Statement of Corporate Qualifications

965 South 100 West, Suite 200
Logan, Utah 84321

Telephone: (435) 787-1490
Fax: (435) 787-1495

www.cirruses.com

TABLE OF CONTENTS

INTRODUCTION

Cirrus Ecological Solutions, L.C. (Cirrus) is a Logan, Utah, based consulting firm providing a wide range of natural resource and environmental planning and permitting services. These include comprehensive environmental compliance assistance, environmental impact assessment, biological inventory and analysis, physical resource inventory and analysis, natural resource management and planning, GIS services, and litigation support.

Our staff has training and experience in a wide range of natural and human resource disciplines and an in-depth knowledge of federal and state environmental regulations. This knowledge and experience allow our firm to provide solutions to most natural resource management and environmental planning and compliance problems in a timely and cost-effective manner. The high standard of our work has earned the respect of a clientele that includes private industry, land management agencies, and regulatory agencies.

Our specialists have worked in most of the major physiographic provinces of the U.S., with the most cumulative experience in the Rocky Mountains, the Great Basin, the Desert Southwest, New England, and the Pacific Northwest, including Alaska. Our staff is familiar with the consultation requirements, survey and analysis protocols, and reporting standards of all pertinent federal land management and regulatory agencies and their state government counterparts. We also have international experience, having completed work in Africa and Latin America.

SUMMARY OF SERVICES

Our principal service is assisting clients in natural resource management and environmental planning and in permitting actions involving federal and state regulatory and resource management agencies. What sets us apart in providing this service is our ability to assist in advance planning for environmental compliance, to coordinate multi-agency permitting processes, to facilitate effective public involvement activities, to build and manage multi-disciplinary analysis teams, to focus analysis on real issues, to maintain schedules and budgets, and to produce quality documents. Specific services we offer are outlined below.

ENVIRONMENTAL COMPLIANCE

- National Environmental Policy Act (NEPA): Categorical Exclusions (CEs), Environmental Assessments (EAs), and Environmental Impact Statements (EISs).
- Federal Energy Regulatory Commission (FERC): pipeline filings, development plans, environmental reports, site clearances, and environmental inspection.
- Endangered Species Act: biological evaluations and assessments, and threatened and endangered species clearances.
- Clean Water Act: Section 404 wetland delineations, permit applications, and mitigation plans, and Section 401 permits.
- State environmental compliance (CEQA, Act 250).
- Environmental inspection during construction and post-construction monitoring.
- Environmental Site Assessments (ASTM standard).
- Stormwater Management Plans and National Pollution Discharge Elimination System (NPDES) permitting.
- Training in environmental compliance and permitting.

ENVIRONMENTAL IMPACT ASSESSMENT

- Wetland impact avoidance/assessment and mitigation planning.
- Watershed, hydrologic, and flood plain investigations.
- Wildlife impact assessment and mitigation.
- Aquatic impact assessment and stream, wetland, and marsh restoration.
- Disturbed site rehabilitation planning and implementation.
- Socioeconomic analysis and impact assessment.
- Grazing utilization and range condition studies.

BIOLOGICAL INVENTORY AND ANALYSIS

- Wildlife, fish, and plant inventory and census.
- Terrestrial and aquatic habitat inventory and analysis.
- Surveys for threatened, endangered, and sensitive plant and animal species.
- Adamus Wetland Evaluation Techniques (WET).
- U.S. Environmental Protection Agency's Rapid Bioassessment Protocols for use in Streams and Rivers.
- Natural Resources Conservation Service's Stream Visual Assessment Protocol (SVAP).

PHYSICAL RESOURCE INVENTORY AND ANALYSIS

- Water quality and quantity surveys and assessments.
- Total Maximum Daily Load (TMDL) studies and plans.

NATURAL RESOURCE MANAGEMENT AND PLANNING

- Wildlife, fish, livestock, and vegetation management consulting and planning.
- Riparian habitat restoration planning and implementation.
- Residential development planning and landscape integration.
- Ranch resource inventory and management planning.

GEOGRAPHIC INFORMATION SYSTEM (GIS) SERVICES

- ESRI suite and open-source GIS software used for cartographic production and for natural resource planning, analysis, and research projects.
- GPS data collection and post processing.
- Aerial photography, satellite imagery, and their associated formats, projections, and coordinate systems.
- Large raster dataset creation and management.
- Geospatial databases using Access and PostgreSQL/PostGIS software use and maintenance.
- Spatial data quality control and associated attribute data management.
- Internet-based mapping services for up-to-date project progress, map printing, and database querying.

LITIGATION SUPPORT

- Analysis and expert witness services.

Cirrus personnel have provided these services on diverse projects involving winter and summer recreational development, grazing management, water quality assessment, water development, energy development, real estate acquisition and development, environmental site assessment, aviation projects, land use planning and development, reservoir management, site reclamation, livestock production, wetland mitigation, waste management, research, and teaching. Project profiles are discussed briefly under Project Profiles section.

CORE STAFF

OWNERS/PROJECT DIRECTORS

Neal E. Artz, PhD
NEPA Specialist/Natural Resource Manager/Social Scientist
Dr. Artz is a broad-based natural resource professional who has emphasized human aspects – from rural sociology to conflict resolution to policy analysis – in his career. In 2000, he became an owner/manager of Cirrus Ecological Solutions, LC and has been active in its day-to-day operations since its inception. Since 1992, he has been in the environmental field, working as a consulting business owner/manager, an environmental project manager, a natural resource management specialist, a socioeconomic analyst, expert witness, and a pipeline inspector. He has demonstrated expertise in social and natural sciences, environmental compliance and permitting, rangeland management, reclamation, rehabilitation, and technical writing. In the past, he has worked in rangeland management, vegetation/habitat analysis and fire control for federal agencies and spent several years as a social scientist and natural resource management specialist on government-funded projects in Africa. Prior to 1992, he had 11 years of professional experience.

Scott G. Evans, PhD
NEPA Specialist/Natural Resource Manager/Economist
Dr. Evans is experienced in natural resource, project, and business management, range science, economics, and livestock production. He has gained first-hand knowledge and experience in private as well as public aspects of resource use and management. In 2000, he became an owner/manager of Cirrus Ecological Solutions, LC and has been active in its day-to-day operations since its inception. Since 1992, he has served as a NEPA project manager, a resource specialist, an expert witness, and a pipeline inspector. As a project manager, he has led numerous small and large NEPA analyses (focusing on recreation, livestock grazing, and energy related projects), several water quality projects, resource management plans, and environmental site assessments. He demonstrates expertise in the management of complex projects and on-the-ground decision making as well as an in-depth understanding of the environmental compliance process. He has provided expert witness testimony for range and livestock production issues. He worked as a head environmental inspector for pipeline construction and has provided oversight various in reclamation efforts. He also taught at the university level in range economics and ranch inventory and management planning. Prior to 1992, he had 6 years of professional experience primarily in the livestock field.

PROJECT MANAGERS/SENIOR RESOURCE SPECIALISTS

W. Bryan Dixon, MS
Environmental Analyst III
Mr. Dixon is experienced in areas as diverse as special-status bird species surveys for various energy-related projects, water quality analysis, rangeland monitoring, and aquatic resource surveys. His skills in the areas of technology and data management and analysis have carried across from the public and business realm to make him a highly effective environmental professional. He has expertise in the areas of ornithology, field biology, environmental impact analysis, data management and analysis, GIS, and project development and administration.

Eric K. Duffin, MS
Watershed Scientist/Hydrologist
Mr. Duffin is experienced in the field of watershed science including hydrology, soil physics, fluvial geomorphology, and computer science since 1993. He has experience as a project manager and has managed several TMDL (water quality) projects for the State of Utah and worked with Salt Lake County to develop an ecological health index for the Jordan River. He has managed field crews, served on several NEPA project teams, and provided technical writing and editing for other physical and human-resource disciplines. He has examined snowmelt runoff, soil erosion, infiltration, evapotranspiration, and unsaturated soil moisture flow in sagebrush-steppe ecosystems. His experience includes evaluation and analysis of proposed watershed improvements, conducting hydrologic inventories, quantifying point and non-point source pollution, computer modeling, stream surveying, water quality sampling and monitoring, water quantity assessment, datalogger programming, and remote data retrieval.

John W. Stewart, BS
Terrestrial Ecologist/Wetland Specialist
Mr. Stewart is an experienced terrestrial ecologist dealing in a wide variety of natural resource issues, emphasizing botany, wetland delineation and permitting, wildlife, range management, and technical writing. Since 1993, his professional experience includes surveys for federally listed threatened, endangered, and candidate species as well as state and Forest Service sensitive species, ESA compliance (including biological impact assessments), general vegetation surveys and inventories, and community descriptions of habitats ranging from desert to alpine ecosystems. His wetland expertise includes jurisdictional delineation, functional value analysis, impact avoidance planning, 404 permitting, and mitigation planning and implementation. He has managed terrestrial surveys for plants and wildlife as part of the permitting process for geophysical surveys for oil and gas resources. He has worked on numerous NEPA project teams for a variety of projects and been an expert witness. He has provided project management and technical writing and editing for other biological, physical, and human-resource disciplines.

RESOURCE SPECIALISTS

Timothy A. Royer, MS
Terrestrial Ecologist/Wetland Specialist
Mr. Royer has professional experience since 2001 with a wide variety of natural resource disciplines, including: botany, wildlife, range management, hydrology, and wetlands. He is skilled at identifying plants in upland and wetland communities, and is experienced in multiple vegetation monitoring techniques. Mr. Royer conducts biological inventories and habitat assessments for ecosystem types found across the intermountain west, including assessments for federally listed threatened, endangered, and candidate plant and wildlife species. He is registered with the U.S. Fish and Wildlife Service as a certified Utah prairie dog

surveyor. As a hydrologist, he collects water quality and quantity data, and models management impacts at varying spatial scales. He has expertise in delineating wetlands for jurisdictional status, and in preparing Section 404 permits, stream alteration permits, mitigation and monitoring plans, and in conducting compliance monitoring.

ADMINISTRATIVE SUPPORT STAFF

Judith A. Seamons, BS
Office Manager/Document Production Specialist
Ms. Seamons is an experienced document production specialist and desktop publisher. Since 1989, she has demonstrated excellence in completing numerous high-quality ad campaigns, project proposals, and environmental documents, including EISs, EAs, technical reports, biological assessments and evaluations, and TMDLs. She also has experience in desktop publishing. She is skilled in maintaining and indexing administrative records for NEPA projects. As a bookkeeper and office manager, she has assisted in all aspects of business management and administration on a daily basis.

NETWORKING

In addition to our in-house staff, we maintain sound working relationships with other firms offering technical expertise in specialized biological fields, civil engineering, stormwater management, surveying, air quality analysis, transportation engineering, noise assessment and management, landscape planning, mine planning, geologic assessment, environmental law, and archaeological and cultural resources. We are experienced at coordinating these resources to manage the large multidisciplinary teams necessary to complete projects such as major environmental impact analyses and land-use plans.

PHYSICAL SUPPORT CAPABILITIES

We maintain the following equipment and other physical resources at our Logan, Utah, office:

- Vehicles and equipment to carry out field operations in all types of terrain and climates including pickup trucks, ATVs, boats, etc.
- The capability to model biotic and abiotic processes, design and manage customized relational databases and Geographic Information Systems (GIS), and generate mapping and graphics using ESRI Suite, MapWindow, AutoCAD, PostgreSQL/PostGIS database software, and various other spatial analysis tools.
- Water quality and quantity sampling equipment.
- Global Positioning System units for accurate spatial data gathering.
- Camping equipment for completing surveys in remote areas.

Our proximity to universities in Logan and Salt Lake City provides access to state-of-the-art research support resources. Minutes away from our office, Utah State University affords ready access to the Merrill Library, the Quinney Natural Resources Library, the Remote Sensing/GIS Laboratory, the Intermountain Herbarium, the Federal Documents Repository for the Intermountain Region, the Utah Water Research Laboratory and other university facilities. Proximity to the University of Utah provides access to additional resources, including the Eccles Health Sciences Library, Marriott Library, and the Quinney Law Library.

PROJECT PROFILES

Most of our core staff has worked together for up to 12 years prior to and since the establishment of Cirrus. During that time, we have played central roles in the management and implementation of the following projects.

RECREATION PROJECTS

Alta Ski Area Master Plan Amendment, Utah
Under third-party contract with the Wasatch-Cache National Forest and Alta Ski Lifts, Cirrus completed all phases of a NEPA analysis addressing a proposal to replace two older lifts with a single new detachable lift and to construct a major new base-area skier services structure adjacent to the lower terminal of the new lift. An EA, a biological assessment, and a biological evaluation were prepared. This project began in 2002 and was successfully completed in 2004. We have continued to provide permitting support, including numerous biological surveys and assistance in drafting proposals to the Forest Service as well as Forest Service documents such as scoping notices, scoping reports, and categorical exclusions.

Aspen Highlands Ski Area Expansion, Colorado
Under third-party contract with the White River National Forest and the ski area, our staff managed and implemented all phases of the NEPA analysis and state and federal permitting. Staff completed botanical, wildlife, and wetland surveys that resulted in the production of an EIS, biological evaluation, biological assessment, and technical reports. The EIS disclosed the potential impacts associated with proposed ski trails and lifts and expanded snowmaking. This project began in 1995 and was successfully completed in 1997.

Brian Head Resort Master Plan Amendment, Utah
Under third-party contract with the Forest Service and Brian Head Resort, Cirrus completed NEPA analysis on a proposed master plan amendment which included a permit boundary expansion and construction of several new lifts and base facilities. The full range of physical, biological, and socioeconomic impacts was assessed and documented in an EA, biological assessment, and biological evaluation. This project began in 2001 and was successfully completed in 2002.

Crested Butte Mountain Resort Main Mountain Improvements, Colorado
Under third-party contract with the Grand Mesa, Uncompahgre and Gunnison National Forest (GMUG) and Crested Butte Mountain Resort, our staff managed and implemented all phases of the NEPA analysis and the production of an EA, biological evaluation, biological assessment, and technical reports. This EA disclosed the potential impacts associated with proposed ski trails and lifts, additional on-mountain structures, and expanded snowmaking on Crested Butte Mountain. This project began in 1993 and was successfully completed in 1997.

Crested Butte Mountain Resort Mountain Improvement Plan, Colorado
Under third-party contract with the Grand Mesa, Uncompahgre and Gunnison National Forest (GMUG) and Crested Butte Mountain Resort, our staff managed and implemented all phases of the NEPA analysis and the production of an EA, biological evaluation, biological assessment, and technical reports. These documents disclosed the potential impacts associated with proposed ski lift construction and realignment, ski and hike/bike trail construction and improvements, new and expanded on-mountain structures, and expanded snowmaking on Crested Butte Mountain. This project began in 2006 and was successfully completed in 2007.

Crystal Mountain MDP Amendment #1, Washington
Under third-party contract with the Mount Baker-Snoqualmie National Forest and Crystal Mountain Inc., Cirrus completed NEPA analysis on a proposed master plan amendment which included relocation of an approved wastewater treatment plant, replacement of double chairlift with a quad, and revision of approved plans for redevelopment of a previously abandoned pod (chairlift and associated trail system). The full range of physical, biological, and socioeconomic impacts was assessed and documented in an EA, specialist reports, biological assessment, and biological evaluation. This project began in 2008 and was successfully completed in 2010.

Eldora Mountain Resort Master Development Plan, Colorado
Under third-party contract with the Arapahoe National Forest and Eldora Enterprises, our staff managed and implemented all phases of a master plan update and the associated NEPA analysis. Two EAs, a biological evaluation, a biological assessment, and technical reports were produced. The project involved new lifts and trials, expanded snowmaking, and other on-mountain construction. This project began in 1992. The primary EA was released in 1994, and associated work is ongoing.

Eldora Mountain Pine Beetle Suppression, Colorado
Under third-party contract with the Arapahoe National Forest and Eldora Mountain Resort, our staff managed and implemented all phases of a categorical exclusion process addressing direct control efforts (removal and disposal of infested trees and spraying to protect sound trees) targeting mountain pine beetles on 200 acres of National Forest System land. A biological assessment, a biological evaluation, an MIS report, several technical reports, and a draft decision memo were produced. This project began in 2006 and was successfully completed in 2007.

Kirkwood Resort Specific Plan EIR, California
Under contract to Alpine County, Cirrus managed all phases of a California Environmental Quality Act (CEQA) review process and completed an EIR and mitigation monitoring plan. The project involved the long-term development of the resort's base-area community, implementation of a new ski area master plan, and upgrading the community's wastewater treatment plant. The impact analysis covered the full range of physical, biological, and socioeconomic impacts. This project began in 1997 and was successfully completed in 2002.

Loon Mountain Expansion, New Hampshire
As subconsultants under a third-party contract with the White River National Forest and Loon Mountain Recreation Corp, our staff assessed the environmental impacts of implementing this ski area's proposed expansion and facility upgrades. In the EIS prepared for the project, Cirrus personnel addressed all human resource disciplines as well as vegetation and wetlands. The proposal called for a major permit expansion, development of a new snowmaking water storage and delivery system, lift upgrades and new trail development on the existing mountain, and restoration of previously disturbed sites. Our involvement in this long-running project began in 2000 and was successfully completed in 2002.

Silverton Outdoor Learning and Recreation Center, Colorado
Under third-party contract with the Bureau of Land Management and SOLRC, Cirrus completed all phases of an EIS process addressing a proposal to conduct "lift served backcountry skiing" and other, four-season recreation and environmental education programs on private land and 1,300 acres of BLM-administered land in the San Juan Mountains. A biological assessment and a biological evaluation was also prepared. The major issues addressed were avalanche safety, potential impacts to Canada lynx, socioeconomic impacts, and land-use conflicts. This project began in 2001 and was successfully completed in 2004.

Snowbird Ski and Summer Resort Master Development Plan, Utah
Under third-party contract with the Wasatch-Cache National Forest and Snowbird Ski and Summer Resort, staff assessed the environmental impacts of implementing this ski area's updated master plan. The master plan included developing a new back-bowl area, day lodges, snowmaking, lift construction and upgrades, a number of ski-trail improvements, and summer recreation facilities. This work involved the completion of the full range of physical, biological, and social impact analyses and the production of documents associated with the NEPA process, including three biological evaluations, three biological assessments, an EIS, and a mitigation monitoring plan. Work began on the project in 1995. The Final EIS was released in 1999, and associated work is ongoing. We have continued to work with Snowbird on a regular basis, completing numerous biological surveys, wetland delineations, environmental site assessments, proposal drafts, and drafts of associated agency documentation.

Snowbird Peruvian Lift Replacement Project, Utah
Under contract to Snowbird, Cirrus completed the studies and documentation necessary for Forest Service review and approval of a plan to remove the fixed-grip Peruvian lift and build a new detachable quad lift to the top of Peruvian Gulch, bore a tunnel through to Mineral Basin, and install a "people mover" type lift from the upper lift terminal, through the tunnel to Mineral Basin. Based on the biological evaluation, biological assessment, capacity analysis, and cumulative effects analysis prepared by Cirrus, the Forest Service categorically excluded the project from further NEPA analysis. The project was successfully completed in 2005.

Snowbird Base Area Master Plan, Utah
Under contract to Snowbird, Cirrus prepared a master plan update and application for conditional use review by Salt Lake County. The submittal included: Snowbird's base area site plan with supporting mapping, slope analysis, and density calculations; transportation analysis; on-mountain capacity analysis; water quality analysis; and assessment of the adequacy of utilities. The project was successfully completed in 2006.

Solitude Mountain Resort Master Development Plan, Utah
As subcontractors under a third-party contract with the Wasatch-Cache National Forest and the ski area, Cirrus completed the portions of this EIS dealing with watershed resources (including sedimentation, other aspects of water quality, and water quantity) and biological resources (including wildlife, aquatic resources, vegetation, and wetland and riparian impacts). Both the watershed's mining history and the influence of resort development on the character of the area were key factors in the analysis. Cirrus compiled background information; conducted the analysis of direct, indirect, and cumulative impacts; developed mitigation measures; and prepared pertinent sections of the EIS document. This project began in 2000 and was successfully completed in 2001.

Steamboat Ski Area Master Plan Amendment, Colorado
Under third-party contract with the Medicine Bow-Routt National Forest and Steamboat Ski and Resort Corporation, Cirrus is completing NEPA analysis on a proposed master plan amendment which included: a base area redesign with a new, detachable, six-pack, out-of-base lift; other lift replacements, realignments, and capacity increases; new ski and summer trails as well as improvements to existing trails; extensive glading of forested ski terrain; expansion and improvement of the snowmaking system; and construction of several on-mountain structures. The full range of physical, biological, and socioeconomic impacts was assessed and documented in an EA, biological assessment, and biological evaluation. This project began in 2005 and is slated for completion in 2006.

Sun Valley Heli-Ski Permit Renewal, Idaho
Under third-party contract with the Sawtooth National Forest and Sun Valley Heli-Ski, our staff managed and completed all phases of the NEPA analysis and production of an EA, biological assessment, and biological evaluation. The EA disclosed potential impacts associated with continued helicopter skiing in alpine areas surrounding Sun Valley. The major issues addressed were impacts to wildlife, to other forms of dispersed winter recreation, and to residents of the permit area. The project began in 2000 and was successfully completed in 2002.

Proposed Improvements and Development at Sugarbush Resort, Vermont
Under third-party contract with the Green Mountain National Forest and the ski area, our staff managed and participated in all phases of the NEPA analysis and production of an EA, biological evaluation, biological assessment, technical reports, and an EIS. The EIS disclosed the environmental impacts associated with implementation of Phase I of the proponent's Master Development Plan, including adding ski trails and lifts, expanding tree skiing terrain, adding mountain biking trails, expanding the base area, additional snowmaking, night lighting, and completing a land exchange between the resort and the Forest Service. This project began in 1997 and was successfully completed in 1998.

Telluride Ski Area Expansion, Colorado
Under third-party contract with the GMUG National Forest and Telluride ski area, our staff managed and implemented all phases of the NEPA analysis and production of an EIS, biological evaluation, biological assessment, and technical reports. The EIS disclosed the impacts associated with proposed ski trails and lifts, a transportation gondola, additional structures, and expanded snowmaking. Staff subsequently completed a Supplemental EIS to address additional public concerns regarding the expansion. The supplement included analyses of wildlife, vegetation, wetland, socioeconomic, recreational, and aquatic resources issues. The project began in 1993 and the Final EIS was released in 1996. The Final Supplemental EIS was released in 1999, and associated work continued through 2001.

Telluride Ski Area Improvements, Colorado
Under third-party contract with the GMUG National Forest and Telluride ski area, our staff managed and completed the production of an EA disclosing the potential impacts associated with constructing additional snowmaking ponds, as well as expanded snowmaking coverage and additional lift and trail improvements to the existing ski area. This project addressed issues and concerns associated with operation of the existing ski area. This project began in 1997 and was successfully completed in 1998.

Telluride Trails, Colorado
Under contract with a private party, staff conducted vegetation and wildlife surveys for threatened, endangered, and sensitive species along several proposed hiking/mountain biking trails. Work also included wetland surveys to determine areas of potential impact. This project was successfully completed in 1999.

Threatened & Endangered Species Survey on UWCNF, Utah
Under contract with the Uinta-Wasatch-Cache National Forest, Cirrus is completing surveys for several terrestrial animal and plant sensitive species within range allotments that are within three geographic areas on the Forest. Species surveys involved terrestrial bird species (boreal owl, goshawk, and flamulated owl), amphibians in ponds, and sensitive and recommended-sensitive plant species. Services provide for this work included all labor, supervision, equipment, transportation on both roaded and non-roaded forest environments and providing supplies to complete the mapping of primary habitat and animal and plant surveys. All surveys followed established protocols and direction from the Forest Service. Results of the survey work were

reported to the Forest Service in a written report, including all data gathered and GIS information. The project began in 2010 and will be completed April 2011.

Wasatch Powderbird Guides Permit Renewal, Utah
Under third-party contract with the Wasatch-Cache National Forest and Wasatch Powderbird Guides, our staff managed and completed all phases of the NEPA analysis and production of an EIS. The EIS disclosed potential impacts associated with continued helicopter skiing in alpine areas in Utah's Central Wasatch Range. Key issues included recreational conflicts, safety, noise disturbance, and impacts to nesting golden eagles. This project began in 1997 and was successfully completed in 1999. In 2002, Cirrus was awarded an additional contract to complete an EIS analysis for a permit renewal which was successfully completed in 2004.

GRAZING MANAGEMENT PROJECTS

2005 Grazing Permit Renewals, New Mexico
Under contract with the Lincoln National Forest, Cirrus completed the NEPA analysis required on grazing permit renewals for seven cattle and horse allotments on the Forest. The allotments spanned from desert to high alpine ecosystems and included several federally listed plant and animal species. The proposed actions included adoption of recent changes in Forest Service grazing permit administration regulations. Four separate EAs, with associated biological assessments, biological evaluations, and technical reports, were completed as part of this effort. The project began in 2004 and was completed successfully in 2005.

2006 Grazing Permit Renewals, New Mexico
Based on the successful experience in 2005, Cirrus was contracted by the Lincoln National Forest in 2006 to complete similar NEPA analysis addressing renewal of three more grazing permits. Two EAs and associated documentation were prepared. The project began in 2005 and was successfully completed in 2006.

North Sheep Grazing Authorization EIS, Idaho
Under subcontract, Cirrus worked with the Sawtooth National Forest (SNF) to complete the NEPA analysis on AMP revisions for four sheep and goat allotments on the Forest. The project was highly controversial because of strong pro and con sentiments regarding grazing in the local community, recreational conflicts, and a range of environmental concerns, including potential impacts on a number of federally listed species. The SNF was under federal court order to complete this EIS by the start of the 2004 grazing season, which allowed 8 months to complete the entire process, from NOI through ROD. The project was completed on schedule as well as on budget. Along with the EIS, a biological assessment and biological evaluation were completed. The project began in 2003 and was successfully completed in 2004.

Roche Ranches Project, Nevada
Under third-party contract with Roche Ranches and the BLM Elko Field Office, Cirrus is working with the agency to complete the NEPA process to support a decision whether or not to convert two winter sheep allotments on the Nevada/Utah line to multiple use, allowing cattle use as well as sheep. Issues involved include bighorn sheep re-introduction, wilderness study area, highway safety, raptor migration routes, and other special status species. The project began in August 2008 and is anticipated to be complete in a year.

Squaw Valley Ranch Grazing Permit Renewal, Nevada
Under third-party contract with Barrick Gold Corp. and the BLM Elko Field Office, Cirrus is working with the agency to complete all phases of the permit renewal process for three cattle and horse allotments comprised by the 360,000-acre Squaw Valley Ranch. Deliverables under the contract include: collecting

current upland, riparian, and wildlife monitoring data; preparing a Monitoring Report that compiles and assesses all historic through current data then recommends appropriate management changes; and preparing an EA on the permit renewal. The project is controversial; a 2003 Multiple Use Decision authorizing grazing was successfully litigated. Cirrus involvement with the current renewal process began in February 2008 and was completed in 2009.

LAND USE PLANNING PROJECTS

Brooks Lake Lodge Additions, Wyoming
Under a third-party arrangement with the Shoshone Nation Forest and Brooks Lake Lodge, Cirrus completed NEPA analysis on proposed improvements associated with their master plan which included the addition of two cabins, a spa, and a pond for emergency water storage. The full range of potential impacts was assessed. This project began in 2001 and was successfully completed in 2002.

Brundage Mountain Land Exchange, Idaho
Under third-party contract with the Payette National Forest and Brundage Mountain Company, Cirrus completed NEPA analysis on a proposed land exchange involving federal land comprising the ski area's base facilities and two parcels of private land owned by BMC in the surrounding area. The full range of physical, biological, and socioeconomic impacts was assessed and documented in an EA, biological assessment, and biological evaluation. This project began late in 2004 and was successfully completed early in 2006.

Bureau of Reclamation Reservoir Management Plans, Utah and Wyoming
Under subcontract, staff worked with the Bureau of Reclamation to describe the existing biological resources, analyze the potential impacts to these resources resulting from the implementation of various management alternatives, and participated in master plan development for five Utah and Wyoming reservoirs (Deer Creek, Lost Creek, Scofield, Starvation, and Seedskadee). These projects began in 1993 and continued through 1997.

City of Logan Fire Department Training Facility, Utah
Under contract with the City of Logan, Cirrus completed all phases of the NEPA analysis and the production of an EA for a fire department training facility. The lead agency for the work was the U.S. Department of Housing and Urban Development due to the use of their funds for the project. The project included building a 4-story tower to train for search and rescue, high-angle rescue, and other related activities. Future phases of the project will include placement of hazardous materials and confined space props. This project began in February of 2003 and was successfully completed in May of 2003.

Dry Creek Riparian Habitat Restoration Project, Utah
Under contract with the City of Sandy, our staff completed a pilot design project to restore 4 acres of riparian forest and stream habitat on Dry Creek as part of a wetlands mitigation program. The project included all phases of restoration planning, from budgeting water needs, to channel design, to plant selection, and landscape design. Work on the project began in 1998 and was successfully completed in 1999.

Emory Port of Entry Project, Utah
Working with the Utah Department of Transportation, our staff participated in an analysis of alternatives, mitigation planning, public involvement, preparation of a biological assessment/biological evaluation, and stream remediation planning including channel design, design of instream habitat structures, wetland delineation, and on-site environmental compliance monitoring. This project began in 1996 and was successfully completed in 1998.

Grace-Cove Site Plan, Idaho
Under contract to PacifiCorp, Cirrus completed a site plan for the Grace-Cove hydroelectric site on the Bear River, in accordance with the FERC license for the Bear River Hydro Project. The plan detailed how public access, vegetation, wetland and riparian resources, and agricultural uses would be managed and coordinated with power-generation operations on PacifiCorp owned lands. The project was successfully completed in 2005.

Logan City 600 West Recreation Trail Project, Utah
Under contract with the City of Logan, Cirrus completed all phases of the NEPA analysis and the production of an EA for a recreational hiking/biking trail. The project was designed to link the existing trail network to a proposed neighborhood park. Issues included working with the railroad to address pedestrian and right-of-way concerns, safety concerns relating to the proximity of the highway, and proximity of the trail to other hazardous facilities along the route. This project began in 1999 and was successfully completed in 2000.

Logan City Zoo Education Building, Utah
Under contract with the City of Logan, Cirrus completed all phases of the NEPA analysis and the preparation of an EA for an educational building on the City's zoo property. This project was successfully completed in 2000.

Oneida Site Plan, Utah and Idaho
Under contract to PacifiCorp, Cirrus completed a site plan for the Oneida hydroelectric site on the Bear River, in accordance with the FERC license for the Bear River Hydro Project. The plan detailed how public access, vegetation, wetland and riparian resources, and agricultural uses would be managed and coordinated with power-generation operations on PacifiCorp owned lands. The project was successfully completed in 2006.

Randolph Management Framework Plan Amendment, Utah
Under contract with the Coordinated Resource Management (CRM) Committee in Rich County, Utah, Cirrus assisted in the development of a management plan for rangeland resources countywide, including those administered by the Forest Service, BLM, state, and private landowners. Portions of the CRM plan involving BLM lands were the proposed action in a Resource Management Plan amendment. We were contracted to work with the CRM Committee to facilitate completion of the plan, then with the BLM on the NEPA analysis addressing the resulting RMP amendment. This project was particularly interesting because Cirrus's involvement started during the initial, planning phase at the county level and carried through to completion of the NEPA analysis. Management of this project required an additional level of facilitation, coordination, and planning, as well as the capabilities needed to complete the NEPA process. The project started in 2003, and Cirrus involvement ended with the preparation of the preliminary draft EIS in June 2006.

WATER PROJECTS

12 Mile Watershed Assessment and Road Analysis, Utah
Under contract with the Manti-LaSal National Forest, Cirrus completed a comprehensive watershed analysis and roads assessment for the 12 Mile Watershed. Summer recreation in the watershed increased dramatically over the previous decade. As a result, issues surfaced with respect to the number of trails in the planning area and the associated watershed impacts. Cirrus determined the extent and severity of these impacts. The work began in 2001 and was successfully completed in 2002.

Bear Lake Dredging Project, Utah and Idaho
Under contract to PacifiCorp, Cirrus completed an assessment of the environmental impacts of a proposal to dredge a channel to maintain flows of irrigation water pumped from Bear Lake. Our report described the proposed project and alternatives then discussed potential impacts in the areas of hydrology, water quality, socioeconomics, recreation, fisheries and wildlife, and noxious weed invasion. The report was subsequently submitted to the U.S. Army Corps of Engineers, where it provided the basis for their NEPA analysis and issuance of the required permits. The project began in 2001 and was successfully completed in 2002.

Bear River TMDL Coordination Effort, Idaho, Utah, and Wyoming
Under contract with the Bear River Commission, Cirrus coordinated TMDL water quality studies for the Bear River watershed. The Bear River watershed includes three states, and numerous federal, state, and local agencies are involved in its management. Cirrus coordinated water quality improvement efforts to allow the Commission to more fully understand water quality issues in the watershed and how state boundaries are affecting water quality programs. This project began in 2002 and was successfully completed in 2003.

Bear River Watershed Initiative, Idaho, Utah, and Wyoming
Under subcontract to Utah State University, Cirrus worked to update TMDL software and to document all existing water quality improvement projects undertaken in this three-state watershed. The project began in 2005 and was successfully completed in 2006.

Central Valley Water Reuse Project, Salt Lake City, Utah
Staff managed and implemented a third-party contract awarded through the Central Utah Water Conservancy District. The project involved resource analyses in preparation for an EIS on a proposal by Salt Lake County's Central Valley Water Reclamation Facility. The proposal sought to reuse 40,000 acre-feet of treated effluent annually, thereby qualifying for Central Utah Project funding for improvements to the facility. Our impact analysis spanned the full range of physical, biological, and socioeconomic impacts. The project was initiated in 1994 and much of the background information compilation and impact assessment was completed. However, the project was shelved in 1997 due to operational and economic constraints.

Cove Dam Decommissioning Project Water Quality Monitoring, Idaho
Under contract to PacifiCorp, Cirrus conducted water quality monitoring during demolition of the Cove Dam on the Bear River in southeastern Idaho. Cirrus established remote datalogger monitoring sites above and below the dam and provided continuous water quality monitoring, sample analysis, QA/QC review, and reporting throughout the demolition process. Cirrus reported directly to the Idaho Division of Water Quality during the demolition process in support of their effort to control sediment release and its potential impact on the Bonneville cutthroat trout and other aquatic life. The project was completed in 2006.

Cove Hydroelectric Project Decommissioning Environmental Report, Idaho
Under contract to PacifiCorp, Cirrus prepared an environmental report detailing all physical, biological, and socioeconomic effects of decommissioning this century-old hydroelectric project on the Bear River. Impacts on the federally listed Bonneville cutthroat trout were a central concern. The report provided the basis for FERC's NEPA process prior to their approval of the decommissioning. The project began in 2004 and was successfully completed in 2005. Once the environmental report was complete, Cirrus was contracted to assist PacifiCorp in acquiring the NPDES permit, 401 certification, stream alteration permit, and 404 permit necessary to complete the project.

Echo Reservoir TMDL Study, Utah
Under contract with the Utah Division of Water Quality, Cirrus completed a TMDL water quality study and remediation plan for the upper Weber River basin, one of the largest municipal watersheds on the Wasatch Front. This watershed has been heavily developed for storage and regulation of water and includes three of the seven reservoirs in the greater Weber River basin including Echo, Wanship (Rockport Lake), and Smith-Morehouse reservoirs. Cirrus identified pollutant loads of total phosphorus from five NPDES permitted point sources and recommending treatment alternatives for each facility. We utilized a reservoir/riverine computer model integrated with a customized GIS platform to allocate pollutant loads and determine concentrations of total phosphorus, dissolved oxygen, and temperature in reservoirs and streams in the project area. Cirrus also worked closely with the Weber Basin Water Conservancy District and various federal agencies to coordinate water improvement efforts focused on management of non-point source pollution. The project began in 2003 and was successfully completed in 2006.

Hydrologic Monitoring for Coal Tracts on the Manti-LaSal National Forest, Utah
Under contract with the Forest Service, Cirrus completed additional hydrologic monitoring in coordination with the coal tract evaluation project described below. This monitoring effort was completed to meet the permitting requirements of the Utah Division of Oil, Gas, and Mining. Monitoring efforts include water quality and quantity measurements on springs and streams within two potential coal lease tracts. The monitoring effort began in 2002 and was successfully completed in 2004.

Logan City 600 West Park Wetland Delineation and Groundwater Monitoring, Utah
Under contract with the City of Logan, Cirrus is providing long-term groundwater monitoring to determine the extent of wetlands on a site proposed for a city park. Cirrus has been working with the U.S. Army Corps of Engineers to determine the proposal's potential wetland impact. This project began in 2000 and was completed in 2003.

Logan City Leachate Treatment and Logan River Trail, Utah
As a subconsultant under contract with the City of Logan, Cirrus prepared the biological and soils portions of an EA for these two projects involving development in wetlands. Cirrus also coordinated the NEPA portion of the project to ensure the process requirements were met. These projects were designed to address leachate concerns in the groundwater and provide additional recreational opportunities for the people in Cache Valley. Issues included surface and groundwater quality, wetland impacts, private property issues, wildlife and fisheries impacts, and impacts to soils. This project began in 2001 and was successfully completed in 2003.

Jordan River TMDL Study, Utah
Under contract with the Utah Division of Water Quality, Cirrus is completing a TMDL water quality study and remediation plan addressing point and non-point source pollutant loads entering the Jordan River between Utah Lake and Farmington Bay. Point sources include three major municipal wastewater treatment facilities, and non-point sources include substantial urban stormwater runoff. Pollutants of concern include dissolved oxygen, total dissolved solids, temperature and coliform bacteria. A thorough investigation of the linkage between pollutants of concern and watershed processes that influence these pollutants is currently being conducted. The project began in 2005 and was initially focused on the lower segments of the Jordan River. Based on our initial data review and pollutant source characterization, the Division of Water Quality has recommended the project deadline be extended to 2011 in order to incorporate additional data collection and analysis.

Middle and Lower Sevier River Watershed Management Plan, Utah
Under contract with the Sevier Conservation District, Cirrus is completing a watershed management plan for the middle and lower Sevier River. The watershed management plan is being completed to restore full support of beneficial use to water bodies in the project area that were included on the Utah 2004 303(d) list. These water bodies were identified as impaired due to elevated levels of Total Dissolved Solids (salinity), sediment, Total Phosphorus, and Habitat Alteration and assessed in a TMDL Water Quality Study of the Middle and Lower Sevier River Watersheds. The watershed plan will contain management strategies and conservation practices that will meet the water quality endpoints and target loads for each pollutant source as recommended by the TMDL study. The strategies and practices included in the plan will be selected following discussions with agencies and private landowners in an effort to identify roadblocks and obstacles that would prevent implementation of projects that can improve water quality. In order to obtain funding from the Section 319 Nonpoint Source Grants program, the plan will meet all minimum EPA requirements for watershed plan development. The project began in 2009 and was concluded in 2010.

Monticello/Blanding Infrastructure Improvement Project, Utah
Under contract with the Manti-LaSal National Forest, Cirrus completed a thorough watershed analysis for the Monticello/Blanding Infrastructure Improvement Project. Our work also included a watershed analysis of potential timber harvest areas. Our analysis was submitted as a technical report for the preparation of an EIS by the Forest Service. The project began in 2001 and was successfully completed in 2002.

Mt. Crested Butte Wastewater Treatment Facility Wildlife and Wetland Delineations, Colorado
Working with the local Water and Sanitation District, our staff completed wildlife and wetland surveys needed to satisfy regulatory requirements for a wastewater treatment plant expansion in this high-elevation resort community. Subsequently, we acted as the District's agents in securing Section 404 permits needed to complete the project. Our work began in 2000 and was successfully completed in 2003.

Newton Reservoir TMDL Study, Utah
Under contract with the Utah Division of Water Quality, Cirrus completed a TMDL water quality study and remediation plan addressing non-point source pollutant loads of total phosphorus and subsequent low dissolved oxygen contributing to impairment of Newton Reservoir, Clarkston Creek, and Newton Creek. Cirrus worked closely with representatives from the Natural Resource Conservation Service and local stakeholders to assess specific streambank and upslope conditions associated with livestock feeding operations and agricultural development. Cirrus utilized a non-point source computer model developed specifically for the Newton watershed to assess current and future pollutant loads of total phosphorus. The project began in 2002 and was successfully completed in 2004 following EPA approval of the final TMDL report.

Otter Creek TMDL Study, Utah
Under contract with the Utah Division of Water Quality, Cirrus completed a TMDL water quality study and remediation plan addressing point and non-point source pollutant loads contributing to impairment of the East Fork Sevier River, Otter Creek, and several reservoirs. The project area includes Otter Creek, Lower Box, and Tropic reservoirs. Management of land and water resources in the project area involves a number of federal, state, and county governments as well as private individuals. We completed detailed management plans incorporating watershed-scale efforts by federal and state agencies with those of individual stakeholders to achieve water quality goals in an efficient and cost effective way. Cirrus also provided recommendations for managing flows from reservoirs and an assessment of how reservoir discharge impacted seasonal water quality conditions. The project began in 2002 and was successfully completed in 2006 following EPA approval of the final TMDL report.

Recapture Reservoir TMDL, Utah
Under contract with the Utah Division of Water Quality, Cirrus is completing a TMDL water quality study and remediation plan addressing non-point source pollutant loads entering Recapture Reservoir. This water body was listed on the Utah 2006 303(d) list as a result of low DO concentrations. The watershed contributing flow to Recapture Reservoir is comprised of a mixture of private and public land ownership that is utilized for livestock grazing, recreation, timber harvesting, and mining development. Cirrus is currently working with local stakeholders and federal resources specialists to define reservoir inflows and pollutant loading to the Reservoir. Once consensus has been reached on pollutant source characterization, load allocations will be made along with recommendations for Best Management Practices that will achieve the TMDL. The project began in 2007 and is successfully completed in 2008.

Salt Lake County Water Quality Stewardship Plan, Utah
Working with Salt Lake County Division of Engineering, Cirrus is providing support towards updating the Salt Lake County Water Quality Stewardship Plan. As part of this effort, Cirrus created a Watershed Function Index model that will be used by Salt Lake County to establish baseline conditions in 17 major watersheds that comprise Salt Lake County and routinely monitor progress towards watershed goals. Cirrus completed an assessment of aquatic, riparian and wetland habitat found in all major watersheds in Salt Lake County. Cirrus also completed an assessment of aquatic resources in each major watershed with regards to minimum instream flows needed to support these resources. Both assessments will be included as part of the Water Quality Stewardship Plan. The project began in 2006 and was successfully completed in 2008.

Spring Creek TMDL Study, Utah
Under subcontract, Cirrus worked with the Utah Division of Water Quality to complete the EPA-mandated analysis and remediation plan to clean up a stream with a long history of water quality degradation due to livestock feeding operations, fertilization of fields, and municipal wastewater treatment plants. Spring Creek is high on the Utah Division of Water Quality's priority list, and the TMDL study will likely serve as a model for other, similar water impairment situations. The project began in 2000 and was successfully completed in 2001.

Rio Tinto Aquatic Survey, Nevada
Under contract with the Humbolt-Toiyabe National Forest, Cirrus collected macroinvertebrate and water quality samples. These samples were collected below the Rio Tinto Mine to monitor the quality of the water and the resultant effects on the aquatic environment. The project began in 2004 and was successfully completed in 2005.

Upper Bear River TMDL, Utah
Under contract with the Utah Division of Water Quality, Cirrus completed a TMDL water quality study and remediation plan addressing non-point source pollutant loads and subsequent low dissolved oxygen contributing to impairment of the Bear River in Rich County, Utah. Cirrus worked closely with representatives of the Natural Resource Conservation Service and local stakeholders to assess specific streambank and upslope conditions associated with livestock feeding operations and agricultural development. We utilized a water quality and flow model to assess current and future DO levels. The project began in 2005 and was successfully completed in 2006 following EPA approval of the final TMDL report.

Water Hollow Wetland Survey
Wetland surveys and mitigation plan completed for a private landowner in Wasatch County, Utah, to construct a series of pond structures for irrigation purposes. Surveys were completed along the existing

stream channel to identify the extent of wetlands. An alternatives analysis was also completed in accordance with Section 404 of the Clean Water Act. The project began and successfully completed in 2003.

ENERGY PROJECTS

Arizona Gas Storage Project, Arizona
Under subcontract, Cirrus completed the Federal Energy Regulatory Commission (FERC) required resource socioeconomic resource report (#5) for El Paso Natural Gas Company. The Arizona Gas Storage Project addressed the potential socioeconomic impacts of installing a storage facility and approximately 9 miles of pipeline located in Pinal County, Arizona. Two other alternative pipeline alignments were also part of the analysis. The work was begun and successfully completed in 2006.

Aspen Products Pipeline, Utah
Working with the pipeline company, our staff completed wetland surveys along approximately 150 miles of a petroleum products pipeline corridor from Crescent Junction to Payson, Utah. Wetlands were delineated and mapped with GPS technology for use in NEPA documentation and U.S. Army Corps of Engineers permitting. This work was successfully completed in 1999.

Barrett Resources Corp, Colorado
Under contract to the energy company, our staff completed a number of projects over an 8-year span, ending in 2001 when Barrett was purchased by a larger corporation. We obtained 404 and stream alteration permits and threatened and endangered species clearances for a pipeline crossing the Colorado River. As environmental inspectors, members of the staff supervised the crossing of the river and adjacent wetland areas to ensure compliance with regulatory standards and guidelines.

Our staff secured all environmental permits and authorizations required to complete a 30-mile natural gas collector pipeline from the Parachute production fields to the Greasewood Compressor Station. Work included the following: completion and submittal of right-of-way applications and a plan of development; completion and/or coordination of all environmental surveys and analyses including wetlands, threatened and endangered and sensitive species, cultural resources, visual resources, land use, and socioeconomic impacts; planning appropriate mitigation and obtaining necessary permits, compliance documentation, and clearances; planning of right-of-way rehabilitation; and completion of an EA for the Bureau of Land Management.

Our staff conducted site clearance surveys for threatened and endangered species, wetlands, and unstable slopes potentially occurring in the vicinity of the Parachute and Rulison natural gas fields for five drilling seasons. Site clearances were provided for gas well sites, roads, and pipelines. The clearances were necessary for the Bureau of Land Management approval of Barrett's annual drilling programs. Our involvement in these clearances began in 1993 and continued through 2001.

Bull Mountain Pipeline, Colorado
Under contract to Trigon-EPC, Cirrus completed the biological surveys necessary for permitting of a 25-mile natural gas pipeline and associated facilities. Surveys for threatened, endangered, and sensitive plant and animal species, wetlands, noxious weeds, and vegetation were completed and documented in appropriate reports to support the NEPA analysis completed for the project. The pipeline traverses portions of the White River and GMUG National Forests as well as private and BLM lands. The work began in 2004 and was successfully completed in 2005.

Cheyenne Plains Project, Colorado and Kansas
Under subcontract, Cirrus completed the Federal Energy Regulatory Commission (FERC) required resource socioeconomic resource report (#5) for El Paso Natural Gas Company. The Cheyenne Plains Project addressed the potential socioeconomic impacts of installing 380 miles of 30-inch, high pressure mainline located in Weld, Morgan, Washington, Yuma, and Kit Carson counties in Colorado and Sherman, Wallace, Logan, Scott, Lane, Finney, Hodgeman, Ford, and Kiowa counties in Kansas. In addition to the pipeline itself, the analysis covered up to five new compressor stations; an amine processing facility; and other associated facilities including block valve locations, meter stations, pig traps, pipe yards, extra work areas, and staging areas. The work began in 2002 and was successfully completed in 2003.

Delta Petroleum Seismic Testing, Utah
Under contract to Western Land Services, Cirrus completed the NEPA analysis (Determinations of NEPA Adequacy and Environmental Assessments) and biological work (special status species surveys and preparation of Biological Assessments, Biological Evaluations, and wildlife technical reports) for Delta's Petroleum's seismic survey program that were necessary for Forest Service, BLM, and state permitting of seismic testing for underground oil and gas resources on several central and southern Utah tracts. These included the Parowan, Beaver, and Richfield areas. The surveys addressed federally listed and agency sensitive plant and wildlife species and raptors. Survey results were documented in reports and maps submitted to the land management agencies. Cirrus also surveyed a large tract of land with active Utah prairie dog colonies, mapped the colonies, located access around the colonies, and monitored the burrows during the seismic acquisition using vibroseis as required by the U.S. Fish and wildlife Service. The first surveys were completed in 2005 and 2006, and additional work is continuing annually.

Greens Hollow Coal Lease Tract Proposed Leasing and Underground Mining Project, Utah
Under third-party contract with the Price BLM, Manti-La Sal and Fishlake National Forests, and Ark Land Company, Cirrus managed and implemented all phases of the NEPA analysis and production of an EIS. In preparation of the EIS Cirrus completed the biological assessment, biological evaluation, management indicator species, and other required technical reports. The EIS disclosed the potential impacts associated with leasing and long-wall coal mining by the BLM and Forest Service. The EIS specifically addresses the consequences of implementing three alternatives. Impacts were assessed on a range of environmental parameters including geology, surface and groundwater, aquatic and terrestrial wildlife, vegetation, heritage, paleontology, socioeconomics, recreation, visual quality, rangeland, roadless, and air quality. The project began in 2007 with a Draft EIS being published March 2009. The Final EIS has been prepared and is awaiting a Record of Decision.

High Plains Expansion Project, Colorado
Under subcontract, Cirrus completed the Federal Energy Regulatory Commission (FERC) required resource socioeconomic resource report (#5) for Colorado Interstate Gas Company. The High Plains Expansion Project addressed the potential socioeconomic impacts of installing four segments of 24-inch and 30-inch pipelines totaling about 164 miles located in Adams, Morgan, and Weld counties, Colorado. In addition to the pipeline itself, the analysis covered associated facilities including block valve locations, meter stations, pigging facilities, pipe yards, extra work areas, and staging areas. The work began in 2006 and was successfully completed in 2007.

Manti-La Sal Coal Tract Evaluation Project, Utah
Under direct contract with the Forest Service, Cirrus headed a team responsible for developing probable long-wall coal mining scenarios for two coal tracts, then assessing their impact on a range of environmental parameters including air quality, hydrology, geology, water quality, wetland and riparian resources, vegetation, wildlife, cultural resources, paleontology, visual resources, and recreation. The project required mine engineering, multi-year hydrologic and water quality data collection, and ground subsidence and groundwater modeling. Following the impact assessment and reporting, we worked with the agency to devise an appropriate mitigation and monitoring scheme. Our product consisted of technical reports that will provide the basis for preparing EISs addressing mining of these tracts once they are leased. The project began in 2000 and was successfully completed in 2004.

Medicine Bow Lateral Project, Wyoming
Staff participated in the environmental inspection and compliance monitoring for several phases of construction and reclamation of a 149-mile natural gas pipeline from southeastern Wyoming to north-central Colorado. Staff provided oversight of reclamation and revegetation efforts (i.e., recontouring, fertilizing, mulching, reseeding, and erosion control). This work was successfully completed in 1999.

Piceance Basin Expansion Project, Wyoming and Colorado
Under subcontract, Cirrus completed the Federal Energy Regulatory Commission (FERC) required resource socioeconomic resource report (#5) for El Paso Natural Gas Company. The Piceance Basin Expansion Project addressed the potential socioeconomic impacts of installing 142 miles of natural gas pipeline located in Sweetwater County Wyoming and Moffit and Rio Blanco counties in Colorado. In addition to the pipeline itself, the analysis covered associated facilities including compressors, meter stations, pigging facilities, pipe yards, extra work areas, and staging areas. The work began in 2004 and was successfully completed in 2005.

Questar Mainline 68 Replacement Project, Colorado
Under contract to the gas company, our staff conducted surveys for threatened and endangered plants and wildlife and identified jurisdictional wetlands along the right-of-way for a natural gas pipeline replacement project in Colorado. Results were documented in a biological assessment and a biological evaluation prepared for the U.S. Fish and Wildlife Service and the Bureau of Land Management. This work was successfully completed in 1997.

Questar Mainline 104 Replacement Project, Utah
Under contract to the gas company, our staff completed wetland surveys along approximately 75 miles of the pipeline corridor from Price to Elberta, Utah. Wetlands were delineated and mapped using GPS technology for use in NEPA documentation and Section 404 permitting. This work was successfully completed in 1999.

Skull Valley Nuclear Fuel Storage Project Wetland Delineation, Utah
Under contract to Private Fuel Storage, LLC, Cirrus specialists delineated wetlands, channels, and other jurisdictional waters of the U.S. along a proposed 32-mile rail spur from Low Junction to the Skull Valley Goshute Reservation, west of Salt Lake City. The spur would be used to transport spent fuel rods to the proposed storage site in Skull Valley. We completed mapping of these jurisdictional features, prepared a report submitted to PFS and the U.S. Army Corps of Engineers, and assisted PFS legal staff in pursuing the permitting required under section 404 of the Clean Water Act. The project began in 2000, and our role was successfully completed in 2001.

Uinta Basin Lateral Pipeline, Wyoming, Colorado, and Utah
Under contract to Colorado Interstate Gas Company, our staff participated in environmental inspection and compliance monitoring for all phases of construction, reclamation, and maintenance of a 222-mile natural gas pipeline from Wamsutter, Wyoming to Vernal, Utah. Staff provided oversight of wetland crossings, river crossings, and reclamation efforts (i.e., recontouring, reseeding, transplanting, and erosion control), as well as assistance in communication between the lead agency and the client.

Staff also performed follow-up revegetation monitoring and reclamation standards analysis and provided input to the monitoring report. Staff members prepared a noxious weed EA that was used as a standard for weed control along Uinta Basin Lateral Pipeline. Our involvement in the project began in 1992 and continued through 1994.

Well Site Clearances, Colorado
Under contract to Tom Brown, Inc., our staff conducted site clearance surveys for threatened and endangered species, wetlands, and unstable slopes potentially occurring in the vicinity of the Rulison natural gas field to support the Bureau of Land Management's approval of the clients' 1997 drilling program.

West Lease Modifications EA, Utah
Under third-party contract with the Price BLM and Fishlake National Forests, and Ark Land Company, Cirrus managed and implemented all phases of the NEPA analysis and production of an EA. In preparation of the EA Cirrus completed the biological assessment, biological evaluation, management indicator species, and other required technical reports. The EA disclosed the potential impacts associated with leasing and long-wall coal mining by the BLM and Forest Service. The EA specifically addressed the consequences of modifying three existing leases, and subsequent underground, longwall extraction of coal on the modified leases. Impacts were assessed on a range of environmental parameters focusing on surface and groundwater, wetlands, aquatic and terrestrial wildlife, and heritage resources. The project began in 2008 and successfully completed in 2009.

Wolverine Gas and Oil of Utah Seismic Surveys, Utah
Under contract to Western Land Services, Cirrus completed the biological surveys for Wolverine's seismic survey program that were necessary for Forest Service, BLM, and state permitting of seismic testing for underground oil and gas resources on several central Utah tracts. The surveys covered about 560 miles of seismic lines in the Nephi-Richfield and Parker Mountain areas. Coordinated with agency counterpart biologist, the surveys addressed special status (i.e., federally listed and agency sensitive) plant and wildlife species and raptors. Survey results were documented in reports and maps submitted to the land management agencies. This biological work has been ongoing since 2003. In 2008, Cirrus also drafted the BLM's categorical exclusion review and approval documentation for a Wolverine 3D seismic project in the Richfield area.

REAL ESTATE ACQUISITION AND DEVELOPMENT PROJECTS

Golden Corral Environmental Site Assessment, Utah
Our staff completed a Phase I Environmental Site Assessment (ESA) for the prospective buyer of a restaurant site in Logan, Utah, where underground storage tanks and asbestos were concerns. This work was successfully completed in 1998.

Logan City Environmental Site Assessments, Utah
Under contract to the City of Logan, our staff completed a Phase I and II ESA for the Canyon Country Tire/Logan Dry Cleaners property, where underground storage tanks and potential long-term release of cleaning solvents and other contaminants were a concern. This work was successfully completed in 1999.

Snowbird Ski & Summer Resort Environmental Site Assessments (9), Utah
Under contract to the resort, our staff has completed a Phase I ESA for refinancing of the entire resort base area and the Canyon Racquet Club, as well as eight separate Phase I assessments for mining claims the client was considering purchasing. Two of these were followed by Phase II assessments. This work began in 1996 and is ongoing.

Two Bear Ranch Resource Management Plan, Utah and Wyoming
Working with the developer and various agencies, our staff developed a resource management plan for a proposed residential/recreational development at Two Bear Ranch in Utah and Wyoming. This management plan outlined the placement of residential housing, fencing, roads, bridges, and other structures to best integrate this development with grazing, wildlife, fishery, and wetland resources. Our work began in 1997 and was successfully completed in 1998.

Wolf Creek Resource Management Plan, Utah
Working with the developer and various agencies, our staff completed a resource management plan for a proposed residential/recreational development called Wolf Creek in Heber, Utah. This management plan outlined the placement of residential housing, fencing, roads, bridges, and other structures to best integrate this development with grazing, wildlife, fishery, and wetland resources. Our work began in 1997 and was successfully completed in 1998.

AVIATION PROJECTS

Parowan Airport Taxiway and Facilities Project, Utah
Under contract with Armstrong Consultants, Cirrus prepared a biological assessment to address impacts on threatened, endangered, and candidate species associated with a proposal to add a parallel taxiway and adjunct facilities to the existing Parowan Airport. The primary species of concern was the Utah prairie dog. Surveys were completed to determine the potential impact to this species. This project began and was successfully completed in 2002. In 2005, Cirrus completed another biological assessment to address impacts on special status species associated with a proposal to construct a taxi lane perpendicular to the existing taxiway and an access road parallel to the proposed taxi lane. Again, the primary species of concern was the Utah prairie dog. Surveys were completed to determine the potential impact on this species. This project began and was successfully completed in 2005.

11th Air Force Military Operations Area Improvement, Alaska
Under third-party contract, staff participated in an EIS project initiated by the U.S. Air Force to assess the impacts of expanding airspace zones for military flight training exercises in Alaska. Staff assessed and documented biological impacts, particularly related to the impacts of noise on wildlife, and provided NEPA process oversight. The project began in 1993, and the Final EIS was released in 1995.

LITIGATION SUPPORT PROJECTS

Connor Cattle Company v. Thiokol, Utah
Our staff provided analysis and expert witness services in a multi-million dollar lawsuit pertaining to range/livestock production issues. This work began in 1999 and was successfully completed in 2001.

Henrichson-Paramount Property, Spanish Fork, Utah
Our staff provided analysis and expert witness services in an lawsuit involving the impact of a forest fire on vegetation, habitat value, and slope stability on the subject property. This work was successfully completed in 1998.

Tony Chavez v. Murray City, Utah
Our staff provided analysis and expert witness services in a lawsuit regarding the presence of jurisdictional wetlands on the Chavez property. This work was successfully completed in 1998.

TRAINING PROJECTS

Federal Energy Regulatory Commission Seminar, Colorado
At the request of the FERC, our staff assisted in presenting a training seminar for FERC staff, on the topic of effective monitoring for environmental compliance on pipeline projects. The seminar was conducted in 1993.

Rocky Mountain Capshell Snail Training Seminar, Colorado
At the request of the Colorado Division of Wildlife and the Forest Service, our staff developed and presented a training seminar for agency personnel on the population status and life history of the Rocky Mountain capshell snail. This seminar included field techniques for identification, quantitative sampling, and population estimation for the species. The seminar took place in 1997.

RÉSUMÉS OF KEY PERSONNEL

NEAL E. ARTZ, PH.D.

Position

Owner/NEPA Specialist/Natural Resource Manager/Social Scientist.

Education

Ph.D., Range Science (resource management and socioeconomic issues), Utah State University, 1986.

B.S., Renewable Natural Resources and Communications, University of Nevada-Reno, 1977.

Employment History

2000–Present:	Owner, Cirrus Ecological Solutions, L.C.
1998–2000:	Business Leader, Project Manager, and Natural Resource Specialist, KW Brown & Associates, Inc.
1992–1998:	Project Manager and Natural Resource Management Specialist, Pioneer Environmental Services, Inc.
1987–1992:	Project Social Scientist, Lesotho Agricultural Production and Institutional Support Project (LAPIS), and partner in American Ag International, the LAPIS prime contractor.

Areas of Expertise

Dr. Artz is a broad-based natural resource professional who has emphasized human aspects - from rural sociology to conflict resolution to policy analysis - in his 27-year career. In the past, he has worked in rangeland management, vegetation/habitat analysis and fire control for federal agencies and spent several years as a social scientist and natural resource development specialist on government-funded projects in Africa. For the past 12 years he has been in the environmental field, working as a business owner/manager, an environmental project manager, a natural resource management specialist, a socioeconomic analyst, and a pipeline inspector. He has demonstrated expertise in social and natural sciences, environmental compliance, rangeland management, reclamation, rehabilitation, and technical writing. His skills include:

- NEPA Process.
- Project Management.
- Natural Resource Management.
- International Development.
- Rural Sociology.
- Socioeconomic Impact Assessment.
- Range Science.
- Environmental Inspection
- Disturbed Site Rehabilitation.

Professional Experience

Ski Area Projects. Served as project manager on the following projects: Crested Butte Mountain Improvement Plan EA, Steamboat Master Plan Amendment EA, Brundage Mountain Land Exchange EA, Alta Ski Area Master Plan Revision EA, Solitude Mountain Resort Master

Development Plan EIS, Sun Valley Heli-Ski Permit Renewal EA, Silverton Outdoor Learning and Recreation Center EIS, Kirkwood Resort Specific Plan EIR, Brian Head Resort Master Plan Amendment EA, Snowbird Master Plan EIS, Wasatch Powderbird Guides Permit Renewal EISs (1997 and 2004), Crested Butte Mountain Resort Development Project (master plan update and EA), Eldora Mountain Resort Development Project (master plan update and two EAs), and Vail Category III Expansion (managed final editing and production of Draft and Final EISs only). Responsibilities included: contract negotiations, process oversight, public involvement; agency coordination; environmental compliance documentation; collection, analysis, and reporting of physical, biological, and economic data; subconsultant oversight; technical review; document production and publishing; and budget control. Worked as socioeconomic analyst on the Vail Cat III EIS and Telluride Ski Area Expansion EIS and Supplemental EIS.

Energy and Linear Projects. Served as project manager on the following projects: Bull Mountain biological surveys (TES plant and wildlife surveys and BA/BE production), Questar Pipeline Corp. Mainline 68 Replacement Project (threatened and endangered species and wetland surveys, biological assessment and biological evaluation), Barrett Resources Corp.'s Colorado River Pipeline Crossing Project (negotiating BLM right-of-way grant and Section 404 permitting), Barrett Resources Corp.'s Parachute Valley-Piceance Basin Natural Gas Pipeline Project (construction and environmental permitting, and EA), and Barrett Resources Corp.'s well site environmental clearances, 1994-2000. Worked as environmental inspector on the Colorado Interstate Gas Co. Uinta Basin Lateral pipeline (inspection of right-of-way rehabilitation, environmental inspector), the Colorado Interstate Gas Co. Parachute Lateral Natural Gas Pipeline Project, and Barrett Resources Corp.'s Colorado River Pipeline Crossing Project.

Grazing/livestock Management. Served as project manager on the following projects: Roche Ranches Project, Squaw Valley Ranch Grazing Permit Renewal, New Mexico permit renewal EAs in 2006 (two EAs addressing three cattle and horse allotments), North Sheep EIS (four sheep and goat allotments), and New Mexico permit renewal EAs in 2005 (four separate EAs on seven cattle and horse allotments). Served as NEPA specialist on the Rich County Resource Management Plan and NEPA process. Provided socioeconomic input in the design and implementation of programs to increase small-holder, commercial production of high-value livestock products and crops in Lesotho, southern Africa. Investigated cattle-supply constraints to privatizing a meat processing plant in Somalia. Provided editorial consulting on a National Academy of Science book entitled, *Improvement and Management of Arid and Semi-arid Rangelands*. Designed and conducted a two-week course on the principles of range management for participants in Utah State Univ.'s International Range Management and Extension Shortcourse. Designed and conducted a month-long training program for Peace Corps volunteers working with the Moroccan Ministry of Agriculture on a range management extension project. Accompanied and provided medical/health care for 500 Holstein heifers shipped by sea from Virginia to Morocco and Algeria, then tended the animals through a month-long quarantine.

Resource and Water Development Projects. Served as project manager for the Cove Hydroelectric Project decommissioning project and Grace-Cove, Oneida, Alexander, Grace Dam, and Last

Chance site plans, as project coordinator for the Jordan TMDL project, as project manager for Bear Lake Channel Dredging Environmental Report Project. Served as technical coordinator on the Central Utah Project's Central Valley Water Reuse Project EIS. Provided review and oversight on the Spring Creek TMDL Project. Served as project manager on the Elkhead Reservoir Expansion Project (biological aspects of EIS).

Environmental Site Assessments. Conducted Phase I ESAs for the Snowbird Ski and Summer Resort and Canyon Racquet Club, the Melville Property in Little Cottonwood Canyon, the War Eagle claim in Mineral Basin, and the Bradshaw Estate claims in American Fork Canyon.

Aviation Projects. Project Manager for the 11th Air Force Military Operation Area Improvement in Alaska.

Litigation Support Projects. Project Director for Henrichson-Paramont Property and Tony Chavez v. Murray City.

Training Projects. As Project Manager for Federal Energy Regulatory Commission Seminar and Rocky Mountain Capshell Snail Training Seminar.

SCOTT G. EVANS, PH.D.

Position

Owner/NEPA Specialist/Natural Resource Manager/Economist.

Education

Ph.D., Range Science (Range Economics), Utah State University, 1992.
M.S., Animal Science (Reproductive Physiology), Brigham Young University, 1988.
B.S., Range Science (Range/Livestock Management), Utah State University, 1986.

Employment History

2000–Present:	Owner, Cirrus Ecological Solutions, L.C.
1998–2000:	Business Leader, Project Manager, and Resource Management Specialist, KW Brown & Associates, Inc.
1994–1998:	Project Manager/Natural Resource Manager, Pioneer Environmental Services, Inc.
1992–1994:	Terrestrial/Rangeland Ecologist, Pioneer Environmental Services, Inc.

Areas of Expertise

Dr. Evans is experienced in natural resource, project, and business management, range science, economics, and livestock production. He has gained first-hand knowledge and experience in private as well as public aspects of resource use and management. In 2000, he became an owner/manager of Cirrus Ecological Solutions, LC and has been active in its day-to-day operations since its inception. Since 1992, he has served as a NEPA project manager, a resource specialist, an expert witness, and a pipeline inspector. As a project manager, he has led numerous small and large NEPA analyses (focusing on recreation, livestock grazing, and energy related projects), several water quality projects, resource management plans, and environmental site assessments. He demonstrates expertise in the management of complex projects and on-the-ground decision making as well as an in-depth understanding of the environmental compliance process. He has provided expert witness testimony for range and livestock production issues. He worked as a head environmental inspector for pipeline construction and has provided oversight various in reclamation efforts. He also taught at the university level in range economics and ranch inventory and management planning. Prior to 1992, he had 6 years of professional experience. His skills include:

- Environmental Compliance and Permitting.
- Project Management.
- Natural Resource Management.
- Environmental Inspection.
- Range Livestock Management.
- Reclamation.
- Economics.

Professional Experience

Ski Area Projects. Served as project manager on the following ski area projects: Aspen Highlands Ski Area Expansion EIS, Sugarbush Resort Proposed Improvement and Development EIS, Telluride Ski Area Expansion (master planning, environmental permitting, Draft, Final, and Supplement EIS), Telluride Ski Area improvements EA. Responsibilities included: contract negotiation; process oversight; public involvement; agency coordination; environmental compliance documentation; collection, analysis, and reporting of physical, biological, and economic data; subconsultant oversight; technical review; document production and publishing; and budget control. Also worked as technical writer for the Kirkwood Specific Plan EIR and Loon Mountain Expansion EIS socioeconomic and other human resource issues.

NEPA projects in addition to Ski Areas. Served as project manager on the following NEPA projects: Brooks Lake Lodge EA, Logan City 600 West Recreation Trail EA, Logan City Fire Department Training Facility, Logan City Zoo Education Building EA, Logan City Leachate Treatment and Logan River Trail EA, and Parowan Airport BA/BE.

Grazing/livestock Management. Served as project manager on the Rich County Resource Management Plan Amendment and NEPA process. Served as range/livestock technical specialist on the North Sheep EIS (four sheep and goat allotments) and New Mexico Allotment Management Plan Renewal EAs (6 separate EAs on 10 cattle and horse allotments). Conducted detailed inventory and economic analysis of ranches in the Intermountain West and performed optimum combination techniques among improvement alternatives. Worked as an assistant ranch manager, participating in grazing management decisions, irrigation of hay fields and meadows, equipment operation, bull performance testing, breeding stock selection, and marketing of purebred breeding stock.

Water Projects. Project coordinator for the Middle and Lower Sevier River Watershed Management Plan, Rio Tinto Aquatic Survey, Upper Bear River, Echo Reservoir, Otter Creek and Newton TMDL studies. Project manager for the Bear River TMDL Coordination Effort. Project Manager for the 12 Mile Watershed Assessment and Road Analysis, Hydrologic Monitoring for Coal Tracts on the Manti-LaSal National Forest, and Monticello/Blanding Infrastructure Improvement Project.

Energy and Linear Projects. Served as project manager for the Greens Hollow Coal Lease Tract Proposed Leasing and Underground Mining Project and Manti-LaSal Coal Tract Evaluations project, and the Wolverine Oil & Gas, Delta Petroleum, Armstrong Petroleum, and Royalite Petroleum seismic survey projects. Served as project manager for the Skull Valley Nuclear Fuel Storage Project Wetland Delineation. Served as head environmental inspector in charge of compliance monitoring for Uinta Basin Lateral natural gas pipeline built by Colorado Interstate Gas, specializing in wetland and river crossings, reclamation efforts, NEPA compliance (i.e., document preparation, project management, data collection, monitoring, and conflict management), and follow-up vegetation monitoring and reclamation standards analysis. Primary author of a Noxious Weed EA used as a standard for weed control along the pipeline. Served as environmental inspector for Barrett Resources Corporation,

supervising the crossing of wetland areas and the Colorado River to ensure compliance with agreed upon standards and guidelines. Served as reclamation and revegetation specialist on the Medicine Bow Lateral natural gas pipeline. Served as Socioeconomist for the Cheyenne Plains, Piceance Basin, High Plains, Arizona Gas Storage natural gas projects. Livestock specialist for the Grace/Cove Site Plan for PacifiCorp.

Land Use Planning and Development. Served as project manager for the Logan City 600 West Recreation Trail and Telluride area resource surveys for recreational trail development. Served as project manager on the Two Bear Ranch and the Wolf Creek Ranches Resource Management Plans. These plans focused on incorporating development with livestock and wildlife.

Reservoir Management Plans. Served as project manager for the Lost Creek Reservoir, Deer Creek Reservoir, Scofield Reservoir, and Starvation Reservoir Bureau of Reclamation resource management plans (four separate EAs and associated plans).

Environmental Site Assessments. Conducted Phase I and II ESAs on mining claims in the Mineral Basin and Mary Ellen Gulch areas of the American Fork River drainage, including the Miller Hill, Bradshaw, Excelsior, Globe and associated claims. Also worked on Phase I and II ESAs for the City of Logan, Goodyear Tire/Logan Laundry property and Golden Corral. All were completed to American Society of Testing and Materials standards.

Litigation Support. Worked as livestock and range production specialist on Conner Ranch litigation project, completing analysis and serving as an expert witness.

W. BRYAN DIXON

Position

Project Manager and Environmental Analyst.

Education

M.S., Community Planning, University of Rhode Island, 1982.
M.S., Physiological Psychology, Brown University, 1979.
B.S., Physiological Psychology, Virginia Tech, 1977.

Employment History

2008–Present:	Cirrus Ecological Solutions, LC.
2008:	Avian Survey Coordinator, Little Bear Conservancy Alliance.
2007–2008:	Private Consultant.
1995–Present:	Bridgerland Audubon Society.

Areas of Expertise

Following on a career in the public sector and business development and administration, Mr. Dixon returned to his roots in the biological realm to turn his avocation in ornithology and conservation into a livelihood. This has entailed independent consulting and work on the Cirrus team in areas as diverse as special-status bird species surveys for various energy-related projects, water quality analysis, rangeland monitoring, and aquatic resource surveys. His skills in the areas of technology, and data management and analysis have carried across from the public and business realm to make him a highly effective environmental professional. Through this professional evolution, he has maintained an active volunteer role in the Audubon Society, Stokes Nature Center, and other naturalist and conservation efforts.

- Ornithology
- Field Biology
- Environmental Analysis
- Data Management and Analysis
- GIS
- Project Development and Administration

Professional Experience

Water Projects. Did water quality data analysis, water budget modeling, and report writing for TMDL (Total Maximum Daily Load) projects for Jordan River, Utah, Middle and Lower Sevier River Watershed Management Plan, and Recapture Reservoir, Utah. Organized and conducted study of fish stranding following river flow manipulations by hydropower facility on Bear River in southern Idaho.

Energy Projects. Supervised work for the Wolverine Gas and Oil of Utah Seismic Surveys by organizing and managing field biologists on high-elevation northern goshawk and flammulated owl surveys on Sevier Plateau in central Utah; and organizing and conducting helicopter survey of raptor nest sites prior to seismic exploration in central Utah.

Grazing management. Assisted with vegetation monitoring on a remote Nevada ranch in support of grazing permit process for Bureau of Land Management for the Squaw Valley Ranch Grazing Permit Renewal.

Additional work: GIS analysis and map presentation in support of various projects. Also Organized volunteer avian species abundance surveys on private ranch land holdings (Little Bear Conservation Alliance) in northern Utah for The Nature Conservancy; designed and organized continuing avian survey for white-faced ibis rookery in Cutler Marsh for Bridgerland and National Audubon Societies.

Guided organization in formal positions as well as from the background on land conservation and avian survey projects for great blue heron rookeries, shorebirds, white-faced ibis, etc. (see, e.g., www.bridgerlandaudubon.org website links to the Wetlands Maze, and Barrens Sanctuary); training and support each year for seasonal hawkwatchers from Hawkwatch International on Wellsville Mountains; Fundraising; Membership; Newsletter; Currently facilitating conservation easement between The Nature Conservancy of Utah and PacifiCorp (seven state power company) on 1,800 acres of bottomlands on the Bear River in northern Utah.

Represented environmental interests on Technical Advisory Team, specifically advocating for protection of water quality characteristics for waterfowl and shorebirds.

ERIC K. DUFFIN

Position

Watershed Scientist/Hydrologist.

Education

M.S. Watershed Science, Utah State University, 1999.
B.S. Watershed Science (Hydrology), Minor in Soil Science, Utah State University, 1993.

Employment History

2000–Present:	Watershed Specialist/Hydrologist, Cirrus Ecological Solutions, L.C.
1999–2000:	Watershed Specialist/Hydrologist, KW Brown & Associates, Inc.
1996–1999:	Research Associate, Biology Department, Idaho State University.
1993–1996:	Graduate Research Assistant, Watershed Science Unit, Utah State University.
1992–1993:	Hydrology Technician, USDA Intermountain Experimental Research Station, Logan, Utah.
1990–1992:	Lead Forestry Technician, Wasatch-Cache National Forest, Logan Ranger District, Utah.

Areas of Expertise

Since 1993, Mr. Duffin has gained professional experience with a wide range of watershed issues with emphases on hydrology, water quality, and soil resources. Areas of hydrologic specialty include long-term and seasonal flow assessments for gaged and ungaged watersheds, defining flood elevation and return intervals for defined storm events, evaluating and assessing stream channels for stability and function, and collecting, managing, and assessing streamflow data. His water quality expertise includes Total Maximum Daily Load (TMDL) assessments for streams and reservoirs, point and non-point source pollution characterization, computer modeling to link pollutant sources with water quality conditions, projecting water quality impacts from development scenarios, and providing recommendations for Best Management Practices (BMPs) and Best Available Technology (BATs) to restore impaired water bodies and degraded watershed areas. He also has experience in presenting technical information to both agencies, stakeholders, and the general public, evaluation and analysis of proposed watershed improvements, conducting hydrologic inventories, stream surveying, water quality sampling, datalogger programming and remote data retrieval. He has served on several NEPA project teams and has also provided technical writing and editing for other physical and human-resource disciplines. His skills include:

- Watershed Science.
- Hydrology.
- Water Quality.
- Environmental Science.
- Public Education.
- Computer Modeling.
- Data Management.
- Waste Management.

Professional Experience

Ski Area Projects. Completed watershed/hydrology analyses and/or other components (including soils, transportation, noise, energy, and land use) on the following NEPA analyses: Loon Mountain Ski Resort Development and Expansion EIS, Solitude Mountain Resort EIS, Silverton Outdoor Learning and Recreation Center EIS, Kirkwood Resort Specific Plan EIR, Alta Ski Area Master Plan Amendment EA, Brian Head Resort Master Plan Amendment EA, and Steamboat Ski Area Master Plan Amendment EA. When necessary, provided assessment of impacts to watershed resources from proposed development alternatives including but not limited to, potential modifications to hydrologic regimes (timing and magnitude), sedimentation of stream channels, and loss of soil resources.

Water Quality Projects. Served as Project Manager for the Echo Reservoir, Otter Creek Reservoir, Newton Reservoir, and Recapture Reservoir TMDL studies, Upper Bear River, and Jordan River TMDL studies. Served as Project Manager for the Middle and Lower Sevier River Watershed Management Plan, and Bear River Watershed Initiative. Served as Assistant Project Manager for the Spring Creek TMDL study. Characterized point and non-point pollutant sources using monitoring data, computer modeling, and other scientifically based methods. Projected future loads and developed load allocations for point and non-point pollutant sources. Utilized computer modeling to define water chemistry in rivers and to link pollutant sources to water quality conditions in streams and reservoirs. Retrieved and organized monitoring data into database for use in TMDL water quality assessments. Completed field surveys of stream and river channels using agency established protocols to define channel stability and non-point pollutant loading. Served as project hydrologist for the Bear River TMDL Coordination Effort. Developed customized GIS software and database that allowed stakeholders to visually identify previous TMDL studies, pollutants of concern, and monitoring data collected at select locations in the Bear River Basin. Presented results of water quality projects to watershed steering committees, technical advisory committees, and the general public. Served as Hydrologic Technician for Intermountain Research Station, processed thalweg sediment samples taken from watersheds disturbed by mining development, data entry and statistical analysis.

Resource Management Planning Projects. Served as hydrologist for Bear Lake Channel Dredging Environmental Report, Manti-LaSal Coal Tract Evaluations Project, Manti-LaSal Hydrology Project, Monticello/Blanding Infrastructure Improvement Project, and Manti-LaSal Hydrology Project - 12 Mile Watershed Assessment and Road Analysis. Collected multiple years of water monitoring data in remote locations, including measurements of flow and water quality, from springs, streams and reservoirs. Completed longitudinal and cross section stream surveys in remote locations using total station survey equipment. Compiled and assessed flow and water quality monitoring data. Inventoried and characterized recreational stream crossings. Served as Watershed Specialist for the Salt Lake County Water Quality Stewardship Project. Developed Watershed Function Index protocol and model for assessing ecological health and social function of riparian corridors in Salt Lake County. Provided assistance in developing watershed functional targets. Assessed riparian habitat for all planning management units in Salt Lake County to establish baseline conditions and monitor progress towards watershed targets.

Reservoir Management. Served as Project Manager for the Cove Dam Decommission on the Bear River in southeastern Idaho. Established remote datalogger monitoring sites above and below Cove Dam and provided management and QA/QC review of monitoring data throughout the decommission process. Consulted for the Cache County Extension Service on Oneida Reservoir release program. Responsibilities included monitoring stage level of the Bear River, measuring soil moisture potential and depth to groundwater along sections of the Bear River channel during ramping releases from Oneida reservoir, installation of sensors, datalogger programming, data collection and analysis. Assisted in developing stage rating curves and analyzing data collected during ramping releases.

Grazing/livestock Management. Served as watershed scientist and soils specialist on team preparing the North Sheep EIS (four Forest Service sheep and goat allotments), and 2005 and 2006 New Mexico Grazing Permit Renewal EAs (11 Forest Service cattle and horse allotments). Served as watershed specialist on the Rich County Resource Management Plan and NEPA project.

Environmental Site Assessments. Authored reports on several Phase I ESAs conducted on mining claims located in American Fork Canyon, including the Bradshaw, Acme, and Excelsior claims. Provided field assistance in Phase II ESAs by collecting water quality and soil samples from areas disturbed by hard-rock mining and ore processing.

Site Remediation. Worked as Research Assistant on a study examining snowmelt runoff, infiltration, and erosion from disturbed slopes revegetated with exotic grasses at the Idaho National Laboratory. Primary responsibilities included data collection and analysis, computer modeling of snow ablation, runoff, infiltration and erosion, installation and programming of electronic sensors to monitor meteorological, snow, and soil parameters, and presenting results of research at professional conferences and seminars in Utah, Washington, and Idaho.

JOHN W. STEWART

Position

Terrestrial Ecologist/Wetland Specialist.

Education

B.S., Range Science, Minor in Spanish, Utah State University, 1993.

Employment History

2000–Present:	Terrestrial Ecologist/Wetland Specialist, Cirrus Ecological Solutions, L.C.
1998–2000:	Biologist/Wetland Specialist, KW Brown & Associates, Inc.
1993–1998:	Biologist, Pioneer Environmental Services, Inc.
Summer 1992:	Forest Technician, USDA Forest Service.
Summer 1990:	Range Technician, Bureau of Land Management.

Areas of Expertise

Since 1993, Mr. Stewart has professional experience with a wide variety of natural resource issues, with emphases on botany, wildlife, wetland delineation, and range management. Areas of botanical and wildlife specialty include surveys for federally listed threatened, endangered, and candidate species as well as state and Forest Service sensitive species, general vegetation surveys and inventories, and community descriptions of habitats ranging from desert to alpine ecosystems. His wetland expertise includes jurisdictional delineation, functional value analysis, impact avoidance planning, 404 permitting, and mitigation planning and implementation. He has served on numerous NEPA project teams. He has also provided technical writing and editing for other biological, physical, and human-resource disciplines. His skills include:

- Vegetation community inventory and mapping; surveys for threatened, endangered, and sensitive plants and animals. Recent wildlife survey work in 2005 included surveying approximately 60 miles of geophysical survey lines on Parker Mountain in Wayne County, Utah, and 38 miles of geophysical lines in the Parowan, Utah area for Utah prairie dogs. Active Utah prairie dog colonies were mapped in order to establish buffers around active colonies that were intersected by the seismic lines. For lines that were located off-road, drive-arounds were surveyed to locate routes that could be used to move equipment around the colony buffers. For lines that followed roads, burrows in active colonies were monitored during seismic testing for indication of damage to the burrow system.
- Wetlands delineation and mapping, functional values analysis, 404 permitting, and mitigation planning.
- Technical writing for Environmental Impact Statements (EIS), Environmental Assessments (EA), Biological Assessments (BA), Biological Evaluations (BE), technical reports, field survey reports.

Professional Experience

Ski Area Projects. Worked as vegetation and wetland specialist for the following ski area NEPA projects: Alta Ski Area Master Plan Amendment EA, Brian Head Resort Master Plan Amendment EA, Kirkwood Resort Specific Plan EIR, Loon Mountain Ski Resort Development and Expansion EIS, Snowbird Ski and Summer Resort Master Plan EIS, Silverton Outdoor Learning and Recreation Center EIS, Solitude Mountain Resort Master Development Plan EIS, Sun Valley Heli-Ski Permit Renewal EA, Wasatch Powderbird Guides Permit Renewal EIS, Telluride Ski Area Proposed Improvements EA, Telluride Ski Area Expansion EIS, Crested Butte Mountain Resort Proposed Improvements EA, Aspen Highlands Ski Area EIS, Vail Category III EIS, Eldora Mountain Resort Master Plan EA, Steamboat Springs Ski Resort Proposed Expansion EA, Sugarbush Resort Proposed Improvements EIS, Stratton Mountain EIS, and Attitash Ski Area Proposed Expansion EA. Duties included: threatened, endangered, and sensitive plant and wildlife surveys; general vegetation surveys; community type descriptions and mapping; updating and augmenting vegetation and wetland surveys; wetland delineation and mapping; Section 404 permitting; authoring wetland and vegetation sections for NEPA documents; contributing other sections to NEPA documents, including avalanche control, transportation, noise, cultural resources, and land use; and coordinating with federal, state, and local agency representatives.

NEPA projects in addition to ski areas. Worked as vegetation resource specialist on the Brooks Lake Lodge EA, Gypsum Hills, Logan City 600 West Recreation Trail EA, Logan City 600 West Park Wetland Delineation and Groundwater Monitoring, Logan City Zoo Education Building EA, Logan City Leachate Treatment and Logan River Trail EA, and the cellular tower EA for Voicestream.

Grazing/livestock Management. Worked as botanist and wetland specialist on the Squaw Valley Ranch Grazing Permit Renewal, North Sheep EIS and the six 2005 and 2006 New Mexico Allotment Management Plan Renewal EAs. Served as vegetation and wetland specialist on the Rich County Resource Management Plan and NEPA project.

Energy Projects. Worked as vegetation and wetland specialist for the Greens Hollow Coal Lease Tract Proposed Leasing and Underground Mining Project, Manti-LaSal Coal Tract Evaluations Project, Wolverine Gas and Oil seismic survey projects, Skull Valley Nuclear Fuel Storage Project Wetland Delineation, Delta Petroleum Company seismic survey projects, Bull Mountain pipeline project, Aspen Products Pipeline Project, the Questar Mainline 104 and Questar Mainline 68 Pipeline Replacement Project, and the Barrett Resources Corp. well site and pipeline right-of-way biological clearances. Duties included project oversight and coordination, surveys for threatened, endangered, and sensitive species, noxious weed surveys, jurisdictional wetland delineations and Section 404 permitting, technical report preparation, and coordination with federal agencies.

Resource Management Planning Projects. Worked as the vegetation resource specialists on the Bear Lake Channel Dredging Environmental Report, Manti-LaSal Hydrology Project - Monticello/Blanding Infrastructure Improvement Project and Manti-LaSal Hydrology Project - 12 Mile Watershed Assessment and Road Analysis.

Water Development Projects. Worked as the vegetation resource specialist for the Dry Creek Riparian Habitat Restoration Project. Assisted in completing the Spring Creek and Otter Creek TMDL Projects, assessing wetland and riparian aspects and supporting GPS/mapping activities, providing field expertise especially in regard to assessing the impact of grazing practices, developing responsive BMPs, and identifying and inventorying vegetation communities and wetland/riparian resources. Worked as wetland specialist for the Central Valley Water Reuse Project EIS. Duties included delineation, mapping, typing, and description of jurisdictional wetlands along the pipeline right-of-way; direct and indirect impact assessment; preparation of a technical report and section for the EIS; coordination with federal and state agencies; and preparation of the air quality section for the EIS.

Land Use Planning and Development. Worked as vegetation and wetland specialist for the Two Bear Ranch Resource Management Plan, the Genstar development, and the proposed Town of Crested Butte Expansion. Duties included: jurisdictional wetland delineation; wetland mapping from aerial photographs; wetland functional values assessments; threatened, endangered, and sensitive species surveys; and coordination with federal, state, and local officials.

Environmental Site Assessments. Conducted Phase I and II ESAs on mining claims in the Mineral Basin and Mary Ellen Gulch areas, including the Miller Hill, Bradshaw, Excelsior, Globe and associated claims.

TIMOTHY A. ROYER

Position

Terrestrial Ecologist/Wetland Specialist.

Education

M.S., Forest Engineering (emphasis in Hydrology and Soils), Oregon State University, 2006.
B.S., Range and Wildlife Management (emphasis in Riparian Management), Brigham Young University, 2002.
Grazing Management for Riparian-Wetland Areas, Eureka Opera House and Roberts Creek Allotment seminar. 2011.

Employment History

2010-Present:	Terrestrial Ecologist/Wetland Specialist, Cirrus Ecological Solutions, L.C.
2008-2010:	Range and Wetland Scientist, Frontier Corporation USA.
2007-2008:	Assistant Project Leader and Wildlife Biologist II, Utah Division of Wildlife Resources.
2006-2007:	Hydrologist, Oregon State University.
2003-2006:	Graduate Research Assistant, Oregon State University.
2000 & 2002:	Wildlife Technician, Utah Division of Wildlife Resources.
2001:	Biological Aide, USDA Forest Service.

Areas of Expertise

Mr. Royer has ten years of professional experience with a wide variety of natural resource disciplines, including: botany, wildlife, range management, hydrology, and wetlands. He is skilled at identifying plants in upland and wetland communities, and is experienced in multiple vegetation monitoring techniques. Mr. Royer conducts biological inventories and habitat assessments for ecosystems found across the Intermountain West, including work focusing on federally listed threatened, endangered, and candidate plant and wildlife species. He is registered with the U.S. Fish and Wildlife Service as a certified Utah prairie dog surveyor. As a hydrologist, he collects water quality and quantity data, and models management impacts at varying spatial scales. He has expertise in delineating wetlands for jurisdictional status, and in preparing Section 404 permits, stream alteration permits, mitigation and monitoring plans, and in conducting compliance monitoring.

Professional Experience

Grazing/livestock Management. Served as range specialist on the Roche Ranches project. Duties included: forage productivity analysis and carrying capacity calculation to support a decision whether or not to convert several winter sheep allotments on the Nevada/Utah line to common use, allowing cattle as well as sheep use.

Biological Inventory Projects. Served as assistant project manager for the Utah Division of Wildlife Resources' Utah Big Game Range Trend Monitoring Project. Duties included: conducting state-wide habitat surveys, analyzing field data, determining habitat trend and condition, preparing technical reports, presenting findings to regional habitat and wildlife biologists, and coordinating with private landowners, and federal, state, and local agency representatives. Also worked as a vegetation and wetland specialist on various biological inventory projects for the U.S. Forest Service and private landowners. Duties included: jurisdictional wetland delineations; plant and wildlife species inventories, including threatened, endangered, candidate species and state-designated species of concern.

NEPA Projects. Served as vegetation and wetland specialist for an EA that was prepared for a municipal wastewater treatment facility. Duties included: community-type descriptions and mapping, wetland delineation and mapping, Section 404 permitting, responding to stakeholder comments, and assisting with special status plant and wildlife surveys.

Energy Projects. Served as the vegetation and wetland specialist for various aspects of Clean Water Act permitting of a transmission line, a gas-fired power plant, a new coal mine, and a new wind farm project. Duties included: jurisdictional wetland delineations and Section 404 permitting, surveys for special status species, as-built surveys, technical report preparation, and coordination with private landowners and federal agency representatives.

Watershed Projects. Served as project hydrologist for the Hinkle Creek Paired Watershed Study in Western Oregon. Tasked with gathering water quality and quantity data and modeling the potential effects of contemporary timber harvest practices in fish and non-fish bearing streams. Worked as hydrologist in a research forest to model the effects of forest roads on runoff timing and magnitude. Duties included: collecting, analyzing, and performing quality control for meteorological data and hydrometric data such as discharge, turbidity, temperature, total suspended sediment, specific conductivity and hyporheic exchange; and assisting with the monitoring of fish movement within the watershed. Also worked as a vegetation and wetland specialist on a restoration project to improve fish habitat and water quality in a degraded stream in Central Utah. Duties included: Section 404 permitting, stream alteration permitting, and permit compliance monitoring.

Land Use Planning and Development. Served as vegetation and wetland specialist for various aspects of Clean Water Act permitting of transportation, real estate development, communication line, and municipal stormwater, drinking water, and sewage line projects. Duties included: jurisdictional wetland delineation, mapping, and Section 404 permitting; noxious weed management planning; ground and surface water monitoring; stream alteration permitting; BLM special-use permitting; threatened, endangered, and sensitive species assessments; mitigation and monitoring plans; as-built surveys, technical reports; and coordination with federal, state, and local agency representatives.

JUDITH A. SEAMONS

Position

Document Production Specialist/Office Manager.

Education

Professional Word Processor, Certified Careers Institute, 1987.
B.S., Home Economics Education, Utah State University, 1982.

Employment History

2000–Present:	Document Production Specialist/Office Manager, Cirrus Ecological Solutions, L.C.
1998–2000:	Document Production Specialist/Administrative Assistant, KW Brown & Associates, Inc.
1996–1998:	Document Production Specialist/Administrative Assistant, Pioneer Environmental Services, Inc.
1989–1996:	Marketing and Administrative Assistant, Lundahl Instruments, Inc.

Areas of Expertise

Ms. Seamons has worked in document production and desktop publishing since 1989. She has managed document production efforts and demonstrated excellence in completing numerous high-quality environmental documents, including EISs, EAs, and biological assessments. She has also used her talents in layout and design to generate marketing materials for small business advertising campaigns. Her skills include:

- Word processing and desktop publishing.
- All phases of production and printing of documents.
- Bookkeeping, payroll, and invoice generation.
- Production of proposals, qualifications statements, catalogs, and ad campaigns.
- Office administration and coordination of activities.

Professional Experience

Ski Area Projects. Provided administrative assistance and document production support on these projects: Alta Ski Area Master Plan Amendment EA, Brian Head Resort Master Plan Amendment EA, Crested Butte Mountain Resort Proposed Improvements EA, 6 New Mexico EA's in 2005 and 2006, Snowbird Ski and Summer Resort Master Plan EIS, Silverton Outdoor Learning and Recreation Center EIS, Solitude Mountain Resort Master Development Plan EIS, Steamboat Ski Area Master Plan Amendment EA, Sun Valley Heli-Ski Permit Renewal EA, Wasatch Powderbird Guides Permit Renewal EIS, Telluride Ski Area Proposed Improvements EA, Telluride Ski Area Expansion EIS. Specific duties included: layout and formatting of documents, production of final copy, delivery and coordination of production with the print shop, compilation of mailing list, coordination and mailing of the documents, and compilation of Administrative Records and Appeal Records.

NEPA projects in addition to Ski Areas. Provided administrative assistance and document production support on these projects: Brooks Lake Lodge EA, Brundage Mountain Land Exchange, Gypsum Hills Wildlife and Wetland Delineations, Logan City 600 West Recreation Trail EA, Logan City Zoo Education Building EA, and Parawan Airport BA/BE.

Grazing/livestock Management. Served as administrative assistant and document production specialist on the North Sheep EIS and New Mexico Allotment Management Plan Renewal EAs.

Resource Management Planning Projects. Provided administrative assistance and document production support on the following projects: Bear Lake Channel Dredging Environmental Report, Logan City 600 West Park Wetland Delineation, Greens Hollow Coal Lease Tract Proposed Leasing and Underground Mining Project, Manti-LaSal Coal Tract Evaluations Project, Manti-LaSal Hydrology Project - Monticello/Blanding Infrastructure Improvement Project, Manti-LaSal Hydrology Project - 12 Mile Watershed Assessment and Road Analysis, and Rich County Grazing Permit EA.

Water Development Projects. Completed layout and formatting of technical reports for the Bear River TMDL Coordination Effort, Bear River Watershed Initiative, Central Utah Project's Central Valley Water Reuse Project, Dry Creek Riparian Habitat Restoration Project, and Middle and Lower Sevier River Watershed Management Plan. Completed layout and formatting of TMDLs for Otter Creek Reservoir, Echo Reservoir, Recapture Reservoir, Spring Creek, Upper Bear, and Jordan River.

Land Use Planning and Development. Completed layout and formatting of technical reports for the Two Bear Ranch and Wolf Creek development projects.

Environmental Site Assessments. Completed layout and formatting of site assessments for Golden Corral Environmental Site Assessment Phase I, Logan City Environmental Site Assessment Phases I and II, and Snowbird Ski and Summer Resort Environmental Site Assessments Phases I and II.

Office Management. Duties have included development and supervision of office protocols to ensure smooth operation of the facilities, accounting, bookkeeping, payroll, and other duties as required.

Marketing. Duties include: preparation of marketing materials, proposal review and formatting, SOQ production and updating, and oversight of website development and production.