

ANNUAL REPORT
**CENTER FOR ENVIRONMENTAL DIAGNOSTICS
AND
BIOREMEDIATION**

July 1, 2007 through June 30, 2008

Prepared by

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The University of West Florida
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The Center for Environmental Diagnostics and Bioremediation (CEDB) was established in 1990 to enable the University of West Florida to implement new collaborative research programs in applied environmental sciences, and to enhance educational and training opportunities for undergraduate and graduate students. The E&G funds provided for the Center are utilized to recruit tenure-earning faculty whose expertise is in contemporary molecular biology, microbiology, genetics, and environmental assessment. These core faculty, along with other research faculty (not tenure-earning; funded largely by extramural grants), enable the CEDB to serve as a unique resource to build viable research programs pertinent to the assessment and improvement of environmental health, to provide opportunities for undergraduate and graduate students to participate in contemporary research endeavors, to enrich the curriculum through course offerings, and to contribute to public service.

PART I-SP. Goals/Objectives for 2007-2008

A. Contribute to the success of degree programs in natural and health sciences through classroom instruction, special seminars, field and laboratory experiences, directed studies, and research participation opportunities provided by the CEDB faculty.

Assessment measures

Courses taught; academic advising; student recruitment and retention activities; supervision of directed studies; supervision of thesis research; number of students supported; educational and career development benefits.

Assessment findings

Although the CEDB faculty members were heavily involved in externally-funded research programs, they made significant contributions to the biology curriculum. They taught core courses in *Ecology* and *Microbiology* (both courses taught in Fall and Spring), coordinated the *Biology Seminar* course (Fall and Spring), and offered several elective courses: *Estuarine Ecology*, *Climate Change Biology*, *Marine Field Ecology*, and *Biological Oceanography*. In support of the field-oriented courses, CEDB faculty secured grants for ship time from the Florida Institute of Oceanography.

In addition to the above course offerings, CEDB faculty supervised 12 Directed Independent Studies for undergraduate and graduate students, an undergraduate honors thesis, and thesis research for 10 graduate students as thesis advisor. Collectively, CEDB faculty taught 1162 undergraduate credit hours and 39 graduate credit hours in 2007-2008. Importantly, CEDB faculty enriched the education and training of students by integrating contemporary research with teaching advances in diverse fields and involving students in on-going research. Assessment of teaching effectiveness through the portfolios for annual evaluation, including course materials, performance in examinations, and student evaluations indicate that the CEDB faculty members are excellent teachers.

During 2007-2008 CEDB provided financial support and research opportunities for 3 graduate students and 4 undergraduate students. Progress reports and interviews indicate that the educational experience of students is substantially enhanced by participation in contemporary research, training in emerging technologies, and integration of theoretical knowledge with laboratory experimentation and field studies. Many of the participating students utilized the research opportunities to conduct directed individual studies for academic credit or for thesis projects (at the graduate level). The outcomes of student participation in scholarly endeavors resulted in co-authorship for students on nearly 75% of the publications and presentations at professional meetings by CEDB personnel.

The CEDB faculty has also participated in student recruitment efforts at UWF (i.e., Admissions Phone-A-Thon; UWF Saturday Open House for prospective students; talks at local schools). By engaging in these activities, academic advising, research training, and teaching of seven different courses, the CEDB faculty plays an important role in the education and training of students. The integration of research expertise and opportunities with formal teaching is a noteworthy contribution of the CEDB towards the enrichment of biology curriculum.

Program decisions

The CEDB Director discussed the assessment results with the Chair of Biology Department, in which the CEDB faculty have tenure or tenure-earning status, and during faculty meetings. The resulting decisions are as follows.

1. The CEDB Director and the Chair of the biology department will ensure that reasonable opportunities will be provided to the faculty for teaching formal courses, taking into consideration that commitments to grant-funded research are met.
2. With increasing opportunities for environmental health studies, recruitment of additional faculty, as budgets allow, with joint appointments in CEDB and Biology can lead to the enrichment of the curriculum as well as enhanced research endeavors.
3. Encourage faculty to continue to seek financial support from external sources to support field-oriented training courses and to provide financial support for undergraduate and graduate students to participate in research activities.

The CEDB Director is responsible for follow-up actions, and will include appropriate requests among strategic planning priorities submitted to the Provost.

B. Conduct basic and applied research pertinent to the diagnosis and improvement of environmental health, addressing issues of regional, national, and global importance. These endeavors are aimed to be collaborative and interdisciplinary, involving faculty and students as well as colleagues in consortia at other institutions, and facilitate the creation and dissemination of knowledge.

Assessment measures

Funding received from external sources; publications and reports; presentations at professional meetings; research participation opportunities for students and associates; successful partnerships and consortia.

Assessment findings

CEDB continued to be highly successful in securing external support for research, largely through peer-reviewed, national-level, competitive grants from agencies such as the National Science Foundation (NSF), Environmental Protection Agency (EPA), and National Oceanic and Atmospheric Administration (NOAA). External support for single-year and multi-year projects in force during 2007-2008 in the CEDB amounted to \$4,794,154, including \$375,648 of new funding received during the year.

The above support enabled the CEDB faculty to continue basic and applied research in diverse areas such as molecular biology, biochemistry, microbial ecology, marine ecology, photobiology, and also to undertake research projects targeted to address concerns related to environmental pollution and health outcomes in Northwest Florida.

In order to pursue the various interdisciplinary projects, CEDB established collaborative relations with faculty from several disciplines at UWF (e.g., biology; environmental studies; education; economics; library science), local public school teachers, Escambia and Santa Rosa County Health Departments, and a number of academic institutions in the country and abroad. The latter include: University of North Florida, University of South Florida, Florida Gulf Coast University, Florida A&M University, The Florida Coastal Ocean Observation Consortium, University of Georgia, Hunan Agricultural University in Changsha, China. These strategic partnerships are an asset for promoting cutting-edge research, as well as for being responsive to regional, national and global needs.

CEDB's scholarly output during the year included: 11 publications in peer-reviewed journals and proceedings, 3 major reports to government agencies, and 36 presentations at scientific meetings and invited seminars. Nearly 75% of the publications and presentations included students as co-authors.

The above findings indicate that CEDB was highly successful in meeting the goals/objectives for creative and scholarly activities. Grants in force, publications, and presentations during 2007-2008 are listed below.

Current Projects

Collaborative Proposal: Interactive Effects of UV Radiation and Vertical Mixing on Phytoplankton and Bacterial Productivity of Ross Sea Phaeocystis Blooms, (PI: <i>W. Jeffrey</i>), NSF, 9/1/02-8/31/07	\$515,870
The Interactive Effects of UV Radiation and Temperature on Lake Ecosystems. Integrated Research Challenges in Environment, (PI: <i>W. Jeffrey</i>), NSF, 10-1/02 - 8/31/07	\$267,450
Assessment of Environmental Pollution and Community Health in Northwest Florida, (PI: <i>K. R. Rao</i>), EPA, 7/1/02 – 6/30/09	\$3,055,675

Biological Impacts of Crop Production Systems in Transition from the Use of Methyl Bromide, (PI: <i>K. Martin</i>), U.S. Department of Agriculture, 5/31/03 - 5/30/08	\$15,000
RUI: Effect of Diurnal and Weekly Water Column Hypoxic Events on Nitrification and Nitrogen Transformations in Estuarine Sediments, (PI: <i>J. Caffrey</i>), NSF, 3/15/04 – 2/29/08	\$ 450,405
Science Training in Ecology Programs II 2007-2009, (PI: <i>W. Jeffrey</i>), EPA, 1/1/07 – 12/31/09	\$49,132
Microbial Source Tracking and Its Application to the Northern Gulf of Mexico, (PI: <i>J. Lepo</i>), NOAA, 2/1/07 – 7/31/08	\$25,014
Fecal Source Tracking Research (Co-PIs: <i>J. Lepo and R. Snyder</i>), Florida Department of Health, Escambia County Health Department, 7/1/2007 – 6/30/2008	\$ 40,000
Wet Prairie Habitat Restoration Evaluation and Management Strategies For Garcon Point Water Management Area, (PI: <i>R. Snyder</i>), Northwest Florida Water Management District, 7/1/2007 – 6/30/2008	\$ 7,790
USF EPA MST GoM_3, (PI: <i>J. Lepo</i>), University of South Florida, 8/3/2007 – 8/2/2008	\$70,559
Atmospheric Deposition of Mercury and Trace Metals in the Pensacola Bay Watershed, (PI: <i>J. Caffrey</i>), Electric Power Research Institute, 1/1/2008 – 4/30/2008	\$27,844
Preliminary Data Analysis to Test Land-Use Influence on Red Tide in Choctawhatchee Bay Florida, (PI: <i>M. Schwartz</i> , CoPI: <i>W. Jeffrey</i>), University of Florida, 2/1/2008 – 5/31/2008	\$ 3,500
Enhancement of Public Health Preparedness for Dealing with Bioterrorism: Diagnostics for Intentionally Released Human Pathogens in Surface- And Drinking- Water, (PI: <i>J. Lepo</i>), University of South Florida, 9/26/07 – 9/25/09	\$218,125
Fecal Source Tracking Research (Co-PIs: <i>J. Lepo and R. Snyder</i>), Florida Department of Health, Escambia County Health Department, 7/1/2008 – 6/30/2009	\$ 40,000
Wet Prairie Habitat Restoration Evaluation and Management Strategies For Garcon Point Water Management Area, (PI: <i>R. Snyder</i>), Northwest Florida Water Management District, 7/1/2008 – 6/30/2009	\$ 7,790

Publications and Presentations

Publications

- Abboudi, M., W.H. Jeffrey, J.-F. Ghiglione, M. Pujo-Pay, L. Oriol, R. Sempéré, B. Charrière, and F. Joux. 2007. Effects of Photochemical Transformations of Dissolved Organic Matter on Bacterial Metabolism and Diversity in Three Contrasting Coastal Sites in the Northwestern Mediterranean Sea. *Microbial Ecology* 55: 344-357.
- Caffrey, J.M., N. Bano, K. Kalanetra and J. T. Hollibaugh. 2007. Environmental factors controlling ammonia-oxidation by ammonia oxidizing Bacteria and Archaea. *ISME Journal* 1:660-662.
- Hu, Z., J. Liebens, and K. R. Rao. Linking stroke mortality with air pollution, income, and greenness in northwest Florida: an ecological geographical study. *International J. Health Geographics*, 7:20, pages 1-22 (2008).
- Karouna-Renier, N. K., K. R. Rao, J. J. Lanza, D. A. Davis, and P. A. Wilson. Serum profiles of PCDDs and PCDFs in individuals near the Escambia Wood Treating Company Superfund Site in Pensacola, FL. *Chemosphere*, 69: 1312-1319 (2007).
- Karouna-Renier, N. K., R. A. Snyder, J. G. Allison, M. G. Wagner, and K. R. Rao. Accumulation of organic and inorganic contaminants in shellfish collected in estuarine waters near Pensacola, Florida: contamination profiles and risks to human consumers. *Environmental Pollution*, 145: 474-488 (2007).
- Liebens, J., C. J. Mohrherr, and K. R. Rao. Sediment pollution pathways of trace metals and petroleum hydrocarbons in a small industrialized estuary: Bayou Chico, Pensacola, FL. *Marine Pollution Bulletin*, 54: 1529-1539 (2007).
- Pakulski, J.D., A. Baldwin, A. Dean, S. Durkin, D. Karentz, C.A. Kelley, K. Scott, H. J. Spero, S. Wilhelm and W. H. Jeffrey. 2007. Responses of heterotrophic bacteria to latitudinal variation in solar irradiance. *Aquatic Microbial Ecology* 47:153-162.
- Pakulski, J.D., J.A. Meador, J.P. Kase, and W.H. Jeffrey. 2008. Effect of stratospheric ozone depletion and enhanced ultraviolet radiation on marine bacteria at Palmer Station, Antarctica in the early austral spring. *Photochemistry and Photobiology* 84: 215-221.
- Snyder, R.A. 2008. *Analysis of Dioxin-Furan, PCB and trace metal levels in farmed catfish, Escambia County, FL*. Report to the Escambia County Soil and Water Board 12 March 2008. 7 pp.
- Snyder, R.A. & R. Maisel. 2008. *Pre and Post-Ivan Assessment of Barrier Island Plant Community Dynamics in the Gulf Islands National Seashore Santa Rosa Island Fort Pickens area*. Final Project report (GUIS reviewed), 15 January 2008. 32 pp.
- Snyder, R.A. & R. Rao. 2008. *Bioaccumulation of Chemical Contaminants in Fishes of Escambia Bay*. Submitted to UE EPA Region 4 and the Florida Department of Health. 12 February 2008.

Presentations and Invited Seminars

- Bertoni, R., W. H. Jeffrey, F. Joux, P. Conan, M. Pujo-Pay, L. Oriol. 2007. Phyto and bacterioplankton susceptibility to UV radiation : influence of water column mixing in NW Mediterranean coastal waters. XVIII Congresso Nazionale Associazione Italiana di Oceanologia e Limnologia. Ancona, Italy. September 17-20.
- Caffrey, J. Ammonia oxidation and ammonia-oxidizing Bacteria and Archaea populations from estuaries with differing histories of hypoxia. Estuarine Research Federation meeting November 2007, Providence, RI.
- Caffrey, J. Application of the diagenetic model CANDI in Pensacola Bay. Ocean Sciences meeting. March 2-7, 2008. Orlando, FL N. Davila - presenter
- Caffrey, J. Atmospheric deposition of mercury, trace metals and major ions in the Pensacola Bay watershed: implications for Choctawhatchee Bay. Symposium on Choctawhatchee Bay. June 1-2, 2008.
- Caffrey, J. Atmospheric Deposition of Mercury, Trace Metals and Major Ions in the Pensacola Bay Watershed. National Monitoring Conference May 18-23, 2008. Atlantic City, NJ
- Caffrey, J. Atmospheric Deposition of Mercury, Trace Metals and Major Ions in the Pensacola Bay Watershed. NW Florida Symposium. October 5, 2007, Pensacola, FL.
- Fischer, J.M., K. Kessler, R.W. Sanders, C.E. Williamson, W.H. Jeffrey, R.E. Moeller, D.P. Morris, J.A. Porter, P.A. Neale, J.E. Saros, S.L. Cooke, A.L. Macaluso, E.P. Overholt, J.D. Pakulski, D. Schoener, and C. Scott. 2008. Effects of CDOM addition on crustacean zooplankton in an oligotrophic lake: carbon and nutrient subsidy or UV screen? American Society of Limnology and Oceanography Annual Meeting. Orlando, FL. March 2-7.
- Hellein, K. N., E. M. Kennedy, and J. E. Lepo, 2008. Using Leaf-Epiphytic Pseudomonad Community Fingerprints to Detect Disease or Stress in Cotton (*Gossypium* spp.). 108th Annual Meeting of the American Society for Microbiology, 21- 25 May 2008; Boston Massachusetts. Abstract no. N-279.
- Hu, Z., and Rao, K.R., 2008. Assessing health effect of fine aerosol particles using MODIS aerosol data. The 31st International Geographical Congress, Tunis, Tunisia, August 12-15, 2008.
- Hu, Z., and Rao, K.R., 2008. Extraction of particulate matter surface from MODIS Data for linking stroke mortality with air pollution in Northwest Florida." Annual meeting of the Association of American Geographers, Boston, MA, April, 2008.
- Hu, Z., Rao, K. R., and Liebens, J., 2008. Linking stroke mortality with air pollution, income, and greenness in northwest Florida: an ecological geographical study. International Journal of Health Geographics, 7-20.
- Jeffrey, W. H., A.J. Baldwin, A. Heinze, A. Macaluso, R. Moeller, P.J. Neale, J.D. Pakulski, J. Phillips-Kress, J.H. Porter, and R. Sanders. 2008. The effects of UV and temperature on microbial community structure in a temperate lake. American Society of Limnology and Oceanography Annual Meeting. Orlando, FL. March 2-7.
- Jeffrey, W.H. 2007. Climate change from an oceanographer's perspective. Special Projects in Liberal Arts, Sciences and Humanities (SPLASH! Downtown) Lecture Series. University of West Florida, Pensacola, FL. October 23.

- Jeffrey, W.H. 2007. The Effects of Ozone Depletion on Bacterioplankton in Antarctic Waters. The University of West Florida, Pensacola, FL Sept. 7
- Jeffrey, W.H. 2008. An oceanographer's thoughts on climate change. American Chemical Society, Pensacola Chapter. Pensacola, FL. January 24.
- Jeffrey, W.H. 2008. Climate Change 101: Facts, Fantasies, and Solutions? Earth Day Symposium. University of West Florida. April 22.
- Jeffrey, W.H. 2008. Ultraviolet radiation effects on microbial communities in Pocono Mountain Lakes. University of West Florida, Pensacola, FL March 28.
- Jeffrey, W.H. 2008. Climate Change 101: Facts, Fantasies, and Solutions? Leisure Learning Lectures. University of West Florida, Pensacola, FL. February 7.
- Joe Eugene Lepo* and Richard A. Snyder. 2008. Molecular Assessment of Estuarine Microbial Biofilm Community Response to Environmental Conditions. BIT's 1st Annual World Congress of ibio, Hangzhou, China, May 2008.
- Joux, F., W. Jeffrey, M. Abboud, M. Pujon-Pay, L. Oriol, and J.-J. Naudin. 2007. UV radiation penetration and biological impact on low salinity Rhone River mesoscale structures in the NW Mediterranean Sea. 10th Symposium on Microbial Ecology, Faro, Portugal. September 2 – 7.
- Lee, S. H., A. C. Knowles, R. A. Snyder, and J. E. Lepo, 2007. Effect of Dissolved Oxygen on the Diversity of *nifH* in Microbial Biofilms Generated in Flow-Through Seawater Microcosms. 107th Annual Meeting of the American Society for Microbiology, 21- 25 May 2007; Toronto, Ontario, Canada. Abstract no. N-109.
- Lee, S.H. A. Knowles, K.N. Hellein, R.A. Snyder, and J.E. Lepo. 2007. Effect of Dissolved Oxygen on the Diversity of *nifH* in Microbial Biofilm Generated in Flow-Through Seawater Microcosms American Society for Microbiology Annual meeting.
- Lepo, J.E.. “*Biological Research at the University of West Florida, Pensacola, Florida*” 18 December 2007; Seminar to multiple Departments of the Hunan Agricultural University, Changsha, Hunan Province, China.
- Lepo, J.E.. “*Molecular Assessment of Estuarine Microbial Biofilm Community Response to Environmental Conditions*”; 18 May 2008, Hangzhou, China (see appended invitation letter).
- Lepo, J.E.. “*Round-Robin Validation of Non-Culture Methods for Microbial Source Tracking*”; 4 April 2008; Seminar to Department of Biology, University of West Florida, Pensacola.
- Lepo, J.E.. “*The University of West Florida's Center for Environmental Diagnostics and Bioremediation*”; 14 May 2008; Seminar to China Centers for Disease Control and Prevention, Nanjing, China.
- Miller, A. L., M.A. Cochran, J.A. Serdula, K. Davis, D. Ann, W.H. Jeffrey, and P.P. Vaughan. 2008. Bacterial growth response to photoactive quinines. 2008. American Society of Limnology and Oceanography Annual Meeting. Orlando, FL. March 2-7.
- Mitchell, D. L., C.J. Connelly, W.H. Jeffrey, A. Macaluso, R.E. Moeller, M.H. Olson, J.A. Porter, R.W. Sanders, A.J. Tucker, and C.E. Williamson. 2008. Photoprotection against UV-B radiation in freshwater plankton: a comparative approach across a broad trophic spectrum. American Society of Limnology and Oceanography Annual Meeting. Orlando, FL. March 2-7.

- Neale, P. J., W.H. Jeffrey, R.E. Moeller, J. Phillips-Kress, J.D. Pakulski, J.A. Porter, A. Heinze, A. Macaluso, R.W. Sanders, and C.L. Speekman. 2008. Planktonic response to UV in a changing environment: effects of early spring warming on biological weighting functions. American Society of Limnology and Oceanography Annual Meeting. Orlando, FL. March 2-7.
- Patterson, W.F. III, R.A. Snyder, K.R. Rao, and S. Gibson. 2008. Bioaccumulation of PCBs and Mercury in marine fishes in the northern central Gulf of Mexico. ASLO- AGU- ERF Ocean Sciences Meeting Orlando, FL, March 2008.
- Patterson, W.F., III, R.A. Snyder, K.R. Rao, S. Gibson, S. Jeffers, and A. Ren. 2007. Bioaccumulation of PCBs and mercury in marine fishes off northwest Florida. FL AFS Meeting, Jan 2007.
- Snyder Richard A. Science and its role in environmental management. UWF Earth Day Environmental Symposium April 22, 2008.
- Snyder, Richard A. PCBs and Hg in fish. NW Florida Regional Environmental Symposium. UWF, BARC, FAEP 5 October 2008.
- Snyder, Richard A., Natalie Karouna-Renier, Alexander Ren, Suzanne Gibson and K. Ranga Rao. 2008. PCBs in fish and shellfish in the Pensacola Bay system. ASLO- AGU- ERF Ocean Sciences Meeting Orlando, FL, March 2008.
- Williamson, C. E., G. Dee, L. J. Shirey, J. E. Saros, R. W. Sanders, J. A. Porter, W. J. Palen, M. H. Olson, P. J. Neale, A. L. Macaluso, K. Kessler, W. H. Jeffrey, T. Guida, S. Gilroy, M. DeLange, S. J. Connelly, and A. A. Clauser. 2008. Do ultraviolet (UV) tolerance and photoenzymatic repair vary across trophic levels from bacteria and phytoplankton to zooplankton and fish? American Society of Limnology and Oceanography Annual Meeting . Orlando, FL. March 2-7.

Program Decisions

The CEDB Director discussed the findings at faculty meetings, resulting in the following conclusions and decisions.

1. With only four full-time faculty (including the Director), it would be extremely difficult to expand research programs.
2. Additional doctoral-level scientists are needed to maintain and expand the research programs. The former director's salary will be used to hire a tenure track faculty member to begin August 08. A second faculty hire is being postponed due to E & G budget cuts representing one full time position.
3. The CEDB Director will seek institutional resources to recruit additional tenure-earning faculty with a joint appointment in biology or environmental sciences, to take advantage of the emerging opportunities for applied environmental research.
4. Some of the projects require new equipment. The CEDB Director provided needed funds through the Center's seed funds, carry-forward funds, and salary savings.
5. Encourage faculty to develop and maintain productive partnerships with appropriate agencies and institutions to facilitate interdisciplinary efforts and to ensure high quality outcomes.

6. Encourage faculty to continue to seek external support to provide opportunities for students, assistants/associates, and post-doctoral trainees to participate in contemporary research.

C. Render service to aid in the governance and orderly functioning of the institution, and lend expertise to the profession towards the advancement of science.

Assessment Measures

Service on committees within the institution; assistance in student recruitment, advising, and retention; service as reviewers for funding agencies and professional journals; and service to professional organizations.

Assessment Findings

In order to aid in the governance and orderly functioning of the institution, CEDB faculty served on 22 different committees (e.g., Presidential Faculty Advisory Committee, University Health and Safety Committee; University Employee Benefits Committee; Search Committee for Associate Vice President for Research and Dean of Graduate Studies; Faculty Senate; Sponsored Research Advisory Committee, etc.).

In support of student recruitment and retention, CEDB faculty participated in UWF Saturday Open House for Prospective Students and provided academic advising to students in biology and marine biology programs.

Professional service external to the university included leadership positions (Dr. W.H. Jeffrey, Chair, Florida Institute of Oceanography Advisory Committee; Chair, Raytheon Polar Services [NSF Office of Polar Programs] Palmer Area Users Committee; Dr. Jane Caffrey, Member, National Water Quality Council), and service as reviewers of journal articles and research proposals. Collectively CEDB faculty reviewed more than 32 articles for 11 different journals, and also provided assistance through service on editorial boards (e.g., Dr. R.A. Snyder, *Journal of Eukaryotic Microbiology*; Dr. J. E. Lepo, *Journal of Applied Microbiology*; Dr. W. H. Jeffrey, Associate Editor, *Limnology and Oceanography*). CEDB faculty served on peer-review panels for: US EPA, NSF Biological Oceanography Program. In addition, they also reviewed research proposals for diverse agencies: NSF Ecological Studies, NSF Biological Oceanography Program, and NOAA. These activities attest to the external recognition of the scholarship and expertise of CEDB faculty in their respective fields.

Program decisions

The CEDB Director discussed the assessment findings at faculty meetings and came to the following decisions.

1. The CEDB's service activities have been numerous, diverse, and beneficial for the institution and profession.
2. Notwithstanding the increasing work load generated by the continuing and new research grants, teaching and academic program support in biology, the CEDB faculty members are encouraged to continue their professional service contributions at the present level.

The CEDB Director will facilitate participation in service endeavors and make appropriate resources available in support of pertinent activities.

D. Serve as a regional resource for information and advice pertinent to environmental health issues, and assist the community, public schools, and economic development efforts.

Assessment measures

Communications through news media; service on regional committees; partnership with regional organizations to address issues pertinent to the region; activities related to science education.

Assessment findings

CEDB serves as a regional resource for information and advice pertinent to environmental health issues. This service was rendered through opinions and advice, as noted in the articles/reports released through newspaper, radio, and TV media, as well as through displays at public events (e.g., Festival on the Green; UWF Capitol Day) and work on diverse advisory committees. Collectively CEDB faculty served on 14 different committees for regional organizations.

Examples include:

Dr. K. R. Rao, Member, Environmental Advisory Committee, Pensacola Chamber of Commerce.
Dr. R. A. Snyder, Chairman, Advisory Board, South Santa Rosa Utilities Inc.
Dr. J. E. Lepo, Member, Environmental Advisory Board, City of Pensacola.
Dr. J. E. Lepo, Citizens Environmental Committee, Escambia County.
Dr. J. M. Caffrey, Member, Science Advisory Committee for Georgia Coastal Ecosystem Long Term Ecological Research (LTER)

CEDB contributed to economic development goals by identifying critical needs and pursuing research relevant to the diagnosis and improvement of environmental and community health. CEDB established a strategic alliance, Partnership for Environmental Research and Community Health (PERCH), with the health departments of Escambia and Santa Rosa counties and succeeded in securing federal funds, to continue a major research program aimed at addressing concerns on environmental pollution and public health outcomes in Northwest Florida. Additionally, CEDB assisted the Escambia County health Department, The US Department of Interior Gulf Islands National Seashore, The Florida Department of Environmental Protection and International Paper in assessing water quality in bathing/recreational waters through certified analyses done at the Wetlands Research Laboratory. These endeavors, along with continued involvement in environmental projects pertinent to the West Florida Regional Planning Council, Northwest Florida Water Management District, Florida DEP, Florida DOH, and Florida Fish and Wildlife Commission, illustrate the important role CEDB plays in serving the regional community.

It is noteworthy that CEDB's effective management of the Wetlands Research Laboratory (WRL), securing certification through NELAC (National Environmental Laboratory Accreditation Conference) for WRL's environmental analyses, and rendering the WRL a core facility for analytical services (accessible to all the faculty interested in environmental sciences), are providing increased opportunities for our institution to engage in research programs aimed at

the assessment and improvement of environmental health, an important attribute for sustaining economic development in the region.

CEDB contributed its expertise towards science education in public schools. CEDB's activities for 2007-2008 included:

- Judges at local and regional Science Fairs
- Presentations to students at local K-12 schools.
- Providing summer paid research internships for High School students

Program decisions

The CEDB Director discussed the assessment findings at faculty meetings and came to the following decisions.

1. The CEDB's service activities pertinent to the community, public schools, and economic development have been appropriate, diverse, and beneficial.
2. Notwithstanding the increasing workload generated by the continuing and new research grants, teaching and academic programs supported in biology, the CEDB faculty members are encouraged to continue their professional contributions to the community at the present level.
3. Despite the importance of the core analytical facility (WRL) for supporting UWF research, environmental health assessments and regional service, budget cuts have placed this facility in a vulnerable position. Recruitment and retention of qualified technical personnel are continuing challenges.
4. The CEDB Director will oversee the above activities, facilitate participation in service endeavors in the community, and make appropriate resources available in support of pertinent activities.

PART II-A. Major accomplishments and changes in programs and services for 2007-2008

A. External funding received by the CEDB for new and continuing multi-year projects in 2007-2008 amounted to \$4,794,154 which included funding derived through peer-reviewed, national level competitive grants from NSF and EPA, as well as continuing support from the U.S. Army through a consortium led by USF.

B. The CEDB formed a Partnership for Environmental Research and Community Health (PERCH) in collaboration with the health departments of Escambia and Santa Rosa Counties, secured funding through EPA and CDC to conduct environmental health studies in Northwest Florida.

C. The CEDB maintained strong partnerships to pursue interdisciplinary research projects.

D. The Wetlands Research Laboratory (WRL), State of Florida certified to meet NELAC (National Environmental Laboratory Accreditation Conference) standards, provided analytical services in support of diverse externally-funded projects in CEDB, Biology, and Environmental Studies. The WRL has increased its analytical services for environmental microbial monitoring conducted by the Escambia County Health Department, Florida Department of Environmental

Protection, US Department of the Interior Gulf Islands National Seashore, and International Paper Company..

PART II-B. Distinguished Individual Accomplishments

Dr. R.A. Snyder Has been appointed as director for CEDB, and was granted full professorship at the UWF. In addition to the new administrative role, he will continue teaching, research and service. He has continued work on contaminants in seafood of the Pensacola Bay area, and has been involved in extensive public outreach on the issue.

Dr. W.H. Jeffrey has been developing collaborations with researchers at FAMU, and the Chemistry and Environmental Studies departments at UWF. He also was the lead person for the development of a Center of Excellence proposal involving a diverse group of researchers from UNF, FGCU, and UWF. He continues to serve as Associate Editor, *Limnology and Oceanography*.

Dr. Jane Caffrey joined the PERCH project research team, and is directing a project on atmospheric deposition of mercury to the Pensacola Bay System. She has been appointed as a member of the National Water Quality Council, and as a member of the Science Advisory Committee, Georgia Coastal Reserves LTER.

Dr. J. E. Lepo has continued his funding record for work on microbial detection assays, initiated a student chapter of the American Society for Microbiology at UWF, and has traveled to China to develop collaborations with scientists and government agencies there as a representative of the CEDB.

Dr. Carl Mohrherr, has been continuing his work on sediment contamination analysis in the urban bayous and Escambia Bay, and addressing public concerns over the findings of that work.

Dr. K.R. Rao directed the PERCH (Partnership for Environmental Research and Community Health) Program, and secured funding through the Environmental Protection Agency and the Centers for Disease Control for environmental health studies in Escambia and Santa Rosa Counties. (Total support: \$2,651,307).

Ms. T.L. Streeter, Office Administrator, is doing an admirable job in coping with the workload created by the increasing number of grants and personnel, as well as added responsibilities related to purchasing, P-card authorizations and accounting, grants and center account tracking, personnel and payroll, and external/internal communications.

Ms. Juanita Johns, OPS Office Specialist, is doing a great job taking on multiple grant related tasks including purchasing, payroll, travel, and external/internal communications. She has been participating in staff development training opportunities (Pursuing a Certificate in Administrative Services, Certified Web Developer) and is the recipient of the "Excellence Matters "U-Care" award. She is a valuable asset to the Center.

PART III-A. Goals/Objectives for 2008-2009

A. Provide instructional support to the affiliated academic department(s).

- B. Maintain a strong externally-funded research program involving individual and collaborative projects, with research participation opportunities for students and other trainees.
- C. Engage in service activities pertinent to the institution, community, and profession.
- D. Address critical needs relevant to the diagnosis and improvement of environmental health in Northwest Florida.
- E. Identify and pursue additional sources of funding for research and student training, including federal appropriations for additional projects.
- G. Examine the historical performance outcomes of CEDB and propose targets for short-term and long-term success.

PART III-B. Priorities/Goals for 2009-2014

- A. Recruit additional tenure-track faculty in the areas of environmental modeling, molecular diagnostics, and toxicology.
- B. Recruit an additional USPS staff member in support of expanding activities in the CEDB and WRL.
- C. Expand office/laboratory facilities for CEDB, in conjunction with facilities expansion for biology and/or life and health sciences.
- D. Strengthen collaboration among the various academic units within the university to foster interdisciplinary programs in environmental/community health studies in the region.
- E. Strengthen inter-institutional partnerships to foster interdisciplinary research programs of national priority.
- F. Maintain a productive research program.
- G. Augment and supplement the course offerings and program support in the affiliated academic department(s).
- H. Maintain a strong record of service to the institution, profession, and community.

Principal Unmet Budgetary Needs

- A. Replace lost E&G due to budget cuts that have eliminated the equivalent of one faculty or 1.5 technical staff to maintain the historical record of performance of the center. (~\$80,000)
- B. Recruit new faculty members to expand research programs, increase teaching contributions, and leverage emerging regional opportunities for partnerships and services pertinent to economic development. (Budget request: \$156,000 for salaries and benefits; 2.0 FTE Assistant Professor positions; 9-month pay plan). Recruiting younger faculty will be essential to keeping the research capabilities current and extramural funding coming in.

C. Replace past loss of E&G expense budget for CEDB. The history of allocation is: \$50,000 (1990-1991); \$38,500 (1991-2003); \$23,500 (2003-2004, owing to voluntary reduction to accommodate institutional budget reduction). (Budget request: Restore expense budget to 1990-91 level of \$50,000 by \$10,000 increments per year over the next three years (2009-2011).