

Hosted Conferences

Use of Long-Term Research for Enhancing Water Quality in the Great Lakes Region

The IUPUI Center for Earth and Environmental Science and the USDA-CSREES through the Great Lakes Regional Water Quality Leadership Team, and the Indiana Water Resources Research Center (IWRRC) co-sponsored a regional water quality meeting September 8 and 9, 2005 on the IUPUI Campus in Indianapolis, Indiana. The conference was held at University Place Conference Center and Hotel at IUPUI.

As watersheds continue to undergo transformation to mixed agricultural and urban land use, new challenges face water resource managers working to improve water quality. Improving water resources in the Great Lakes region hinges on integrated approaches addressing not only water quality, but water use, wastewater treatment, and the physical environment. This meeting explored approaches currently used at existing field research sites as well as provided a forum for discussion of novel technologies for both the capture and display of water quality data. Workshop discussions also explored approaches to translating data to information that can aid in the decision-making process. The forum provided an opportunity for hands-on experiences at Central Indiana field sites. The meeting led to the development of a set of unique approaches to assess the impacts of all types of activities associated with watershed functions and provide a

framework and timeline to achieving a regional consortium. Information and presentations from the conference are posted on the CEES website.

Indiana Water Resources Association Fall Meeting: Regional Water Quality Research and Advanced Information Technologies to Assess and Enhance Indiana's Water Resources

CEES and the Pervasive Technology Laboratories of Indiana University hosted the Indiana Water Resources Association (IWRA) fall meeting at IUPUI on Friday, December 9, 2005. CEES faculty and staff presented water resources research within Central Indiana with the Pervasive Technology Labs highlighting advanced visualization technologies for environmental monitoring through tours within their facility. The IWRA fall conference built on information presented at the CEES-sponsored conference, *Use of Long-Term Research for Enhancing Water Quality in the Great Lakes Region* on September 8 and 9, 2005 at IUPUI.

IWRA is a state affiliate of the American Water Resources Association to promote water resources research, education, and communication in Indiana. The IWRA is an organization of several hundred professionals and students working in all aspects of water resources. Its members include scientists, engineers, regulators, educators, policy-makers, and students from government agencies, universities, industry, consulting firms, and other

water related groups. One of the main goals of IWRA is to facilitate communication and the exchange of information within the water-resources community of Indiana. The conferences are opportunities to present regional water resources work to Indiana professionals.

2006 Emerging Issues in Source Water Management and Strategies for Addressing New Drinking Water Regulations

Historically, drinking water quality has been controlled primarily at the treatment plant. As drinking water quality regulations continue to increase in complexity, it is clear that long-term solutions to many water quality challenges must take an integrated approach that includes management of the water supply from source water through treatment and distribution. The goal of the international meeting was to bring together a group of experts and interested parties to link the issues of source water management, health effects and treatment strategies as they relate to current and emerging water quality concerns. The one and a half day meeting included a short regulatory update followed by three half-day topical sessions on the following topics: 1) Disinfection By-Products; 2) Microbial Contaminants with a focus on *Cryptosporidium* and *Giardia*; and 3) Taste and Odor and Algal Toxins. Each session consisted of presentations to link source water, health effects and treatment issues related to the topic. Attendees gained an increased understanding of the linkages between

source water, treatment, and drinking water quality that can facilitate an integrated and more sustainable approach to addressing long-term water quality concerns.

Attendees included drinking water experts from France, Germany, Australia and throughout the United States and included a mix of academic, governmental, industry and municipal representatives.

Honors and Awards

Honorary Membership in the Clean Stream Team February, 2007

CEES Environmental Service Learning Program

Honoring work organizing volunteers to mark storm drains and for assistance with the White River Cleanup.

President's Higher Education Honor Roll for Community Service October 2006

Indiana University-Purdue University Indianapolis (IUPUI) was named as one of three recipients of the Presidential Award as part of the first President's Higher Education Community Service Honor Roll. IUPUI was recognized for the outreach of students, faculty, and staff members. The CEES Environmental Service Learning Program was highlighted as a participating program as part of IUPUI's application for the award and received recognition at the corresponding Indiana State House reception.

Chancellor's Faculty Award for Excellence in Civic Engagement April 2005

CEES Director, Dr. Lenore P. Tedesco was awarded the Chancellor's Award for recognition of outstanding work to improve the quality of life through campus-community partnerships. Her

work is focused through the CEES civic engagement and service lens.

Honorary Membership in the Clean Stream Team October, 2003

Lilly ARBOR Project

The Rotary Club of Indianapolis, Eli Lilly and Company, and the Center for Earth and Environmental Science, IUPUI, were recognized as honorary members of the Indianapolis Clean Stream Team. The community partners were recognized for their work in restoring eight acres along the White River.

Governor's Award for Environmental Excellence September, 2002

Lilly ARBOR Project

CEES was recognized for implementing the 8-acre research and experiential education floodplain forest restoration site along the White River in downtown Indianapolis. CEES coordinated partnerships with over 30 community partners and engaged IUPUI faculty, staff, and students and community volunteers in the installation, maintenance and research of the site.

Water Resources Publications

<http://www.cees.iupui.edu/publications/>

2007

Papers

- Vidon, P., Campbell, M.A., Gray, M., (in review), Unrestricted cattle access to streams and water quality in till landscape of the Midwest: Agricultural Water Management (Submitted Jan. 2007).
- Vidon, P., and Smith, A.P., (in review), Riparian zone hydrological functioning in glacial till valleys of the Midwest: Journal of the American Water Resources Association (Submitted Jan 2007).
- Vidon, P., and Smith, A.P., (in review), Assessing wetland restoration success and the influence of former drainage pipe locations on wetland hydrology: A case study: Ecological Restoration (submitted Jan. 2007).
- Vidon, P., Tedesco, L.P., Pascual, D.L., Campbell, M.A., Casey, L.R., Wilson, J., and Gray, M., (in review), Seasonal changes in stream water quality along an agricultural/urban land-use gradient: Science of the Total Environment (submitted Jan. 2007).
- Randolph, K., Wilson, J., Tedesco, L.P., Li, L., and Willans, A., (in review), Hyperspectral remote sensing of cyanobacteria in case II water using optically active pigments, chlorophyll a and phycocyanin: Remote Sensing of Environment Special Issue – Application of Remote Sensing to Monitor Freshwater and Estuarine Systems (submitted March, 2007).
- Sengpiel, R., Li, L., Pascual, D.L., Tedesco, L.P., Wilson, J., and Willans, A., (in review), Using hyperspectral remote sensing to estimate chlorophyll a and phycocyanin in a mesotrophic reservoir: International Journal of Remote Sensing (submitted March, 2007).

2006

Papers

- Tedesco, L.P., and Salazar, K.A., 2006, Using environmental service learning in an urban environment to address water quality: Journal of Geoscience Education, v. 54, no. 2, p. 123-132.

Technical Reports

- Li, L., Pascual, D.L., Tedesco, L.P., Randolph, K.L., Sengpiel, R.E., Hall, B.E., and Wilson, J.S., 2006, Developing a survey tool for the rapid assessment of blue-green algae in Central Indiana's reservoirs: CEES Publication 2006-01, 55 p.

Conference Abstracts

- Jacinthe, P.A., Tedesco, L.P., and Barr, R.C., 2006, Soil properties and trace gas fluxes in a newly restored riparian forest: Soil Science Society of America Annual Meeting Program, p. 159.
- Tedesco, L.P., Hernly, F.V., Graves, D., and Hall, B.E., 2006. Integrating Geologic and Landscape Data to Identify, Preserve, and Restore Midwestern Seep Wetlands. Soil Science Society of America International Meeting, Indianapolis, November, 2006.
- Tedesco, L.P., Barr, R.C., and Hall, B.E., 2006, Towards sustainable water resources for mixed agricultural and urban watersheds: 26th International Symposium of the North American Lake Management Society Program, p. 70.

- Li, L., Pascual, D.L., Sengpiel, R., Randolph, K.L., Tedesco, L.P., Hall, B.E., Wilson, J., and Moran, D., 2006, Quantifying chlorophyll *a* and phycocyanin of drinking water reservoirs through GA-PLS modeling of hyperspectral reflectance: 26th International Symposium of the North American Lake Management Society Program, p. 51.
- Randolph, K.R., Li, L., Tedesco, L.P., Wilson, J., Pascual, D.L., and Moran, D., 2006, Remote sensing of phytoplankton using optically active pigments (chlorophyll *a* and phycocyanin) in small, turbid reservoirs: 26th International Symposium of the North American Lake Management Society Program, p. 62.
- Pascual, D.L., Raftis, R., Filippelli, G.M., and Tedesco, L.P., 2006, Run-off and tile drainage verses internal recycling: three year mass balance approach to understanding phosphorous loading and productivity in a small, urban reservoir, Eagle Creek Reservoir, IN, USA: 26th International Symposium of the North American Lake Management Society Program, p. 58.
- Pascual, D.L., Filippelli, G.M., Tedesco, L.P., and Seillier, J.M., 2006, Shifts from P- to N-limited growth conditions as indicators of nuisance blue-green bloom formation, Eagle Creek Reservoir, IN, USA: 26th International Symposium of the North American Lake Management Society Program, p. 58-59.
- Sengpiel, R., Li, L., Tedesco, L.P., Wilson, J., Pascual, D., and Moran, D., 2006, Mapping concentration and spatial distribution of cyanobacteria in mesotrophic to eutrophic reservoirs using airborne hyperspectral remote sensing imagery: 26th International Symposium of the North American Lake Management Society Program, p. 66.
- Tedesco, L.P., Pascual, D.L., Shrake, L.K., and Hall, B.E., 2006, A comprehensive and straight-forward method for identifying and prioritizing restoration sites in Eagle Creek Watershed, IN: Rivers Institute Non-Point Source Pollution Conference Program, p. 129 – 130.
- Shrake, L.K., Pascual, D.L., Tedesco, L.P., Hall, B.E. and Moran, D.C., 2006, Subwatershed contribution to an urban drinking water reservoir: Rivers Institute Non-Point Source Pollution Conference Program, p. 56 – 57.
- Jacinthe, P.A., 2006, Spatio-temporal variability of nitrogen dynamics in a freshwater reservoir: Denitrification Modeling Across Terrestrial, Freshwater and Marine Systems, National Science Foundation's Denitrification Research Coordination Network: Integration Across Landscapes and Waterscapes Workshop, 2006 Nov.
- Randolph, K., Li, L., Tedesco, L.P., Wilson, J., Pascual, D.L. and Moran, D., 2006, Remote sensing of phytoplankton using optically active pigments, chlorophyll *a* and phycocyanin: 27th Annual Indiana Water Resources Association Spring Meeting Program p. 28-29.
- Sengpiel, R., Li, L., Tedesco, L.P., Wilson, J., Pascual, D.L., and Moran, D., 2006, Mapping concentration and spatial distribution of cyanobacteria in mesotrophic to eutrophic reservoirs using airborne hyperspectral remote sensing imagery: 27th Annual Indiana Water Resources Association Spring Meeting Program, p. 34-35.
- Vidon P., and Smith, A.P., 2006, Riparian zone hydrological functioning in glacial till valleys of the Midwest: Soil Science Society of America Annual Meeting Program, p. 159.
- Tedesco, L.P., and Graves, D., 2006, Assessing the role of geologic setting on water quality of temperate fens in the glaciated midcontinent United States, Catchments to the Coast, Society of Wetland Scientists 27th International Conference Program, p. 115.
- Graves, D., and Tedesco, L.P., 2006, Assessing the role of geologic setting on water quality of temperate fens in the glaciated Midwestern United States: 26th International Symposium of the North American Lake Management Society Program, p. 69.
- Wagner L., Vidon, P., and Gray, M., 2006, Nutrient specific flow paths during spring and summer storm events in a Midwestern watershed: American Water Resources Association Annual Meeting Abstract CD, Poster Session, Poster no. 43.
- Jacinthe, P.A., 2006, Nitrogen budget and dynamics in central Indiana freshwater reservoirs: Annual Meeting of the Ecological Society of America Abstract CD, Session 43.
- Enochs, A., Jacinthe, P.A., Wang, X., 2006, Organic carbon and denitrification activity in adjacent flatwoods and restored wetlands: Annual Meeting of the Ecological Society of America Abstract CD, Poster Session 19, Poster no.154.

- Jacinthe, P.A., 2006, Nitrogen cycling in Central Indiana reservoir sediments as affected by copper enrichment: Fall meeting of the Indiana Water Resources Association, 2006 Jan.
- Jacinthe, P.A., 2006, Nitrogen dynamics in sediment from three Central Indiana water reservoirs: Seventh Annual IUPUI Symposium Highlighting the Research of Faculty, Staff, and Students of Color, March, 2006.
- Tedesco, L.P., Salazar, K.A., and Covitt, B., 2006. Advancing Urban Environmental Stewardship through Service Learning and Community Partnerships, 35th Annual Meeting North American Association for Environmental Education, St. Paul, Minnesota, October, 2006.

2005

Technical Reports

- Tedesco, L.P., Baker, P., Barr, R.C., Casey, L.R., Salazar, K.A., Shrake, L.K., Smith, A.P., Hernly, F.V., and Hall, B.E., 2005, Use of long-term research for enhancing water quality in the Great Lakes Region, Field Trip Guidebook for the Great Lakes Water Quality Workshop: CEES Publication 2005-08, 20 p.
- Tedesco, L.P., Pascual, D.L., Shrake L.K., Casey, L.R., Hall, B.E., Vidon, P.G.F., Hernly, F.V., Barr, R.C., Ulmer, J., and Pershing, D., 2005, Eagle Creek Watershed Management Plan: An integrated approach to improved water quality: CEES Publication 2005-07, 181 p.
- Tedesco, L.P., Barr, R.C., Hernly, F.V., Hall, B.E., and Graves, D.M., 2005, An overview of Central Indiana Fens, US Army Corp of Engineers Field Trip Guidebook: CEES Publication 2005-06, 31 p.

Conference Abstracts

- Shrake, L.K., Pascual, D.L., Casey, L.R., Tedesco, L.P., Hall, B.E., Moran, D.C., 2005, Determining nutrient contribution on a subwatershed scale: Eagle Creek Watershed, Central Indiana: *in* Steward, C., ed., Abstract Proceedings of the American Water Resources Association 2005 Annual Conference, ISBN 1-882132-69-6, TPS-05-3.
- Raftis, R., Pascual, D.L., Filippelli, G.M., Tedesco, L.P., and Gray, M., 2005. Phosphorus mass balance of an urban eutrophied drinking water reservoir: Eagle Creek Reservoir, Indianapolis, Indiana: Geological Society of America Annual Meeting Abstracts with Programs, v. 37, no. 7, p. 353.
- Pascual, D.L., Johengen, T.H., Filippelli, G.M., Tedesco, L.P., and Moran, D., 2005, Cultural eutrophication of three Midwest urban reservoirs: The role of nitrogen limitation in determining phytoplankton community structure: Interagency International Symposium on Cyanobacterial Harmful Algal Blooms Program, p 68.
- Tedesco, L.P., Pascual, D.L., Shrake, L.K., and Hall, B.E., 2005, A Comprehensive and straight-forward method for identifying and prioritizing restoration sites in Eagle Creek Watershed, IN: Integrated Restoration of Riverine Wetlands, Streams, Riparian Areas, and Floodplains in Watershed Contexts, Association of State Wetland Managers Annual Meeting Abstracts, p. 36.
- Smith A., and Vidon, P., 2005, Using high-resolution water table data as a tool to evaluate restored wetland hydrologic functioning: Geological Society of America Abstracts with Programs, v. 37, no. 7, p. 373.
- Graves, D.M., Tedesco, L.P., and Hernly, F.V., 2005, A Comparative fen water quality analysis: Implications of stratigraphic and land use influence: Geological Society of America Abstracts with Program, vol. 37, no. 7, p. 372.
- Barr, R.C., Hall, B.E., Tedesco, L.P., Webber, J.J., and Hernly, F.V., 2005, The impact of urbanization on basin evolution and isolated wetlands: A study from the Ritchey Woods Natural area, Hamilton County, Indiana: Geological Society of America Abstracts with Program, v. 37, no. 5, p.9.
- Salazar, K.A. and Tedesco, L.P., 2005, Engaging students in urban campus stewardship activities to address water quality: *in* Koester, R.J. ed., Conference Proceedings of Extending Connections: Greening of the Campus VI, v. 6, p. 32.

- Tedesco, L.P., Barr, R.C., Hall, B.E., Webber, J.J., and Hernly, F.V., 2005, Preserving "isolated" wetlands in evolving drainage basins: A study from the Ritchey Woods Natural Area, Hamilton County, Indiana: 5th Annual Meeting of the American Ecological Engineering Society Program, p. 39.
- Tedesco, L.P., 2005, Sustainable water resources for mixed agricultural and urban landscapes: Workshop on Sustainable Approaches in Water Management, Urban Planning, and Effective and Renewable Energy Uses Abstracts, p.10.
- Salazar, K., and Tedesco, L.P., 2005, Engaging undergraduate students in urban environmental stewardship: 34th Annual Meeting North American Association of Environmental Educators, 2005 Oct., Albuquerque, NM.
- Tedesco, L.P., Baker, M.P., Rogers, Y., Hall, B.E., Hursey, J., Hazelwood, W.R., and Salazar, K., 2005, RAPID: Remotely Accessible Personal Information Display – Bridging the gap between the field and the laboratory to synthesize environmental data and foster integrated and collaborative learning: Geological Society of America Abstracts with Programs, v. 37, no. 7, p. 408.

2004

Publications

- Tedesco, L.P., Hernly, F.V., Hall, B.E., Salazar, K.A., Lindsey, G., and Minger, T., 2004, The Lilly ARBOR Project: An experiment in urban riparian restoration (Indiana): *Ecological Restoration*, v. 22, no. 4, p. 294-295.

Technical Reports

- Pascual, D.L., and Tedesco, L.P., 2004, Phytoplankton ecology of Eagle Creek Reservoir, Indiana: CEES Publication 2004-01, 39 p.
- Pascual, D.L., and Tedesco, L.P., 2004, Responses to algaecide treatment in Eagle Creek Reservoir, Indiana: CEES Publication 2004-02, 41 p.
- Tedesco, L.P., Hall, B.E., Shrake, L.K., and Casey, L., 2004, Eagle Creek Watershed and Reservoir and wetland Restoration at the Starling Nature Sanctuary: EPA Source Water States Managers Meeting Field Trip Guidebook, CEES Publication 2004-03, 17 p.
- Brookes, J., Shaw, G., Burford, M., Burch, M., Linden, L., Meyer, T., McNeale, K., Newcombe, G., Rinck-Pfieffer, S., Regel, R., Smith, M., and Hall, R., 2004, Reservoir management strategies for control and degradation of algal toxins: AWWA Research Foundation Project 2976, First Periodic Report. Cooperative Research Centre for Water Quality and Treatment, Environmental Toxicology, Southeast Queensland Water, Veolia Water-USFilter, Griffith University. 154 p.

Conference Abstracts

- Jackson, L. R., Tedesco, L., Shrake, L., Hall, R., Wilson, J., and Pershing, D., 2004, Effects of land use on water quality and nutrient loading in Eagle Creek Watershed, Central Indiana, USA: Geological Society of America Abstracts with Programs, v. 36, no. 5, p. 492.
- Raftis, R., Filippelli, G., Souch, C., Tedesco, L.P., Pascual, D.L., Hall, B.E., Hernly, V., Mysore, C., 2004, Phosphorus and metal geochemistry of sediments in Eagle Creek Reservoir, Central Indiana: Geological Society of America Abstracts with Programs, v. 36, no. 5, p. 398.
- Shrake, L.K., Hall, B.E., Tedesco, L.P., Pascual, D.L., Mysore, C., 2004, Suspended sediment and dissolved load contributions in three Central Indiana Watersheds: *in* Nix, S.J., ed., Abstract Proceedings of the American Water Resources Association 2004 Annual Conference, ISBN 1-882132-66-1, TPS-04-3.
- Pascual, D.L., Johengen, T.H. Johengen, Meier, P.G., Filippelli, G.M., Tedesco, L.P., and Moran, D., 2004, Cultural eutrophication of three Midwest urban reservoirs: the role of nitrogen and phosphorus in determining phytoplankton communities: American Society of Limnology and Oceanography 2004 Summer Meeting Abstract Book, p. 50.

- Tedesco, L.P., Hernly, F.V., and Hall, B.E., 2004, Integrating Geologic and Landscape Data to Identify, Preserve, and Restore Midwestern Seep Wetlands: Annual Meeting of the Society of Wetland Scientists Abstracts, p.155-156.
- Tedesco, L.P., Baker, M.P., and Hall, B.E., 2004, An integrated hydrologic monitoring network: American Geophysical Union Abstracts. SF31A-0719.
- Webber, J.J., Tedesco, L.P., Hernly, F.V., and Hall, B.E., 2004, Characterization of wetland soil and sediments at Starling Nature Sanctuary, Marion County, Indiana: National Council on Undergraduate Research, 2004 Apr., Indianapolis, IN.
- Salazar, K.A., Tedesco, L.P., Hernly, F.V., Hall, B.E., and Lindsey, G., 2004, The Lilly ARBOR Project: An experiment in urban riparian restoration: National Conference on Ecosystem Restoration Abstracts, p. 371.
- Salazar, K.A., and Tedesco, L.P., 2004, Environmental service learning and community partnerships: applying science-based solutions to urban environmental problems: Geological Society of America Abstracts with Programs, v. 36, no. 5, p 162.
- Tedesco, L.P., Salazar, K.A., Webber, J., Hernly, F.V., Hall, B.E., and McPeck, T.M., 2004, The Starling Fen Restoration Project: A university/city park/ corporate/ "Friends of" collaborative: Association of State Wetland Managers National Symposium Abstracts, p. 57.
- Tedesco, L.P., Hernly, F.V., and Hall, B.E., 2004, Interpreting geologic and landscape data to identify, preserve, and restore seep wetlands: Putting Indiana on the Map, Indiana GIS 2004 Conference Proceedings, p. 30.
- Baker, M.P. and Tedesco, L.P., 2004, Smart space services to support multi-venue science learning: Purdue University Teaching and Learning with Technology Conference, 2004 Apr., West Lafayette, IN.

2003

Technical Reports

- Tedesco, L.P., Atekwana, E.A., Filippelli, G., Licht, K., Shrake, L.K., Hall, B.E., Pascual, D.L., Latimer, J., Raftis, R., Sapp, D., Lindsey, G., Manness, R., Pershing, D., Peterson, D., Ozekin, K., Mysore, C., and Prevost, M., 2003, Water quality and nutrient cycling in three Central Indiana watersheds and their reservoirs: Eagle Creek/Eagle Creek Reservoir, Fall Creek/Geist Reservoir, Cicero Creek/Morse Reservoir: CEES Publication 2003-01, 163 p.

Conference Abstracts

- Shrake, L.K., Hall, B.E., Tedesco, L.P., Atekwana, E.A., Latimer, J.C., and Filippelli, G.M., 2003, Watershed contribution to three Central Indiana reservoirs: characterization of suspended sediment and dissolved loads: Geological Society of America Abstracts with Programs, v. 35, no. 6, p. 144.
- Raftis, R., Filippelli, G., Tedesco, L., Atekwana, E., Latimer, J., Pascual, D.L., and Shrake, L., 2003, Nutrient cycling and water quality in an urban drinking water reservoir: Geological Society of America Abstracts with Programs, v. 35, no. 6, p. 145.
- Salazar, K.A., Tedesco, L.P., Atekwana, E.A., Swope, R.J., Pachut, J.F., Lindsey, G., Hernly, F.V., and Hall, B.E., 2003, The Lilly ARBOR Project: promoting science-based environmental education and outreach within an urban riparian setting: Geological Society of America Abstracts with Programs, v. 35, no. 6, p. 119.
- Tedesco, L.P., Atekwana, E.A., Hall, B.E., Salazar, K., and Hernly, F.V., 2003, The Starling fen restoration project: U.S. EPA Sixth Wetlands Workshop Abstracts, p. 15.
- Webber, J.J.; Hernly, F.V.; Tedesco, L.P.; and Hall, B.E., 2003, Characterization of wetland soil and sediments at Starling Nature Sanctuary, Marion County, Indiana: Geological Society of America National Meeting Abstracts with Programs, v. 35, no. 6, p. 406.

Graduate Research Assistantships

CIWRP funding has provided research support to graduate students leading to successful completion of both research and graduate study. Graduates go on to help reverse Indiana's brain drain with most students working for environmental consulting firms and state government in Indiana or go on to advanced graduate research.

2006-2007 GRADUATE RESEARCH ASSISTANTSHIPS

Laura Wagner – Masters Candidate - Department of Earth Sciences
Rebecca Sengpiel – M. S. 2007 - Department of Earth Sciences
Kaylan Randolph – M. S. 2007 - Department of Geography

2005-2006 GRADUATE RESEARCH ASSISTANTSHIPS

Rebecca Sengpiel – Masters Candidate - Department of Earth Sciences
Dustin Graves – M. S. 2007 - Department of Earth Sciences
Mary Abby Campbell – Masters Candidate - Department of Earth Sciences

2004-2005 GRADUATE RESEARCH ASSISTANTSHIPS

Leda Casey – M. S. 2007 - Department of Earth Sciences
Mary Abby Campbell – Masters Candidate - Department of Earth Sciences
Dustin Graves – M. S. 2007 - Department of Earth Sciences

2003-2004 GRADUATE RESEARCH ASSISTANTSHIPS

Robyn Raftis – Masters Candidate - Department of Earth Sciences
Leda Casey – M. S. 2007 - Department of Earth Sciences

Student Interns

Providing opportunities for students to conduct applied research and work with community partners on water resources issues is a key aspect of CEES programs. Our focus on interdisciplinary collaborations is evident in both the number of supported internships as well as the distribution of student backgrounds and majors both internal and external to IUPUI.

Graduate Students

2006

K. Randolph – Masters Candidate, Department of Geography – Remote Sensing and GIS Support for Upper White River Watershed

2005

J. Johnstone – Masters Candidate, Department of Geology – Pigment Analyses of Blue-green Algae

K. Randolph – Masters Candidate, Department of Geography - NPDES Database and Mapping for Upper White River Watershed

2004

D. Graves – Masters Candidate, Department of Geology – Watershed Mass Balance – Eagle Creek Watershed

B. Kuhn – Masters Candidate, Public Health – *E. coli* in Eagle Creek Watershed

K. Randolph – Masters Candidate, Department of Geography - NPDES Database and Mapping for Upper White River Watershed

2003

B. Kuhn – Masters Candidate, Public Health – *E. coli* in Eagle Creek Watershed

K. Johnston – College of Liberal Arts, Department of Geography – Updated Land Use Model for Watersheds of the Indianapolis Water Company

C. Alexa - College of Liberal Arts, Department of Geography – Updated Land Use Model for Watersheds of the Indianapolis Water Company

Undergraduate Students

2006

K. Baker – School of Science, Department of Biology – Water Quality Analysis

A. Chau – School of Science, Department of Biology - Water Quality Analysis

C. Cruz – School of Science, Department of Earth Sciences – Education and Outreach Programs, Water Quality Sampling

A. Enochs – School of Science, Department of Biology – Wetland Restoration and Greenhouse Gas Emissions

A. Herman - School of Science, Department of Earth Sciences – Education and Outreach Programs, Water Quality Sampling
 H. Marr – School of Engineering and Technology, Department of Computer Information Technology - Water Quality Sampling and Stream Gaging
 R. McAtee – School of Engineering and Technology, Department of Construction Technology - Water Quality Sampling and Stream Gaging
 S. Musunuri - School of Engineering and Technology, Department of Computer Information Technology – Web and Database Support
 K. Peters – Purdue University, School of Education – Education and Outreach Programs
 A. Robertson - Purdue University, Department of Biochemistry – Field Sampling and Water Quality Analysis
 J. Teuschler - University of the Cumberland, Department of Biology - Field Sampling and Water Quality Analysis
 J. Underbrink – School of Science, Department of Computer Science - Field Sampling and Water Quality Analysis
 B. Woolems – School of Public and Environmental Affairs - Education and Outreach Programs, Water Quality Sampling
 E. Pahud – School of Public and Environmental Affairs – Veolia Water Intern
 Jennifer Barnes – Department of Earth Sciences – Veolia Water Intern

2005

L. Heller – School of Public and Environmental Affairs – Education and Outreach Programs, Water Quality Sampling
 A. Hileman – School of Public and Environmental Affairs – Septic and Sewer Survey of Eagle Creek
 R. McAtee – School of Engineering and Technology, Department of Construction Technology - Water Quality Sampling and Stream Gaging
 E. Palmer - School of Science, Department of Geology – Water Quality Sampling, GIS Mapping and Field Technical Installation and Support
 B. Roell - School of Science, Department of Geology - Water Quality Sampling and Stream Gaging
 B. Senour – School of Science – Department of Geology – Water Quality Analysis
 J. Underbrink – School of Science, Department of Computer Science - Field Sampling and Water Quality Analysis
 J. Webber - College of Liberal Arts, Department of Geography – Water Quality Sampling and Stream Discharge Surveys

2004

K. Brown - School of Science, Department of Geology – Watershed Survey School Branch and Fishback Creek Subwatersheds
 P. Chapman - School of Science – Department of Geology – GIS Mapping and Web Support
 J. Dent - School of Public and Environmental Affairs – Education and Outreach Programs, Water Quality Sampling

- A. Hileman – School of Public and Environmental Affairs – Septic and Sewer Survey of Eagle Creek
- T. McPeck, - School of Science – Department of Biology – Vegetation Monitoring for Wetland Restoration
- T. Nguyen - School of Science, Department of Computer Science – Web Support
- B. Roell - School of Science, Department of Geology – Field Station Support and Logistics
- A. Trierweiler – Park Tudor High School - Zooplankton – Phytoplankton Interactions in Eagle Creek Reservoir
- B. Senour – School of Science – Department of Geology – Water Quality Analysis
- J. Webber - College of Liberal Arts, Department of Geography – Wetland and Riparian Restoration Monitoring

2003

- K. Carroll – School of Environmental and Public Affairs – Riparian Restoration Water Quality Sampling
- J. Colbert - College of Liberal Arts, Department of Geography – Updated Land Use Model for Watersheds of the Indianapolis Water Company
- W. DeBoard, - College of Liberal Arts, Department of Geography – Service Learning Support
- J. Dent - School of Public and Environmental Affairs – Education and Outreach Programs, Water Quality Sampling
- K. Probst - School of Science – Department of Geology – Riparian Restoration Water Quality Monitoring
- J. Webber - College of Liberal Arts, Department of Geography – Wetland and Riparian Restoration Monitoring

Education and Outreach Events of Note

2006

9/16/2006, Eagle Creek Watershed and Reservoir Tour with Eagle Creek Watershed Alliance

5/8/2006, Intel International Science and Engineering Fair Tour, Lilly ARBOR Project

10/26/2006, National FFA Tour, IUPUI CEES

10/28/2006, Senator Evan Bayh Service Leader Summit for High School Students, Fall Creek Corridor

9/29 and 9/30 2006, Water Quality Awareness Days with Eagle Creek Watershed Alliance, Zionsville Lion's Park and Eagle Creek Park

2005

7/23/2005, Canal Community Clean-Up Day with Veolia Water Indianapolis, City of Indianapolis, Keep Indianapolis Beautiful, Indy Parks and Recreation, United Northwest Community Development Corporation, IUPUI CEES

10/15/2005, Community Storm Drain Marking with IUPUI CEES Service Learning, Veolia Water Indianapolis, Indianapolis Department of Public Works, Garfield Park along Pleasant Run

2004

7/8/2004, Storm Drain Marking and Awareness Video – Before the Storm with Indiana Department of Natural Resources, Lilly ARBOR Project

10/9/2004, America In Bloom Judging Tour, Lilly ARBOR Project

2003

7/29/2003, America In Bloom Judging Tour, Lilly ARBOR Project

6/16/2003 to 6/19/2003, Project SEAM Workshop for 9th – 12th Educators, Lilly ARBOR Project

Invited Presentations

Invited presentations were given predominantly by CEES Director, Dr. Lenore P. Tedesco, with additional presentations by Robert C. Barr and Kara A. Salazar. These presentations serve as an important way for CEES to translate applied research to the community.

2006

- "Integrating Geologic and Landscape Data to Identify, Preserve, and Restore Midwestern Seep Wetlands", Soil Science Society of America National Meeting, Indianapolis, October, 2006.
- "Towards Sustainable Water Resources for Central Indiana", Indianapolis Board of Waterworks and Veolia Water Citizens Advisory Group, Indianapolis, October, 2006.
- "Hydrogeomorphic Setting of Fen Wetlands in the Temperate Glaciated Midwest", Biological Sciences Seminar Series, Butler University, Indianapolis, September, 2006.
- "The Lilly ARBOR Project: A University/Corporate/Community Collaboration", Living Laboratories of the Wabash Seminar, West Lafayette, May, 2006.
- "Vegetative Options to Stormwater Management", Marion County Soil and Water Conservation District Annual Meeting, Indianapolis, March, 2006 (R. C. Barr)
- "Towards Sustainable Water Resources for Central Indiana: Challenges in Mixed Agricultural and Urban Watersheds", National Soil Erosion Research Lab, West Lafayette, February, 2006.
- "Towards Sustainable Water Resources for Central Indiana: Water Quality Programs to Restore the Hydrologic Cycle", Hendricks County Master Naturalists, Avon, February, 2006. (R. C. Barr)
- "Towards Sustainable Water Resources for Central Indiana: Restoring the Hydrologic Cycle", Indiana Water Resources Association, Indianapolis, January, 2006.

2005

- "Eagle Creek Watershed Management Plan: An Integrated Approach to Improved Water Quality", Town of Zionsville Town Council, Zionsville, December, 2005.
- "Wetland Restoration at the Scott Starling Nature Sanctuary of Eagle Creek Park", Indiana Native Plant and Wildflower Society, 12th Annual Conference, Indianapolis, November, 2005.
- "Towards Sustainable Water Resources in Central Indiana: Wetland and Riparian Restoration", Sciencetech Club, Indianapolis, September, 2005.

- "Towards Sustainable Water Resources for Mixed Agricultural and Urban Landscapes", Workshop on Sustainable Approaches in Water Management, Urban Planning, and Effective and Renewable Energy Uses, Indianapolis, September, 2005.
- "Towards Sustainable Water Resources for Central Indiana: University Corporate Partnerships for Long-term Research", Use of Long-term Data to Improve Water Resources in the Great Lakes Region Workshop, Indianapolis, September, 2005.
- "Water Quality and Water Resources in Central Indiana", Hendricks County Master Naturalists, Indianapolis, August, 2005.
- "Towards Sustainable Water Resources for Central Indiana", City of Indianapolis Board of Waterworks, Indianapolis, July, 2005.
- "Wetland Plants of Ritchey Woods Nature Preserve", Indiana Department of Transportation, Fishers, Indiana, June, 2005. (R. C. Barr)
- "Restoration of Groundwater Wetlands: The Starling Nature Sanctuary", Indianapolis Master Gardeners, Indianapolis, June, 2005.
- "Water Quality and Water Resources in Central Indiana", Hamilton County Master Naturalists, Indianapolis, April, 2005.
- "Moving Towards Sustainable Water Resources: The Lilly ARBOR Project, Experimental Design for Restoring Riverbanks", Central Indiana Technical and Environmental Societies 34th Annual Environmental Symposium, Indianapolis, April, 2005.
- "The Starling Wetland Restoration Project: University/Corporate/Community Partnership for Watershed and Water Quality Awareness", IPFW, Ft. Wayne, April, 2005.
- "Towards Sustainable Water Resources for Central Indiana; Watershed Management and Wetland Restoration", IU Center for Aging Research, Indianapolis, February, 2005.
- "Restoration of a Rare, Groundwater-fed Wetland at the Starling Nature Sanctuary of Eagle Creek Park", Amos W. Butler Audubon Society, Indianapolis, January, 2005.

2004

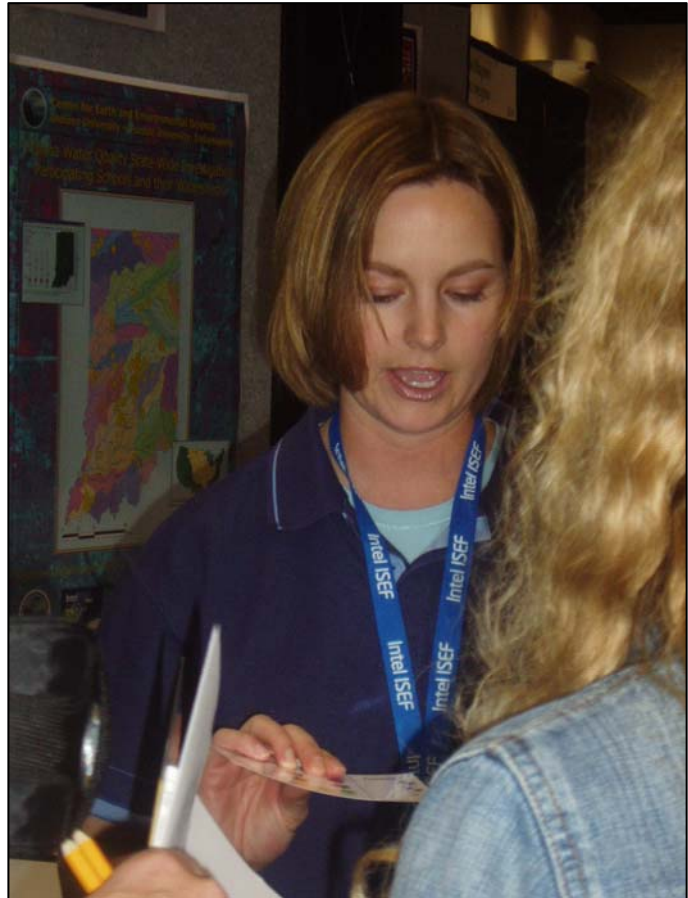
- "The Central Indiana Water Resources Partnership", Watershed and Water Quality Workshop, Berlin Centre of Competence, Berlin, November, 2004.
- "Central Indiana Water Resources: Challenges and Limitations", Indiana's Groundwater Resources: What We Know, What We Need to Know, 49th Annual Midwest Ground Water Conference, Bloomington, October, 2004.
- "Ritchey Woods Nature Preserve: Ecological Restoration Projects in a Rapidly Urbanizing Watershed", Department of Geography, Indiana University, Bloomington, September, 2004.
- "A Master Plan for the Upper White River Watershed Alliance", Upper White River Watershed Alliance Quarterly Membership Meeting, Franklin, IN, June, 2004.
- "The Lilly ARBOR Project: An Experiment in Urban Riparian Restoration", Earth Day Celebration, Eli Lilly and Co., Indianapolis, April, 2004.
- "An Integrated Environmental Monitoring Network and Its Visualization", Indiana University ILight 2004 Symposium, Indianapolis, March, 2004.

"The Central Indiana Water Resources Partnership: Watershed-based Research for Improving Water Quality in Central Indiana", Indiana Geologists, Indianapolis, March, 2004.

2003

"The Central Indiana Water Resources Partnership: Creating a Node of Water Quality Research Excellence in Indianapolis", Indiana Department on Natural Resources and Indiana Department of Environmental Management, Indianapolis, April, 2003.

"The Central Indiana Water Resources Partnership: A Watershed-based Research Program for Improving Water Quality in Central Indiana", Upper White River Watershed Alliance, Indianapolis, December, 2003.



**Education and Outreach are
Fundamental Components of CEES.**

Community Partners

CEES Partners in Research

- Purdue University
- Indiana Water Resources Research Center
- United States Geological Survey – Indiana Water Science Center
- Indiana Department of Environmental Management
- Indiana Department of Natural Resources
- Indiana University School of Medicine – Center for Environmental Health
- Veolia Environment Research Centers – Paris, Adelaide, and Berlin

CEES Community Partners in Education

Not-for Profits

- Central Indiana Land Trust Incorporated
- Science Education Foundation of Indiana
- Indiana State Fair Commission
- Keep Indianapolis Beautiful
- WFYI Public Television
- Life Science Education Center at Marian College
- Indiana Audubon Society
- Indiana Wildlife Federation
- Friends of White River
- Rotary Club of Indianapolis
- Efroymsen Fund of the Central Indiana Community Foundation
- Nina Mason Pulliam Charitable Trust

One of CEES' strongest features is the collaborative approach we take in all we do. In turn our community partners bring strength to our program. We are proud of our tie to the community in research and education.

We can't change the world on our own, but it will not happen on it's own.

State and Local Government

- IDNR – Natural Resources Education Center
- Indiana Department of Environmental Management
- Indiana State Museum
- City of Indianapolis - Department of Public Works – Office of Environmental Services
- Indy Parks and Greenways
 - Hub Naturalist Program
 - Office of Land Stewardship
 - Division of Resource Development - Park Planning and Design
 - Earth Discovery Center of Eagle Creek Park
- Hamilton County Parks
- Noblesville Parks Department
- Zionsville Parks Department
- Marion, Hamilton, Boone, and Hendricks County SWCD

Corporations

- Eli Lilly and Company
- Dow AgroSciences
- Duke Energy
- Veolia Water Indianapolis

Universities

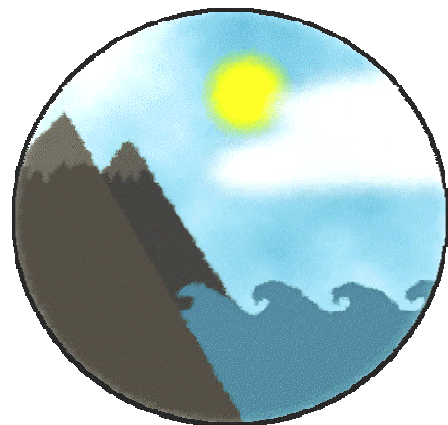
- Butler University
- Marian College - EcoLab
- University of Wisconsin – Madison Arboretum
- Purdue University
- Indiana University
- University of Indianapolis – Center for Excellence in Leadership and Learning

Schools

- Numerous IPS and Township Schools
- Indiana School for the Blind
- Several Indiana Charter Schools
- Zionsville Community Schools

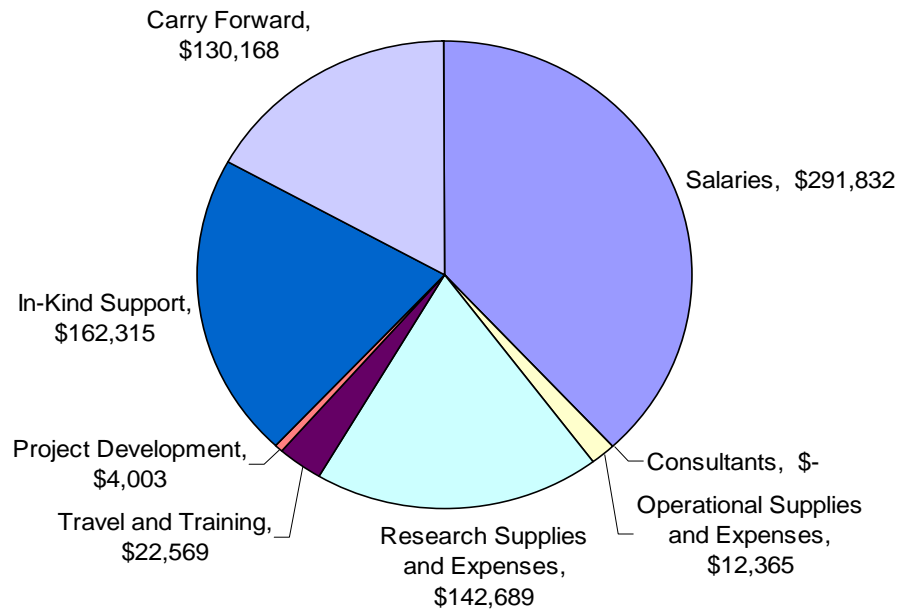
CEES Signature Center

CEES and the Department of Earth Sciences have already made a commitment to hiring excellent people in the area of water quality over the past several years, and have begun a vigorous externally funded program focused on watershed sciences. IUPUI is the Life and Health Sciences campus of IU, and one could argue that no factor is more critical in human health than water, both in terms of quantity and quality. CEES has a long-term \$5 million contract with Veolia Water Indianapolis, LLC to engage in research that sustains and improves water quality both in Indianapolis and worldwide through cutting-edge research and training. Finally, a number of critical campus, local, and state government priorities have aligned that require urgent and significant action to carefully examine water resources in Indiana. Collectively, we are poised to make rapid and substantial impacts that would propel water resources research and training at IUPUI onto a state and national stage, and have nearly all of the factors in place to be successful in this effort.

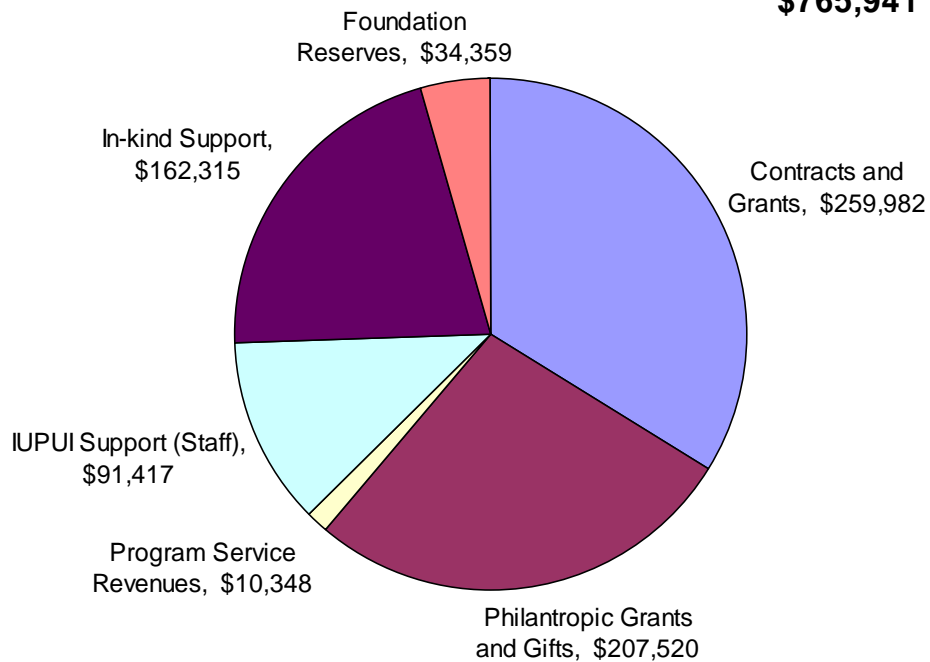


CEES Financial Reports

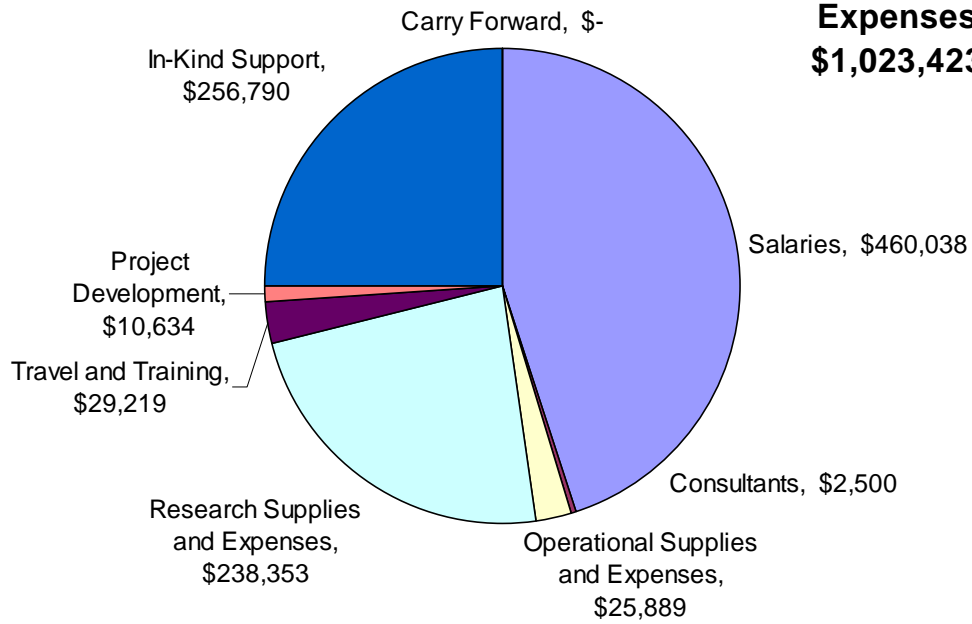
2004/2005 Expenses \$765,941



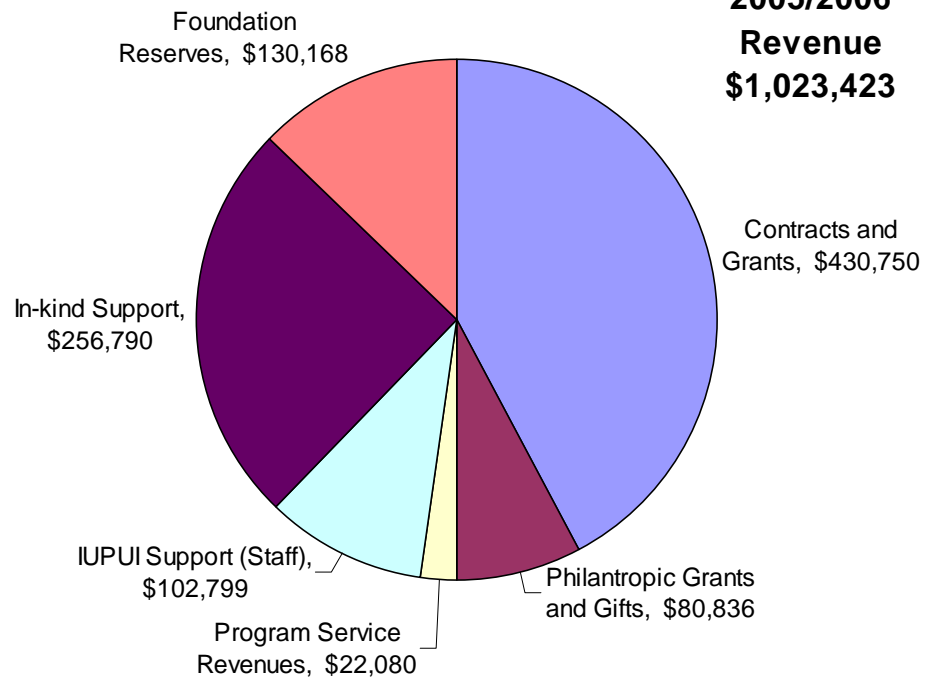
2004/2005 Revenue \$765,941

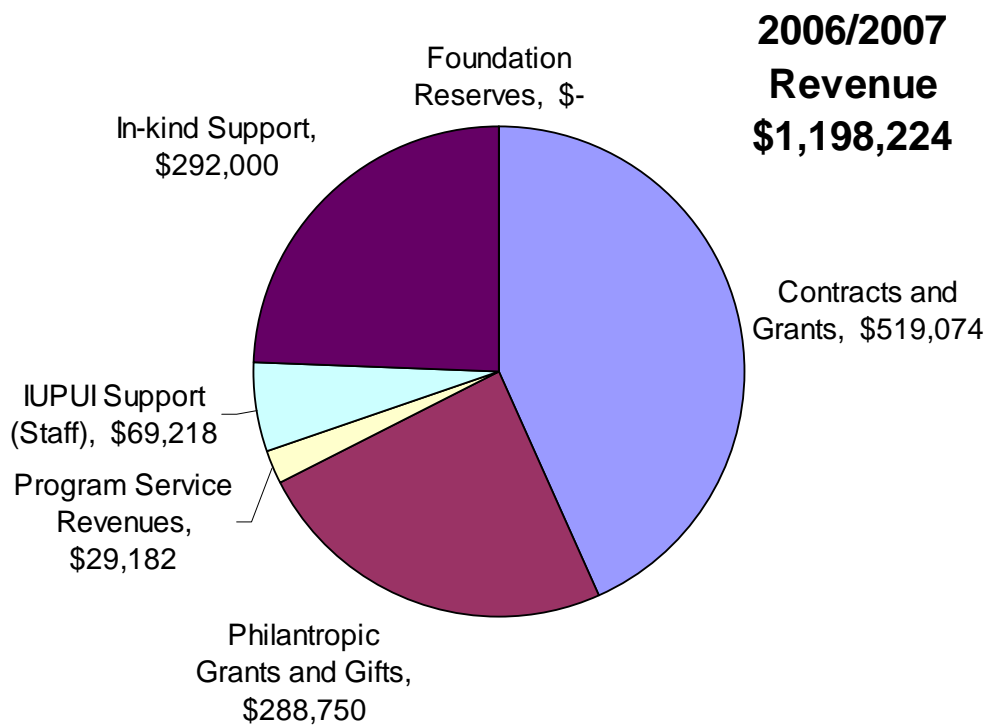
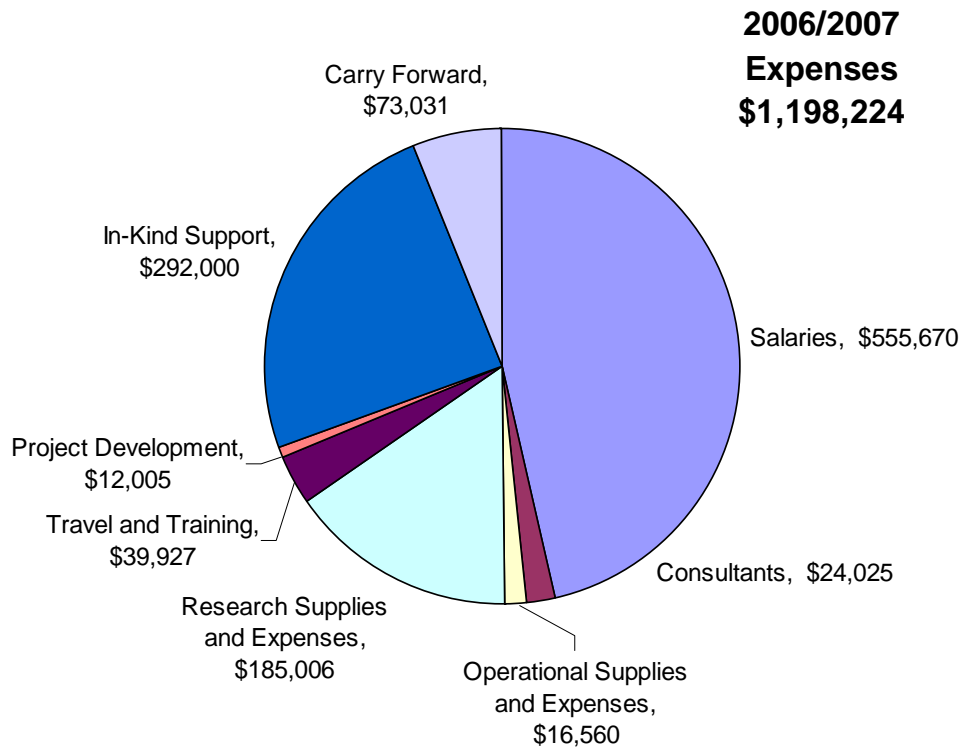


**2005/2006
Expenses
\$1,023,423**



**2005/2006
Revenue
\$1,023,423**







**IN MEMORY OF OUR FRIEND AND
A GREAT EDUCATOR OF YOUTH EVERYWHERE**

CATHERINE E. VOLTZ

SEPTEMBER 2, 1956 - MARCH 15, 2007

Get Involved:

Friends of CEES
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Citizen Science
Donations



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