The City of Denton’s Clear Creek Natural Heritage Center (CCNHC) serves as a cherished natural resource to the region, providing environmental education and access to more than 2,900 acres of open space. The diversity of flora and fauna, extensive trail network, and educational on-site programming provide users with an unmatched recreational and educational experience in North Central Texas.

The City of Denton initiated an update of the Clear Creek Natural Heritage Center Master Plan written in 2002 to incorporate new ideas, policies, and programs. The 2014 Plan guides development of educational programming and facilities on the site, incorporating core concepts to further enhance and celebrate the natural heritage of Denton. The 2014 Plan focuses on expanding programming, developing the environmental education and exhibit space at CCNHC, and showcasing sustainable site and building design principles.

A team of CDM Smith architects and planners prepared the 2014 Plan, to reflect the needs of project partners and community input. A suitable site for a multipurpose educational facility was identified, and concept sketches have been developed, along with suggested square footage dedicated to each purpose.

CCNHC is a model of creative community collaboration for preservation, restoration, education, and sustainability, and is a remarkable gathering place for people of all ages to experience the natural environment. The 2014 Plan presents an innovative design and plan to further celebrate the natural heritage of Denton.
Sustainable development is the pathway to the future we want for all. It offers a framework to generate economic growth, achieve social justice, exercise environmental stewardship and strengthen governance. — Ban Ki-Moon
Here is your country. Cherish these natural wonders, cherish the natural resources, cherish the history and romance as a sacred heritage, for your children and your children’s children.
— Theodore Roosevelt
The BACKGROUND
The City of Denton is home to Clear Creek Natural Heritage Center (CCNHC), a gateway to more than 2,900 acres of bottomland hardwood forest, upland prairie, and diverse aquatic habitats. Located within Lake Lewisville’s upper floodplain and managed by the City of Denton since 1999, CCNHC is a hidden treasure in North Central Texas. The natural setting provides residents and visitors with unmatched ecological, educational, and recreational opportunities.

Located on the northeastern edge of Denton, Clear Creek includes the confluence of Clear Creek and the Elm Fork of the Trinity River and was originally established to protect and restore rare bottomland and upland prairie ecosystems. It began as a partnership between the City of Denton and the United States Army Corps of Engineers (Corps) to restore the 2,900-acre area, and evolved to include education, recreation, and sustainability initiatives. The City leases the land from the Corps, and is responsible for operation and maintenance of CCNHC on behalf of the public.

Clear Creek Natural Heritage Center’s mission is to inspire environmental citizenship through an understanding of the natural heritage of North Central Texas by providing nature experiences, education and research programs, and conservation and restoration projects.
The City of Denton initiated an update of the Clear Creek Natural Heritage Center Master Plan written in 2002 to incorporate new ideas, policies, and programs. The 2014 Plan guides development of educational programming and facilities on the site, incorporating core concepts to further enhance and celebrate the natural heritage of Denton. The 2014 Plan focuses on expanding the environmental education and exhibit space at CCNHC and showcases sustainable site and building design principles. Community stakeholders were engaged to analyze existing policies and programs and brainstorm initiatives for advancing sustainability through a new green-built facility. The public engagement process included two community forums and a public survey (Appendix E) to gather additional input from the community. The 2014 Plan includes a new larger, multi-function facility equipped with classroom space, an exhibit hall, community area, gardens, scenic walkways, additional trails, and parking. The 2014 Plan articulates a collective vision and identifies priority actions to enhance the Clear Creek experience.

**Vision of Clear Creek Natural Heritage Center**

During the 2002 Master Plan process, the City and project partners—the University of North Texas (UNT), Texas Woman’s University (TWU), Elm Fork Chapter Master Naturalists, and Denton Independent School District (DISD)—developed the mission and vision for CCNHC. CCNHC’s mission is “to inspire environmental citizenship through an understanding of the natural heritage of North Central Texas by providing nature experiences, education and research programs, and conservation and restoration projects.”
All aspects of CCNHC support the mission and vision of CCNHC. The City and its partners have transformed CCNHC into one of the region’s best nature experiences, as exemplified by the following successes to-date:

- Completion of multiple restoration and habitat improvements, including the construction of two large wetland areas and the reforestation of more than 500 acres to sustain the ecological vitality of the site
- Involvement from a committed group of volunteers that provide critical support to educational program development and trail creation and maintenance
- Integration of CCNHC into the DISD science curriculum for 2nd, 4th, and 5th grades
- Hosting of university-level research and classes, including the study of air pollution on native plants (UT at Arlington); native bees (UNT); and pollinator research (UT at Austin)
- Development of highly successful sustainability workshop series
- Hosting of several community events such as the well-attended National Trails Day and various City of Denton Parks and Recreation programs
- Installation of upgraded trail signs and maps

THE CCNHC SERVES AS A GATEWAY TO APPROXIMATELY 2,900 ACRES OF RARE HABITAT
The PROPERTY
Located at the confluence of Clear Creek and the Elm Fork of the Trinity River on the northeastern edge of the city, the area encompasses a diverse natural community of bottomland hardwood forest, upland prairie, and fresh water aquatic and wetland ecosystems. The extensive trail network traverses multiple ecosystems providing an ever-changing visitor experience.

Natural Resources
The CCNHC is located at the cross section of the Central Texas Plateau eco-region and the Cross Timbers Region, and includes cross timbers/post oak and prairie habitats in higher elevations and riparian woodland (including 185 acres of rare bottomland hardwood) and wetland habitats in the lower elevations and richer soils of the Trinity River floodplain.

Land cover includes deciduous forest, evergreen forest, woody wetlands, emergent herbaceous wetlands, and grasslands (see land cover map in Appendix D).

The proximity of CCNHC to two large lakes (Ray Roberts Lake and Lake Lewisville) and the Elm Fork of the Trinity River (Elm Fork) promotes an abundance of natural diversity. The Ray Roberts Lake Greenbelt Corridor, located on the east bank of the Elm Fork, is designated a Riparian Conservation area. The Greenbelt Corridor runs through Clear Creek and is leased to Texas Parks and Wildlife Department for operation and maintenance.
Commonly seen animal and plant species that make their homes in the Clear Creek Natural Heritage area:

- Armadillo
- Wood Duck
- Great Egret
- Coyote
- White-tailed Deer
- Ground Skink
- Prickly Pear Cactus
- Water Lilies
- Snowy Primrose Wildflower
- Cottonwood Trees
- Little Bluestem

Recreational Resources
CCNHC offers year-round opportunities to interact with nature. More than five miles of recreational trails provide an excellent opportunity for viewing native plants and animals and enjoying nature. Motorized vehicle use is prohibited throughout the area. Hunting is allowed by permit only on an area east of the Elm Fork of the Trinity River.

The Greenbelt, a popular scenic corridor, provides parallel equestrian and hike/bike trails. Three Elm Fork access points offer pedestrians, bikes, canoes, kayaks, and equestrian users a unique recreation opportunity. The trail map on the following page shows the locations of CCNHC trails and their lengths.

ANNUALLY CCNHC HOSTS MORE THAN 5,500 DISD STUDENTS
Trail Expansion

In 2013, the City was awarded funding from the Texas Parks and Wildlife Department to expand existing recreational facilities onto the 26-acre Davis tract, which was donated to the City. The project will include a 1.3-mile loop trail connecting the property to existing trails, an elevated walkway providing access to CCNHC land north of Clear Creek, a permeable parking area, an ADA accessible restroom, and a cluster of covered pavilions with picnic tables. The elevated walkway is the first phase of a planned project to connect CCNHC trails to the greenbelt corridor.

Site Assessment

The majority of the 2,900 acres at Clear Creek are designated by the Corps as a Wildlife Management Area and located in a floodplain that restricts their development. The City and Corps identified and designated a 40-acre tract, located outside of the floodplain, to build the existing educational facilities. The donation of the Davis property to the City provided an opportunity to build the proposed facility on City-owned property, which provide more flexibility for land use and programmatic decisions.

The project location map on the following page shows the location of the Davis property, proposed facility, existing facility, and their proximity to the 2,900-acre Corps property. Maps showing the floodplain, topography, soil types, and streets are located in Appendix D.
"Nature is not a place to visit. It is home."
—Gary Snyder
The FACILITY
3,000-square-foot building currently houses nature and sustainability programming and serves as a base for restoration activities. The existing facility will be used for maintenance, operations, and research projects upon completion of the proposed new center.

The proposed larger, multi-use facility will keep the growing demand for programming. This state-of-the-art facility will be sufficient in size to accommodate additional nature and sustainability education classes, programs, workshops, and exhibits; serve as a venue for functions; and act as a gateway to the extensive recreational, educational, and cultural opportunities of Clear Creek.

Facility Design
The design, construction, and operation of the new facility will integrate sustainable technologies and practices into every aspect—from building materials and waste disposal to energy efficiency and sustainable management. The building will be located and designed to frame and emphasize the natural beauty of the site. Angled towards the river, the one-story, approximately 20,000-square-foot facility will be nestled in the northwest corner of the Davis property opening up to the nature preserve. Located on the axis of the sun, the facility will maximize views and minimize solar heat gain during warmer months.

The proposed facility is an L-shaped configuration that divides the complex into two 10,000 square-foot wings—the Administration and Exhibition Hall and the Classroom Education Center, which leads to an outdoor demonstration.
and garden area. Both wings will be constructed of masonry with angled roofs and trellis structures including pockets of shade to encourage outdoor activities. A site plan is provided on the following page. The 120-car parking area uses a cluster design to minimize impacts and provides a buffer for the surrounding areas.

All aspects of the facility are designed with sensitivity to the landscape and commitment to stewardship of the land. A detailed description of the core spaces along with concept drawings are provided on the following pages. Concept drawings do not represent actual architectural plans.
Entry Way
The entry way portrays a gateway to Clear Creek’s 2,900 acres of natural beauty. Angular in shape, the entry way divides the Administration and Exhibition Hall from the Classroom Education Center. Straight ahead, visitors enter the facility and immediately see the open courtyard, providing an incredible view of the area.

Administration and Exhibition Hall
The Administration and Exhibition Hall will house both rotating and permanent exhibits and serve as an education demonstration area. The administration space contains offices, restrooms, storage areas, volunteer work space, and conference space. The permanent exhibition display area features the facility’s monitoring center that will showcase the building’s green elements.

The Administration and Exhibition Hall is designed to serve multiple uses, including conferences, lectures, and private functions such as weddings. A catering kitchen and green room equipped with private restroom and sitting area are provided to support these functions.

Classroom Education Center
The Classroom Education Center is designed to serve multiple purposes. The space includes two classrooms that can hold up to 60 students each. A movable partition system allows the space to expand and divide as necessary to accommodate different sized groups and meet a variety of program needs. The southern sliding glass wall allows the space to open to the outside, expanding usable space and encouraging integration with nature.
Outdoor Demonstration and Garden Area

The Classroom Education Center opens up to the outdoor demonstration and garden area, a tranquil place for visitors to rest and admire the site. Planters will double as seating benches.

Open Courtyard

The southeast facing courtyard is an ideal location for outdoor events. The courtyard offers pathways that link to the existing trail system to encourage visitors to further explore the area.
Sustainability Elements
The vision of the new facility is a natural extension of the City’s commitment to sustainability. Sustainability principles, as expressed in the City’s 2012 Sustainability Plan, Simply Sustainable, will be incorporated into every phase of the project, including planning, design, and educational and recreational programming. The facility aims to attain Leadership in Energy and Environmental Design (LEED®) certification from the U.S. Green Building Council. Various green elements are incorporated into the facility design and include:

- Rainwater cisterns will collect and harvest rainwater for native plant and vegetable demonstration gardens
- A wind turbine, in addition to an existing windmill, will demonstrate the advances in technology and celebrate Clear Creek’s natural heritage
- Incorporation of semi-permeable surfaces and bioswales in the parking area will manage and filter stormwater runoff
- Solar-powered parking lot lighting
- Photovoltaic system
- Low- or no-volatile organic compounds (VOCs) materials and finishes
- Natural lighting
- Energy-efficient systems
- Reclaimed wood decking, recycled content, and locally manufactured building materials
- A monitoring system will display comprehensive data on building systems to educate visitors

Development cost information, funding and revenue sources, and administration needs are provided in Appendix A. A detailed breakdown of development costs by building component is provided in Appendix B. The proposed square footage of the facility by room is provided in Appendix C.
“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”

-- John Muir
The PROGRAMMING
The Programming

The center’s education, recreation, and conservation programming support the City’s vision to “inspire environmental stewardship.” Current programming ranges from guided hikes and nature series to university research and elementary school field trips and classes. The City will continually expand programming opportunities. The new multi-use facility will enable additional programming to further advance the vision of CCNHC.

Nature and Environmental Education

Clear Creek offers the opportunity for multiple age groups to interact with nature and learn about the ecology of our region. Visits to CCNHC have been integrated into the science curriculum for all DISD 2nd, 4th, and 5th grade classes. Annually, CCNHC hosts more than 5,500 DISD students. Interdisciplinary classes from TWU, UNT, and North Central Texas College meet regularly on site, and university research at CCNHC has focused on pollinators (UT at Austin), native bumblebees (UNT), and the impacts of air quality on native plants (UT at Arlington). CCNHC also hosts lectures and community events that feature various ecological topics.

Next Steps

- Continue to develop programming and materials on native flora and fauna, including field guides, and plant and animal identification hikes
- Continue to develop educational programming on topics such as watershed management, water conservation practices, and reducing chemical applications to landscapes
- Develop interpretive materials for the site’s sustainable land use practices, such as watershed protection, water quality enhancement, and wildlife management
● Create an exhibit on soil analyses, including composition, erosion, and restoration

● Provide information on poison ivy identification, tick prevention, and other wildlife

● Continue to partner with universities and colleges to develop education programs and train teaching staff

● Establish a bird observation area and develop associated educational material

● Designate a dark sky observation area for viewing of stars and planets

● Encourage varied participation by incorporating interactive technology

Sustainability and Culture Heritage Education
CCNHC uses interpretation, demonstration, workshops, and events to educate visitors about human impacts on the environment, and strategies for meeting human needs in a sustainable manner. Human land use patterns and technologies for energy, water, food, transportation, and construction practices and materials, over differing timescales, will be featured. The cultural heritage of CCNHC, including its history as a “poor farm,” will be highlighted.

Since April of 2013, CCNHC has hosted a Sustainability Workshop series that provides local residents with the skills and knowledge base to incorporate sustainable practices into their everyday lives. This well attended series features local subject matter experts on a variety of topics, including organic gardening, backyard chickens, rainwater harvesting, composting, beekeeping, and tree planting. Ideas for future topics include container gardening, cooking and preserving locally grown vegetables, butterfly gardens, and many others.
Next Steps

- Continue the sustainability workshop series as a means to educate and advance sustainability practices and to inspire changes in behavior
- Develop exhibits and displays on different sustainability practices
- Design portable exhibits to bring to community events such as Jazz Fest, Redbud Festival, Earth Day Texas, and the Holiday Lighting Festival
- Expand scheduled programming, including field trips and education workshops
- Incorporate sustainability into the design of the new facility to showcase sustainability to visitors, including:
  - Energy and water efficiency
  - Renewable energy
  - Sustainable materials
- Interpreting the sustainable design features for the public, including installation of a monitoring center that will educate visitors about the building’s features and performance
- Host special events such as farmers and community markets, and festivals at the facility to attract visitors
- Develop exhibits that represent different time periods and use of land, such as Native American villages, early agriculture, fenced grazing and mechanized farming, and urban development
- Integrate the historical use of Clear Creek for agriculture into sustainable garden activities and education
- Develop program topics, including the archeological significance of Clear Creek
- Install historical markers at the facility and throughout the trail system to identify significant features
- Discuss significance of the old windmill as compared to technological advancements of the wind turbine proposed for the site
Conservation and Restoration
Since 1999, Clear Creek has implemented numerous restoration and habitat improvement projects, including reforestation and wetland restoration and plantings. In 2000, a 100-acre wetland was constructed on the west side of the Elm Fork, and 400 acres were reforested east of the Elm Fork. Between 1999 and 2004, a volunteer reforestation project was conducted on 100 acres of bottomland forest on the western half of the property. In addition, more than one hundred duck boxes were installed between 2001 and 2003.

Next Steps
- Promote past and current conservation and restoration projects to encourage environmental citizenship
- Continue partnerships with the Elm Fork Chapter Master Naturalists and Native Plant Society to protect and restore native habitat
- Identify and engage organizations that may be a source of volunteers, such as the National Honor Society, UNT, and TWU to assist with restoration and plantings
- Expand native grassland and prairie restoration efforts
- Continue reforestation and wetland mitigation efforts
- Remove invasive plant species such as privet
- Construct bird houses and a pollinator garden
- Install elevated pedestrian walkways over wetlands
- Retain the low-impact, non-motorized nature of trails
Recreation
Recreational programming currently offered at CCNHC includes nature hikes and classes, camps, trail runs, geocaching, archery, and more. Next steps for continued recreational program development include:

- Continue to partner with local school districts and camp programs to attract potential users
- Explore both revenue-based day and overnight camping program as funding allows
- Construct an ADA accessible, multi-sensory, interpretive trail
- Continue to develop and host special events such as National Trails Day

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City of Denton (2006). *Clear Creek: A Place to Look and Learn, Recreational Guide to the Clear Creek Natural Heritage Area*. Produced by the Public Communications Office.

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