preventive conservation to non-conservators it is a great asset clearly explaining the issues at hand. Well done!”*

(b) (6) Aiken & Ramer Historic Site Preservation Conservation Consultant, wrote *“Excellent workbook—materials are systematically presented, sections build on one another, very good illustrations, graphs, etc... provides a clear explanation of systems in context of collection care/preservation.”*

Interest in the webinar presentations in Series #2 exploded—over 1,070 individuals have registered for one or more webinar as of this writing, which is less than half way through the series of nine presentations. This is a 150% increase over the total number registered in Series #1. This response broadens our outreach considerably since 82% of webinar participants did not attend any of the workshops. Series #1 webinars averaged close to 200 registrations for each individual presentation. The Series#2 average is 792 individuals per webinar, with the majority over 850. Individuals from every state in the U.S. plus Puerto Rico have registered for a Series #2 webinar. In addition, 180 people from 44 foreign countries have registered—including North, South and Central America, Europe, Africa, and the Middle East.

“I thought your webinar presentation on current thinking about environmental control was brilliant; beautifully crafted to get people to move beyond received wisdom about environment. Thanks much.”

(b) (6) , Director for Library Preservation at the University of California Berkeley

Based on surveys completed after the first four webinars in Series #2, 96% of participants described the webinars as easy to understand, 99% thought they were well organized, 96% said

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the webinar was informative, and 95% found the content relevant to their work. We were happy to see from the surveys that the webinars were viewed by groups of staff in several institutions:

“We are watching the webinars together; a group of six collections staff, engineers, facilities and operations staff. My hope is that after the webinar series, we can tackle the issue of defining the optimal environment for our museum. After the webinar, everyone was excited about the topic and we all wanted to discuss how it was applicable to our museum. This is the first time everyone was in the same room together discussing this. I think this is the most valuable thing, the webinars created a space for us to get together and talk with each other.”

(b) (6) Rubin Museum of Art, New York, NY

We tracked the response to our no-cost promotion of Series #2 webinars, which started in September 2012. There were announcements on the IPI website, IPI’s Climate Notes e-newsletter, conservators and registrar’s online distribution lists, and promotion by three regional centers (BACC, CCAHA, and NEDCC). By November the information had been forwarded to at least thirty other mailing lists in the U.S. and abroad and registrations jumped from 20 to 40 per month to over 220 in one month. Word of mouth helped as well, including the following:

Webinar postings to the Registrar’s Committee of the AAM (RCAAM@SI-LISTSERV.SI.EDU):

“For those of you who have not already seen it, there's a fantastic webinar series being offered by the Image Permanence Institute right now on managing storage environments. I attended the first session today, and I learned a ton. I highly recommend it. I believe the webinar has been recorded for viewing and will be available soon. Future webinars occur on the first Wednesday of the month for the rest of the year.”

(b) (6), Hawaiian Mission Houses, Honolulu, HI

“The current series of free webinars from IPI is excellent and should address most of your questions. I just bought their new book, which is very good and highly recommended (at least by me): Sustainable Preservation Practices for Managing Storage Environments.”

(b) (6), Adjunct Curator of Collections, Earth and Mineral Science Museum & Art Gallery, Penn State University, University Park, PA

Interest in both workshop and webinar presentations varied by geographical region. The Washington, D.C. workshop had the highest number of registrants (34%), followed by the Chicago (27%) and Denver venues (25%). Miami drew 14% of the total number of registrants. At this point the Northeast and the Midwest U.S. have the highest webinar registration numbers (see Appendix 1 – Series #2 Workshop and Webinar Registration by Region).

The workshop and webinar presentations from Series #1 and #2 are available on the project website at www.ipisustainability.org. Site analytics show tremendous growth in popularity over the past two years:

IPI’s Sustainable Preservation Practices Website	As of June 2011	As of April 2013
Number of unique page views	15,000	47,000
Visits to recorded webinars	1,500	7,600
Visits to Workshop PowerPoint Presentations	700	2,200

We routinely get requests from people to use portions of the workshop presentations in talks they are giving and requests to use the webinar recordings as part of staff and intern training at their institutions.

1.4 Assessment of Need

Collecting institutions face very difficult choices as they respond to seemingly conflicting mandates to lower operating costs, achieve sustainability goals, and preserve collections. The need for this project arose from the lack of established guidelines and management methods to reconcile the competing demands of responsible collections stewardship with the desire for sustainability through a reduction in both energy use and costs. A third series would continue to meet the demand for this information by building on the success of the first two series and expanding outreach to more institutions across the country.

The cost of energy to operate heating, ventilation, and air conditioning systems remains a formidable drain on institutional budgets, and institutions large and small are feeling the financial strain. Museums, libraries and archives contain the information and objects that form the essential basis for humanities scholarship and the preservation of our material culture. If collections deteriorate due to improper environmental conditions it would be a significant loss to the humanities and to society in general.

Areas dedicated to collection storage typically receive conditioned air twenty-four hours a day, seven days a week, and are maintained at more stringent temperature and humidity conditions than other spaces. As a result, these spaces consume more energy than other areas. Performance measurements by the energy consulting firm Herzog/Wheeler & Associates (IPI's partner in the previous sustainability projects) indicate that a 10,000 square foot collection storage area costs between \$20,000 and \$50,000 per year to condition. As a result, facility managers and administrators are asking collection care staff to consider energy-saving alterations to the operation of storage area HVAC systems. Some changes can be seriously detrimental to collections and should be avoided, while others will be inconsequential and justified by the resulting energy-savings.

Determining if these or any other energy-saving strategies are viable requires thoughtful consideration of the architectural characteristics of the building, the local climate, and the capabilities of the HVAC systems that serve collection spaces. While some facilities present no viable savings opportunities, our experience has shown that many could reduce energy consumption by 10% to 30% through alterations in the operating schedules of existing HVAC systems, without posing significant risk to collection preservation. In those cases, institutions could potentially realize significant savings in energy costs annually. (b) (6) President of Pacific West Industries, HVAC contractor to the Palm Springs California Art Museum, attended a Series #1 workshop held at UCLA. He later reported that the concepts in the workshop led to \$100,000 in energy cost reductions for the museum.

IPI and Herzog/Wheeler & Associates have worked with several institutions to analyze the risk to collections resulting from energy-saving mechanical system operational modifications. A project is currently underway at the Library of Congress' Adams Building on Capitol Hill where various HVAC operating options have been investigated, significant energy savings have been

identified, and IPI's Preservation Metrics™ used to analyze any changes in the preservation quality of the storage areas served by the system. IPI worked on a similar project, funded by an NEH SCHC Planning grant, with the Folger Shakespeare Library. Comprehensive study and analysis of the preservation quality of monitored storage locations along with data collected within the HVAC system itself led to recommendations for a new mechanical system and the identification of significant potential energy savings. Based on the success of the initial project, the Folger Library received funding from NEH for an implementation project which continues through 2016. IPI is currently consulting on several similar projects and has provided quotes for many more.

The problem for most collecting institutions is that neither the facilities nor the collection care staff feels they have the expertise or tools to properly evaluate the impact of energy reduction strategies such as night and weekend setbacks, AHU shutdowns, or significant changes in temperature and relative humidity settings on long-term collection preservation. Preservation managers fear that arbitrary changes in storage environment settings will undo years of hard-won gains, and are very anxious to avoid the perception that controlled conditions are frivolous and unnecessary. For their part, facility managers know that the systems serving fully conditioned spaces are the most costly and therefore offer the fastest route to dollar savings and major progress toward sustainability goals. There is a clear and continuing need to further define best practices for managing the storage environment to avoid risks to collections and take advantage of opportunities for energy saving and cost reduction.

1.5 A New Environmental Management Approach

A great deal has been learned in recent years about managing the storage environment in collecting institutions. The accepted norm—that temperatures should be steady and unwavering at human comfort levels, and that short-term fluctuations in relative humidity matter more than long-term trends—is now regarded by preservation scientists as outmoded and counter-productive. Environments are complicated. As the current economic situation and related budgetary problems force cost reductions, a new management approach is needed to help institutions safely navigate between fiscal realities and effective preservation strategies.

In reality, the creators of the steady 70° F and 50% RH recommendations regarded their suggestions as provisional and encouraged further study. The evolution away from such simple ideas and toward a more modern view began more than twenty-five years ago. Extensive work by the Smithsonian's Museum Conservation Institute clarified the ways in which moisture content affects the mechanical properties of cultural heritage objects and proved that extremes of dryness and dampness pose the greatest risk of physical damage. Through years of massive accelerated aging projects, researchers have explored how organic materials are at risk due to spontaneous chemical change—also called 'natural aging.' This kind of deterioration is long-term and depends on the integral over time of thermal energy and moisture content. Thanks to this research at the Smithsonian, Library of Congress, IPI, Getty Conservation Institute and other preservation research laboratories, we know much more about the role of environment on material decay than we did when the "standard" was published.

Much of IPI's preservation research, including accelerated aging, moisture and temperature equilibration, and the impact of cycling temperature and relative humidity conditions, has been

funded by NEH. The development of IPI's Preservation Metrics, and the use of standardized, quantitative measures allows us to easily assess and compare the preservation quality of storage and display environments and match them to the specific needs of collection materials (*see Appendix 2 - IPI's Preservation Metrics*TM).

IPI's work with Herzog/Wheeler & Associates has allowed us to develop a cross-disciplinary environmental management approach including building engineers, facility managers, collection staff, and preservation specialists. In 1997, The Andrew W. Mellon Foundation funded *Optimizing Collection Life and Energy Costs in Cultural Institutions*, during which IPI and Herzog/Wheeler partnered with the Library of Congress and the New York Public Library to measure and evaluate HVAC system capabilities, document and analyze the storage environment, and make improvements designed to improve preservation quality and lower operating costs. Related work, funded by NEH, The Mellon Foundation, and the Library of Congress, continued over several years at each institution. Since that time, IPI and Herzog/Wheeler have been contracted to review proposed climate conditions and general design for storage facilities at the Library of Congress, the National Archives, Loyola Marymount University Library, the California Department of Parks & Recreation, Winterthur Museum and many other institutions.

Through this work IPI has found that effective environmental management is a team approach and a long-term process that starts with the collection of reliable data and informed analysis to determine how good or bad environments are for specific collections. The process builds a mutual awareness among the creators and consumers of environmental conditions and helps them understand why conditions are the way they are, what opportunities exist to modify them, and what both the preservation and energy implications are of potential courses of action. We call this process 'optimization'—meaning that human comfort, energy consumption, and preservation quality are all measured, discussed, and modified until an optimal combination of each is achieved. The process is built on a clear and accurate understanding of the building envelope, the basic functions of the mechanical system, the realities of the storage environments, and the role of local climate. The project team should include collection care staff, facility managers and administrators, sharing their knowledge and perspective and developing options for improvement that save energy and protect collections. This approach was reinforced at the March 5th Smithsonian Institution Summit on the Museum Preservation Environment which presented an overview of the development of environmental standards, and current guidelines and best practices, all of which are in line with IPI's research, tools, publications, and presentations on environmental management.

1.6 Managing the Preservation Environment – Analyzing Risk

Sustainable preservation practice requires a balanced approach and any changes in system operation must be weighed against the effect on the preservation quality of the storage environment. Analysis of environmental data provides the vital feedback loop for evaluating the results of energy-saving practices. In this project we will demonstrate the most effective ways to monitor and evaluate their collection storage conditions stressing three simple directives—understand the role of heat energy and moisture in the rate of material decay, manage seasonal extremes, and recognize the role of dew point. These elements directly affect the risk of decay in nearly all materials.

Heat is a form of energy that drives chemical reactions. As the temperature increases, the rate of chemical reaction increases leading to a higher rate of decay. At higher temperatures biological activity also increases. Relative humidity represents how saturated the air is with water vapor and determines the amount of moisture contained within collection objects. As the RH in the space increases, objects absorb more water; as it decreases they release moisture. High RH levels can lead to mold, metal corrosion, mechanical damage and a high rate of natural aging. Low RH levels can also cause mechanical damage. Dew point is the temperature at which the air cannot hold all the moisture in it and water condenses. It is also a measure of the absolute amount of water in the air, which does not change unless the air is humidified or dehumidified. As the temperature varies throughout the year so does the amount of moisture in the air, as represented by the dew point. Unfortunately, collection care staff, and even many HVAC operating staff, don't pay attention to dew point or even understand its critical role in environmental management.

In deciding whether conditions are harmful to collections or not, it's the extremes of RH that are most threatening, especially if they are prolonged for the several weeks or few months that most collection objects require to fully feel the effect. Seasonal highs and lows of humidity and dryness are much more significant than the short-term humidity events that many people agonize over because most objects are slow to equilibrate to variations in RH.

The critical parameter in creating a good environment for preservation is to effectively manage dew point. If your goal is to provide the lowest temperature possible while maintaining RH between about 30% and 60%, you will need to understand the role of dew point. The dew point temperature of the air determines which temperature and RH combinations are possible and adjusting the dew point temperature is the best way to achieve a preservation environment.

1.7 Sustainability and Energy-Savings – Our Approach

Along with a primary concern for maintaining or improving the preservation quality of storage environments, this project will present an approach to energy-saving that emphasizes operating adjustments using existing systems. The process involves understanding the capabilities of the system, identifying the major energy-consuming elements, and progressively implementing changes in operating procedures to reduce energy use—as you document the resulting effect on the storage environment.

Each building, each system, and each institution have unique circumstances. We can't identify a perfect solution for every situation, but we can offer a general framework and a range of options to pursue. It is possible to simplify and explain the most common energy-saving measures, their pitfalls and potential benefits. The curriculum for explaining the basics of HVAC systems, the methods to identify energy reduction opportunities, and the options for progressive implementation of energy-saving measures will be presented in ways that both collections care and facilities staff can understand. Some of it is complex, but we will limit the amount of highly technical information presented. The curriculum will include the rudiments of temperature, RH, and dew point so that energy-saving opportunities like unnecessary sub-cooling and reheating can be easily understood.

2. INSTITUTIONAL PROFILE—IMAGE PERMANENCE INSTITUTE

2.1 Overview of IPI's Preservation Research Background

The Image Permanence Institute (IPI) is an academic preservation research institute in the College of Imaging Arts and Sciences at Rochester Institute of Technology in New York State. IPI began with a mission of research focused on the preservation of imaging media, primarily photography, cinema, and microfilm. The first project, funded by NEH, studied the deterioration and preservation of 19th century photographic prints. Later projects examined the environmental causes of nitrate and acetate film deterioration, fading of microfilm and color photography, sulfiding protection for silver images, selenium for microfilm, and the preservation of safety film. IPI developed accelerated-aging test methods for determining the suitability of materials intended for use as photograph storage enclosures. Practical tools which have had a significant impact on the field of preservation were developed during this period, including the Photographic Activity Test (PAT) and film-based deterioration monitors (Acid Detection or A-D Strips[®]).

Over the course of IPI's preservation research it became clear that heat and moisture are the primary rate-controlling factors in almost every modality of decay. Control of these factors in the storage environment is of fundamental importance in preservation and is more broadly effective than other, more limited, preservation actions. In the mid-1990s, IPI began work on computer modeling and the development of quantitative metrics to measure the effects of storage conditions on the rate of decay. This led to development of the first preservation metric, a general quantitative model of organic decay called the time-weighted preservation index (TWPI), published in *New Tools for Preservation: Assessing Long-Term Environmental Effects on Library and Archives Collections*. Based on this concept, IPI developed the Preservation Environment Monitor[®] (PEM) and Climate Notebook[®] software specifically for use in cultural institutions. With funding from NEH, IMLS, and The Mellon Foundation, these tools were field-tested in hundreds of institutions and used in research and optimization projects with the Library of Congress, and the New York Public Library. These projects led to a greater understanding of how environmental assessment works in cultural institutions and the development of additional preservation metrics for biological decay, mechanical deterioration, and corrosion. In recent years IPI has provided environmental consulting to a wide variety of institutions.

There is considerable evidence of the effectiveness and relevance of IPI's contributions to the field of preservation. IPI is one of the few available sources of preservation research and development. Hundreds of institutions around the world including research libraries, specialized libraries, archives, museums, and historical collections use IPI's technology and preservation management tools and hundreds more rely on IPI for accurate and reliable advice, information, and services (*see Appendix 3— IPI Organizational Profile*).

3. CURRICULUM AND WORK PLAN

3.1 Overview

Our primary goal for this project is to provide up-to-date information, strategies, and tools that will enable both collection care and facility management staff in collecting institutions to make informed, strategic decisions regarding sustainability that result in responsible collection care

and energy cost savings. The audience will understand that sustainable environmental management is a process of understanding and analyzing a number of key factors to determine the best outcome for each institution.

Through a series of five workshops and nine webinars, along with three to five educational videos, we will provide a framework for decision making and practical guidelines for managing any potential risk to collections that could arise from the implementation of sustainable energy management practices. Presentations will include the latest research on the environment's impact on collection materials, an introduction to basic mechanical system functions, opportunities for reducing energy use, and real-world examples of sustainable practices. A comprehensive and understandable *Sustainable Preservation Practices Guidebook* will be provided to all workshop participants and is for sale at a reasonable cost to anyone who would like to purchase it. Overall, participants will come away with useful tools, a foundation of relevant knowledge, and the ability to initiate a successful collaboration between collections care and facilities management staff at their own institutions.

For Series #3 we have added the production of educational videos associated with sustainable preservation practices, targeted specifically for administrative and facility management staff in cultural institutions. The format and free availability of these targeted videos will make it much easier for busy staff members to access the information in the time they have available.

3.2 Workshop Curriculum

IPI staff members James Reilly, Director, and Jeremy Linden and Shae Trewin, Preservation Environment Specialists, will present five two-day regional workshops. No fees will be charged to attend and participants will pay their own travel and lodging costs.

Most venues are happy to waive space rental fees to accommodate a workshop. However, we have found that in general institutions have some financial obligation—from charges for A/V use and maintenance to security services and parking fees. We therefore included funds in the budget to cover these costs. Expenses for minimal break-time refreshment, copies of the *Sustainable Preservation Practices* guidebook, and other printed materials provided for workshop participants are also included in the budget.

We estimate the average attendance at each workshop in a third series to be 80, ranging between 60 and 100 people at each venue. In Series #2 the average number of attendees at each workshop was 70.5. In the first series the average was 70.8 per venue. We were concerned during each round that cutbacks in travel money at cultural institutions and the fact that participants must pay their own travel and housing costs would limit the number of participants, but a significant number of participants signed up for each venue. We are certain that interest in the series remains high and that we will continue to draw an audience to both the workshops and the webinars. As noted earlier in this narrative, in addition to broadly promoting the series on various professional list serves, we will reach out more directly to regional institutions, to administrators, and to facilities staff. Finally, the following organizations have agreed to promote the workshops and webinars in this series, helping IPI to reach the widest possible audience:

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Balboa Art Conservation Center, San Diego, CA
Conservation Center for Art & Historic Artifacts, Philadelphia, PA
Northeast Document Conservation Center, Andover, MA

The workshops will focus on achieving and maintaining an optimal and sustainable preservation environment—one that achieves the best possible preservation environment with the least possible consumption of energy. The workshop will begin with what participants need to know to define an optimal preservation environment, including the latest research related to sustainable practice in cultural institutions, preservation management basics, the role of dew point, and an explanation of basic mechanical system elements. This will be followed with what participants need to do to achieve their goals including data collection and analysis, evaluation of mechanical system operation, environmental management team activities, and investigation of energy saving opportunities (*see Appendix 4 – Sustainable Preservation Practices Series #3 Workshop Agenda*).

Venues in regions with a large number of cultural institutions were selected for Series #3 workshops because they have traditionally had the highest attendance rates. We also wanted institutions in cities with good options for participants to find lunch on their own. Finally, we focused on institutions that have experience with sustainable environmental management practices and could discuss their experiences during the workshop. The following institutions are willing to provide workshop venues:

American Museum of Natural History, New York, New York
Amon Carter Museum, Fort Worth, Texas
Museum of Fine Arts, Boston, Massachusetts
Smithsonian Institution Archives, Washington, DC
California Preservation Program, Berkeley, California

If for any reason the institutions listed above cannot accommodate a workshop during the grant period, past experience has shown that other institutions that meet the criteria can be found (*see Appendix 5 – Series #3 Letters of Commitment & Support*).

The workshop agenda references *IPI's Guide to Sustainable Preservation Practices for Managing Storage Environments* which expands on all the topics covered during the two days. In Series #3 we will again provide a copy of the guidebook to each workshop participant (*see Appendix 6 – Sustainability Guidebook Table of Contents*). We have received several very positive comments about the publication, including:

“IPI's Guide to Sustainable Preservation Practices; What Every Museum Should Buy Itself for the Holidays. This is a practical what-is and how-to manual that will demystify the discussion on collections climate standards and HVAC systems for your staff, your HVAC vendor, your board, or an MEP engineer unfamiliar with museums. And it's the background you need for your next grant proposal on collections spaces and HVAC systems.”

Sarah Brophy, sustainablemuseums.blogspot.com

Workshop participants will also be introduced to IPI's free online *Dew Point Calculator* (www.dpcalc.org) which will be used in the presentations to demonstrate the relationship

between temperature, relative humidity and dew point. The calculator will also be an invaluable resource for project participants after the workshops as they consider changes in environmental settings. Because it allows you to plot hypothetical temperature, relative humidity, and dew point scenarios, the *Dew Point Calculator* provides a framework for determining what environmental changes could be possible given the capabilities of your mechanical systems and the nature of your local climate. It also calculates IPI's Preservation Metrics™ for the hypothetical environment, allowing the user to gauge the impact of potential changes before implementing them in their institution.

NEH funded the development of IPI's tools for managing the environment, including the PEM2® datalogger and the new on-line data management system, eClimateNotebook™ (www.eClimateNotebook.com). These tools will be mentioned because they were developed specifically for cultural institutions and were used in the projects discussed and graphs presented during the workshops and webinars. However, participants are under no obligation to purchase these products. If there is an interest we will provide links to additional information online or to handouts describing IPI's environmental management tools.

3.3 Webinar and Educational Video Curriculum

During Series #3 we will again present nine webinars, developed with a structured curriculum so that each presentation can stand alone as a reference on a particular topic. Each topic expands on information presented during the workshops, making the information available to a much wider audience. As before, all webinars will be archived and available on the project website, allowing participants to review a previously discussed topic, or to share the information with colleagues. The webinar series will be free and there will be no limit to the number of participants. Based on past experience we will use *GoToWebinar*, available from Citrix Online LLC, the same software used in Series #2 to manage the webinar presentations and surveys. *GoToWebinar* provides ease of access, a question and answer feature, polls, live chat, webinar recordings, automatic registration and follow-up emails. Webinars will be delivered by IPI staff, primarily Mr. Reilly, Mr. Linden, and Ms. Trewin. The webinar topics are available in *Appendix 7 – Sustainable Preservation Practices Series #3 Webinar Curriculum*.

In Series #3 we will create three to five free educational videos targeted to specific audiences. They will include subjects of particular interest to administrative and facility management staff in cultural institutions. This format allows viewers to access the information when time allows, and to view and discuss the topics in a group setting. We will develop one video specifically for small institutions with basic mechanical systems and limited options for climate control and another for staff in large institutions interested in learning about more complicated HVAC systems. The potential list of topics is detailed in *Appendix 8 – Sustainable Preservation Practices Series #3 Video Topics*.

3.4 Project Work Plan

The basic project work plan can be broken into three phases as shown below.

Phase I: Planning & Promotion Six Months (March 2014 – August 2014)

- Finalize the location of the five regional workshop venues and work with their staff representatives to set a presentation schedule.

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- Finalize development of the PowerPoint presentations and associated handouts for each workshop.
- Finalize the overall curriculum for and individual outlines of each presentation in a series of nine webinars.
- Finalize the script for three to five educational videos and begin production.
- Update the original project website to include all current information about the presentations and related information.
- Set up the online registration and preliminary workshop and webinar survey forms.
- Promote the workshop and webinar series and the educational videos to potential audiences. Work with other regional service organizations to cross-promote each part of the series.
- Contact institutions within a reasonable distance from each workshop venue to encourage participation.
- Produce any additional workshop course materials and handouts.

Phase II: Presentation Fifteen Months (September 2014 – November 2015)

- Coordinate various activities and finalize details in advance of each workshop.
- Continue promotion of workshops, webinars and videos.
- Contact all workshop registrants prior to each presentation to provide information on where to stay, etc. Weed out any potential drop-outs in advance.
- Ship *Sustainable Preservation Practices* guidebooks and various handouts to each workshop venue.
- Present the five regional workshops.
- Finalize webinar scripts and PowerPoint presentations.
- Contact webinar registrants in advance to remind them of presentation date and time.
- Present the nine webinars.
- Survey each workshop and webinar participant after each of the presentations.
- Finalize production of the educational videos and promote them to various audiences.
- Update the online archive of course materials and webinar presentations on the project website.

Phase III: Documentation Three Months (December 2015 – February 2016)

- Tabulate the results of the workshop and webinar surveys.
- Provide technical support, guidance, and advice to participants as requested.
- Disseminate project results at professional conferences and in professional publications.

3.5 Impact and Intended Results

This project is national in scope and impact since it is available to and accessible by institutions and individuals in every geographic region, and from every type of institution. IPI will rely on partnerships with the regional service providers listed previously to promote the workshop and webinar series, and the educational videos. This series of presentations complements their efforts but goes into greater depth, especially with regard to practical energy-saving measures and collection risk management.

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The project team has over a decade of experience working with libraries and museums on managing the environment for preservation, providing numerous examples of working with a team of facilities and collections staff to achieve the kind of environmental management outlined in this project—where energy consumption and preservation quality are measurable and jointly optimized. This is a relatively new process involving both cultures and we will encourage preservation staff, facility managers and administrators to attend a workshop, listen to a webinar, or watch a video presentation together.

We will advertise the presentations in several professional distribution lists, and through our own contact mailing list of over 2,000 institutions. We will post the series on IPI's website and cross-promote with other institutions. Interest remained high throughout the second series and word spread quickly between colleagues who had attended a presentation and promoted it for us. Based on how far-reaching Series #2 has been we have every confidence that a third series of presentations will be just as extensive.

One impact of this series has been an increase in projects that involve environmental monitoring, mechanical system evaluation, and the development of sustainable practices. In the last few years, IPI has been asked to provide advice or environmental consulting to institutions applying to NEH for grants to cover these activities. Some of these projects include:

- Arizona State Museum—staff attended a Series #2 workshop, they have applied for an NEH SCHC Planning grant
- Columbia College Chicago Library, Illinois—staff attended a Series #2 workshop, they have applied for an NEH Sustaining Cultural Heritage Collections (SCHC) Planning grant
- Columbia Theological Seminary, Georgia—collections and facilities staff attended a Series #1 workshop, they have requested quotes for environmental monitoring and mechanical system assessment of two of their library facilities
- Fundación Luis Muñoz Marín, San Juan, Puerto Rico—staff attended both a workshop and a webinar in Series #1, they have received an NEH Preservation Assistance Grant
- New York Academy of Medicine—staff attended a Series #2 workshop and received an NEH SCHC Planning grant
- Northern Kentucky University—staff attended a Series #2 webinar, they have received an NEH SCHC Planning grant
- University of Illinois, Champagne-Urbana, staff attended both Series #1 and #2 workshops and Series #2 webinars, they have applied for an NEH SCHC Implementation grant
- University of Notre Dame Libraries—staff attended a Series #2 workshop, they have requested consulting quotes for mechanical system design review and preservation commissioning of their main library, off-site storage facility, and special collections storage

The impact of this series will not be temporary in nature or limited to present economic concerns. If successful, these presentations and related documentation will inform management and guide practices in collecting institutions indefinitely.

4. EVALUATION OF RESULTS

Project funds will be used to purchase access to an online service called *Wufoo*. This data collection service will be used to create surveys and collect registrations for workshops and

webinars. *Wufoo* provides customizable reports and survey results at a very reasonable cost. Registrants will be asked to complete a short preliminary survey indicating their interests and expectations. At the close of each workshop and webinar participants will be asked to complete a survey providing their evaluation of the presentation as well as information about their own experiences with sustainable preservation practices (*See Appendix 9, Sample Series #2 Surveys*). Their suggestions will guide any presentations that follow. We will maintain a project website with contact information to encourage communication between IPI and project participants.

5. PROJECT STAFF

IPI staff will develop, present, and document the education and training offered in this series through workshops, webinars, videos and educational materials. IPI and its Director, James M. Reilly, have a worldwide reputation for preservation research with special concentration on assessment and management of storage environments. Patricia Ford, IPI Senior Research Scientist and Principal Investigator (PI), will provide overall project management. Presentations will be delivered by Mr. Reilly (Co-PI) and IPI's two Preservation Environment Specialists, Jeremy Linden and Shae Trewin. Mr. Linden was a presenter at four of the workshops in the first series and all of the workshops and many of the webinars in the 2nd series. Shae Trewin participated in each of workshops and manages the webinar presentations in Series #2.

5.1 The Project Team

The project team has extensive experience with environment and preservation as well as energy issues. The following IPI staff members are slated to work on this project:

- **Patricia Ford**, IPI Senior Research Scientist and Principal Investigator, will spend 15% of her time on the project and have overall administrative responsibility for it. She has an extensive background in museum collections and record management with over twenty-five years work in the field. Ms. Ford will function as day-to-day project manager and will supervise and contribute to content development for presentations, documents and publications. She will oversee project documentation, scheduling, and other organizational activities.
- **James M. Reilly**, Director of the Image Permanence Institute and Co-Principal Investigator, will spend 10% of his time on the project. He will be a presenter at each workshop and several webinar presentations, provide advice to participants, and provide content development for all presentations, documents and publications.
- **Jeremy Linden**, Senior Preservation Environment Specialist, will be a presenter at each workshop and several of the webinar presentations and provide advice to participants. Mr. Linden will also contribute to content development and documentation, and provide technical support. He will spend 15% of his time on the project.
- **Shae Trewin**, Preservation Environment Specialist, will be a presenter at each workshop and several of the webinar presentations and provide advice to participants. Ms. Trewin will also contribute to content development and documentation, and provide technical support. She will spend 15% of his time on the project.
- **Lauren Parish**, IPI Web Designer, will be responsible for web content management, editing, and graphic design. She will be responsible for the design and production of all print and web

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publications, and will assist with webinar presentations. Ms. Parish will supervise the development and production of all educational videos. She is expected to give 10% of her time to the project.

- **Alyssa Marzolf**, part-time IPI Imaging and Microscopy Technician, will work with the project team to develop and produce the educational videos. Ms. Marzolf has significant experience in digital video production, digital photography, and image editing. She will spend 18% of her time on this project.
- **Lisa Cerra**, IPI Business Manager will dedicate 5% of her time managing the financial aspects of the project and assisting with business activities. Ms. Cerra will review and approve all project expenditures, ensure budget compliance, handle account reconciliations, serve as liaison to RIT administration, handle legal issues, and ensure timely reporting.

Qualifications for the project personnel listed above are described more fully in *Appendix 10 - List of Key Project Staff*, and in *Appendix 11- Résumés*.

6. CONCLUSION

Interest in and support for IPI's Sustainable Preservation Practices series continues to grow. The presentations are far-reaching and have an important and significant impact on the field. The continuation of this valuable initiative will build upon the momentum and education begun in the first two series to provide many more institutions with up-to-date information, tools, and strategies so that they can make informed decisions regarding sustainable practices, responsible collection care and energy cost savings.