National Trout Center

A Concept Master Plan for Construction of a Permanent Home

Prepared for the
National Trout Center
Board of Directors

July 2012

Prepared by:
Center for Rural Design, University of Minnesota

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This report is prepared for the National Trout Center
Board of Directors

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College of Design, and
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University of Minnesota

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Introduction and Background

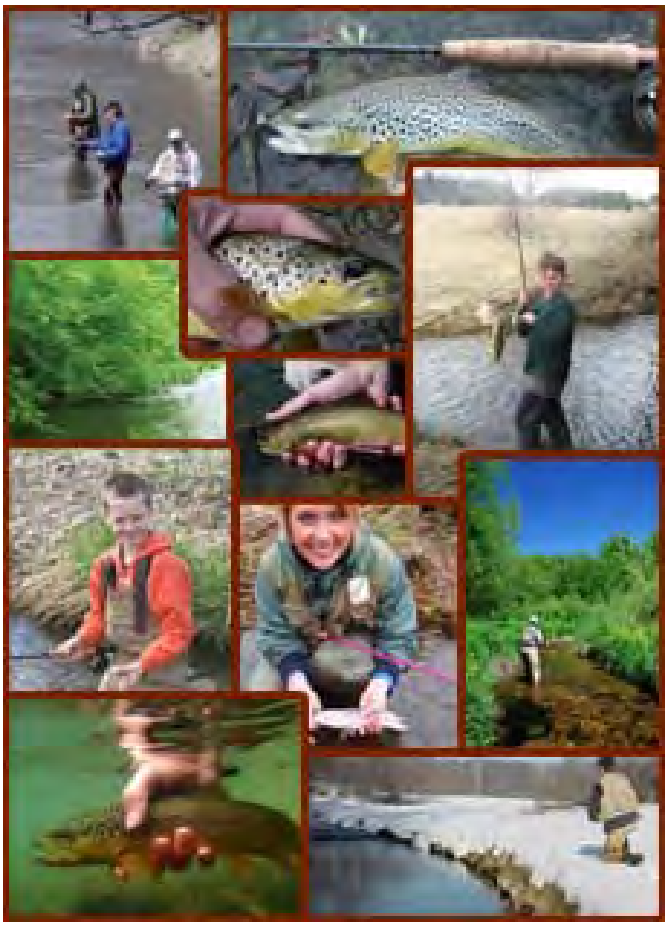
Preston, Minnesota, is located in the heart of the four-state driftless area and home to one of the country's most remarkable freshwater resources - with over 600 coldwater limestone spring-fed creeks supporting a world-class trout fishery. Several thousand miles of mineral-rich streams weave across the landscape and represent one of the highest concentrations of the rarest forms of freshwater on Earth. These streams support abundant populations of trout, which in turn, attract tens of thousands of anglers to the region each year.

The karst geology of this region, with impervious shales overlain by limestone and sandstone strata, provides abundant opportunities to showcase groundwater pathways. Springs bubbling forth at the base of bluffs, limestone caverns, sinkholes, and "disappearing streams" coursing through the river valleys, enhance our ability to visualize groundwater flows resulting in cold, well-oxygenated streams populated by trout.

The National Trout Center (NTC) is an environmental learning center situated at the wellspring of the stream trout fisheries of the upper midwest. Its mission is "to conserve the natural and cultural heritage of trout and their cold-water environments by engaging the public through education, practice and awareness". Fulfilling this mission will entail developing public interest and dedication to environmental stewardship that will sustain the stream habitats essential to trout production.

The National Trout Center convenes hands-on workshops and clinics on stream ecology and the fishing arts. Subjects may include fly casting, knot tying, fly tying, lure making, rod building, nature photography, insect identification and water quality sampling. Visitors to the Center are encouraged to suggest additional topics for workshops.

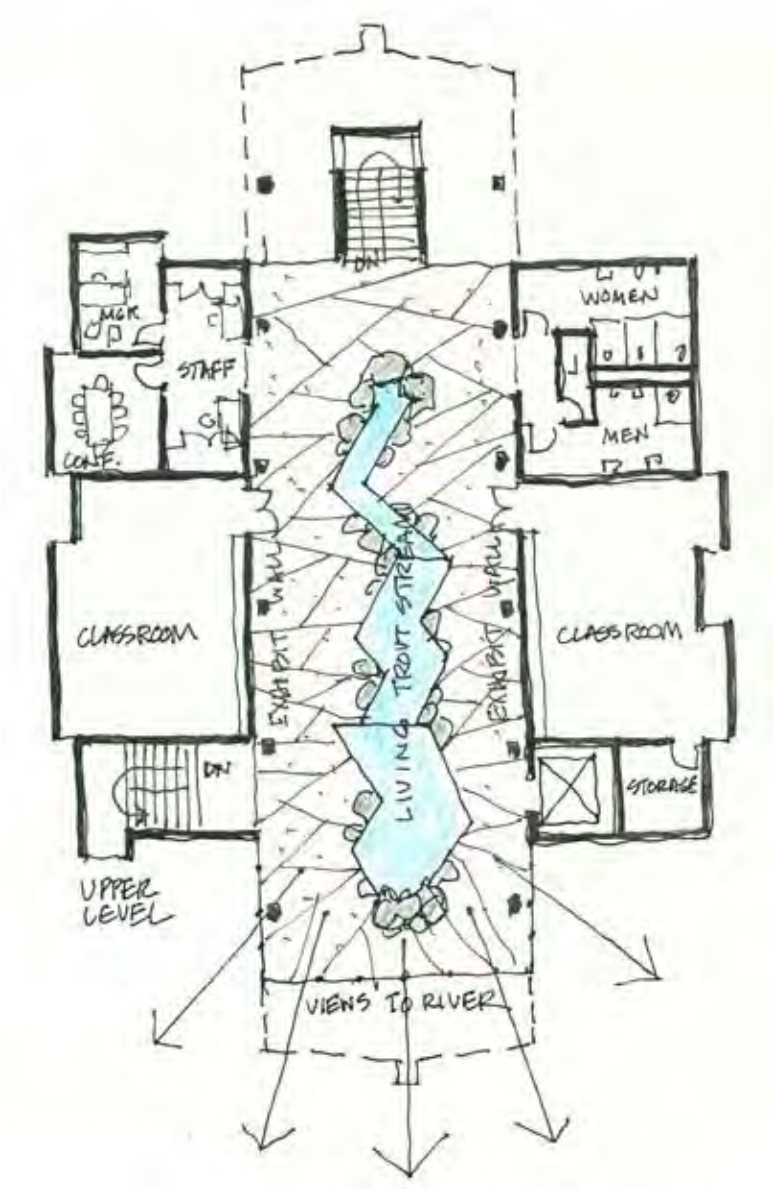
The function of our permanent home will be to ground the special habitat requirements of trout in the physical environment of the unglaciated region of southeastern Minnesota and surrounding states.



Functional Program Features of the Permanent Home Building

The National Trout Center has created an educational program that utilizes the historic interest in trout fisheries to focus public awareness on the biological, cultural, and physical features of the region. Trout biology, behavior and habitat will be exhibited in a recirculating-water artificial stream within the Center. The stream will be divided into sections representative of spring source habitats, middle-reach runs and riffles, and lower stream pools and backwaters. Aquatic organisms characteristic of each habitat type will be observed by visitors from vantage points above and alongside the artificial stream. Adjustable plumbing and substrate features will allow demonstration of the adaptable behavior and physiology of the aquatic organisms in the stream. The living stream level of the building will have atmospheric and acoustic environmental controls to protect the rest of the building from interference of the living stream with other functions and programs in the trout center.

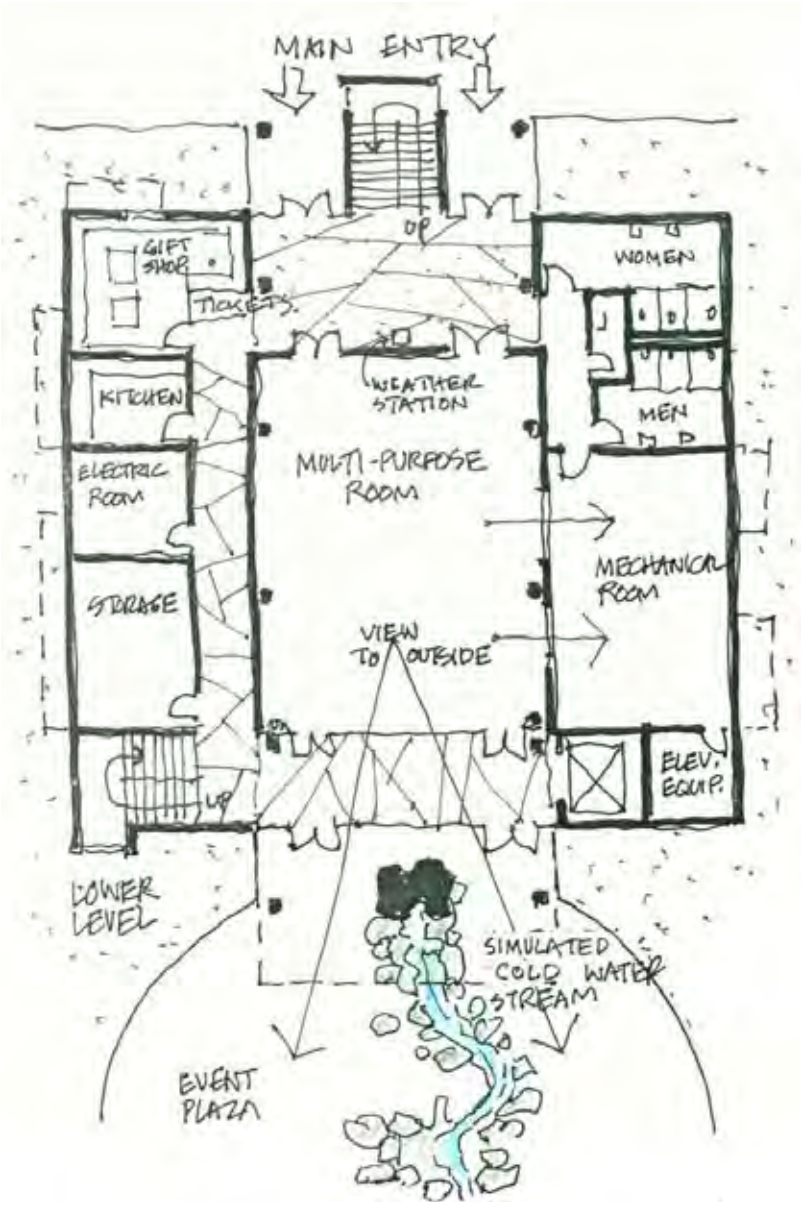
The artificial stream will be complemented by classroom spaces, including a wet-lab, where students can study fish and aquatic organisms, identify insects, and develop an understanding of the relationship between the plants, animals and physical environment in a flowing-water habitat. Classrooms will be multi-purpose spaces that can be configured for instruction, demonstrations, and hands-on exploration of scientific principles related to coldwater habitats. These spaces will be convertible to serve cultural interests such as instruction in the applied arts and crafts associated with trout fishing, including fly-tying, rod-building, leader and lure-making.



The cultural interest in trout fishing will find additional expression in activities related to the traditional roles of literature and the fine arts. Wall space in the main floor multi-purpose room will feature exhibits of the graphic arts and museum presentation cases housing collections of trout fishing paraphernalia. The main floor multi-purpose room will provide seating space for lectures, presentations and video or film screening. It will also serve for community functions accommodating modest numbers of attendees.

Entry to the building will provide convenient access to a ticket kiosk and gift shop, a weather station, and a directory to the features of the building and grounds. The weather station will include hydrographic readouts for current conditions.

Storage areas will house museum collections not in service in exhibits, and field sampling gear and equipment used in outdoor classes and expeditions. Museum collections will be under climate control both in storage and when exhibited.



Space in the Trout Center is also provided for normal administrative functions and workspaces for NTC staff. Staff offices, a conference room and a Management Office will be equipped with shelving for a working library and work tables for research and exhibit preparation. The conference room will have state-of-the-art video and audio equipment for tele-conferencing, management meetings and webinar delivery. A catering kitchen adjacent to the multi-purpose room will provide short-term holding capacity for food catered to events in the building.

The permanent home for

the National Trout Center will be a destination for visitors in southeastern Minnesota. Locally offered programs at the Trout Center will focus on educational programs for all ages, environmental awareness, and public presentations by noted authors, artists, and artisans. In addition to the physical site, the NTC will offer information and education relevant to trout ecology and habitats through its website and trout wiki. The permanent home and educational programs of the NTC, together with its internet presence, will serve to offer local, regional, and national audiences, access to questions about "All Things Trout".

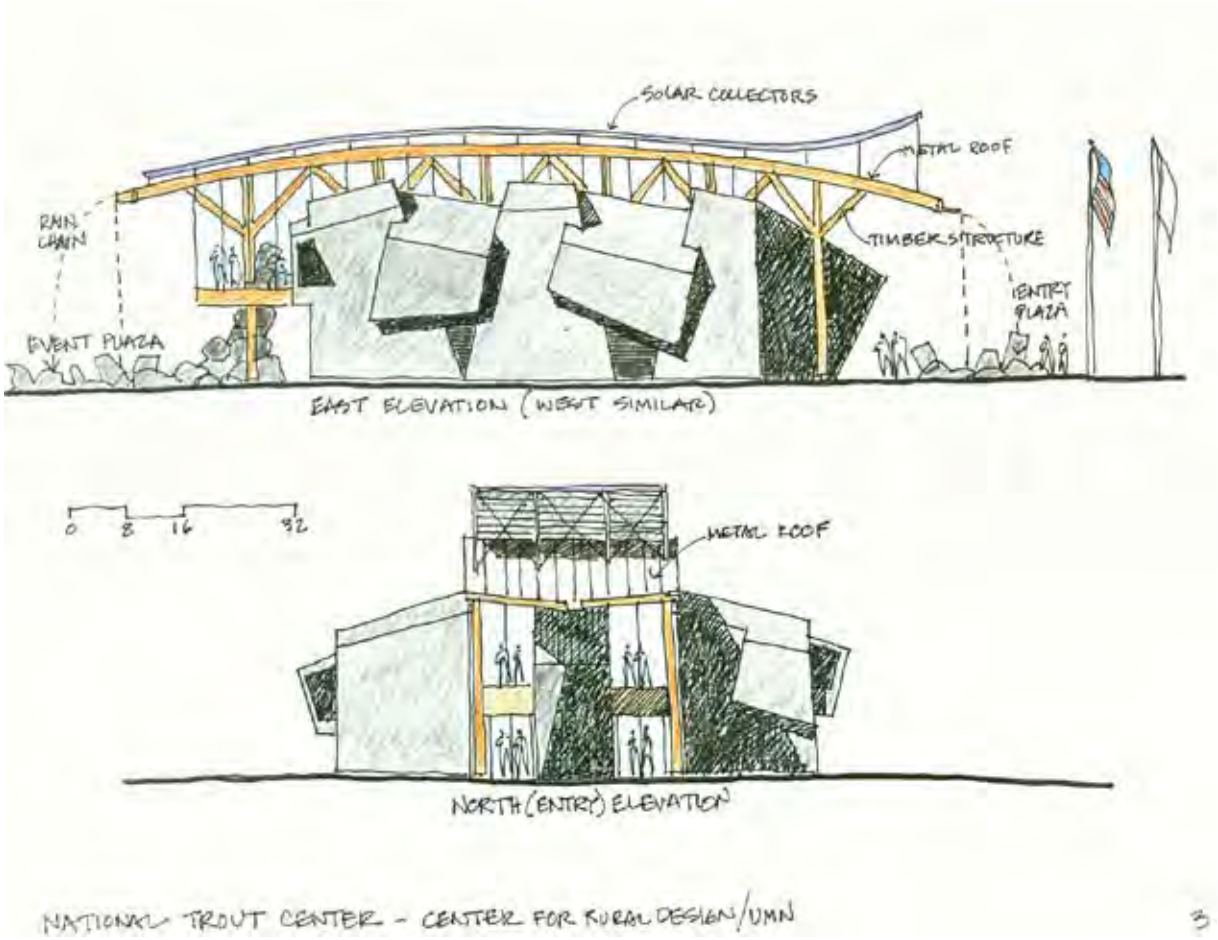
Siting of the permanent home for the NTC, adjacent to the South Branch of the Root River, will underscore the geological features and provide public access to more than a mile of one of the most productive trout streams in Minnesota. Outdoor spaces on the grounds of the Trout Center will include open spaces for activities such as fishing and casting, and will provide river access for lessons on stream ecology, aquatic insects, and water quality sampling. The siting will also accommodate flood-proof information kiosks, a gazebo, and handicap accessibility to the river itself.

Concept Plan

The National Trout Center (NTC) seeks to "conserve the natural and cultural heritage of trout and their cold-water environments by engaging the public through education, practice and awareness."

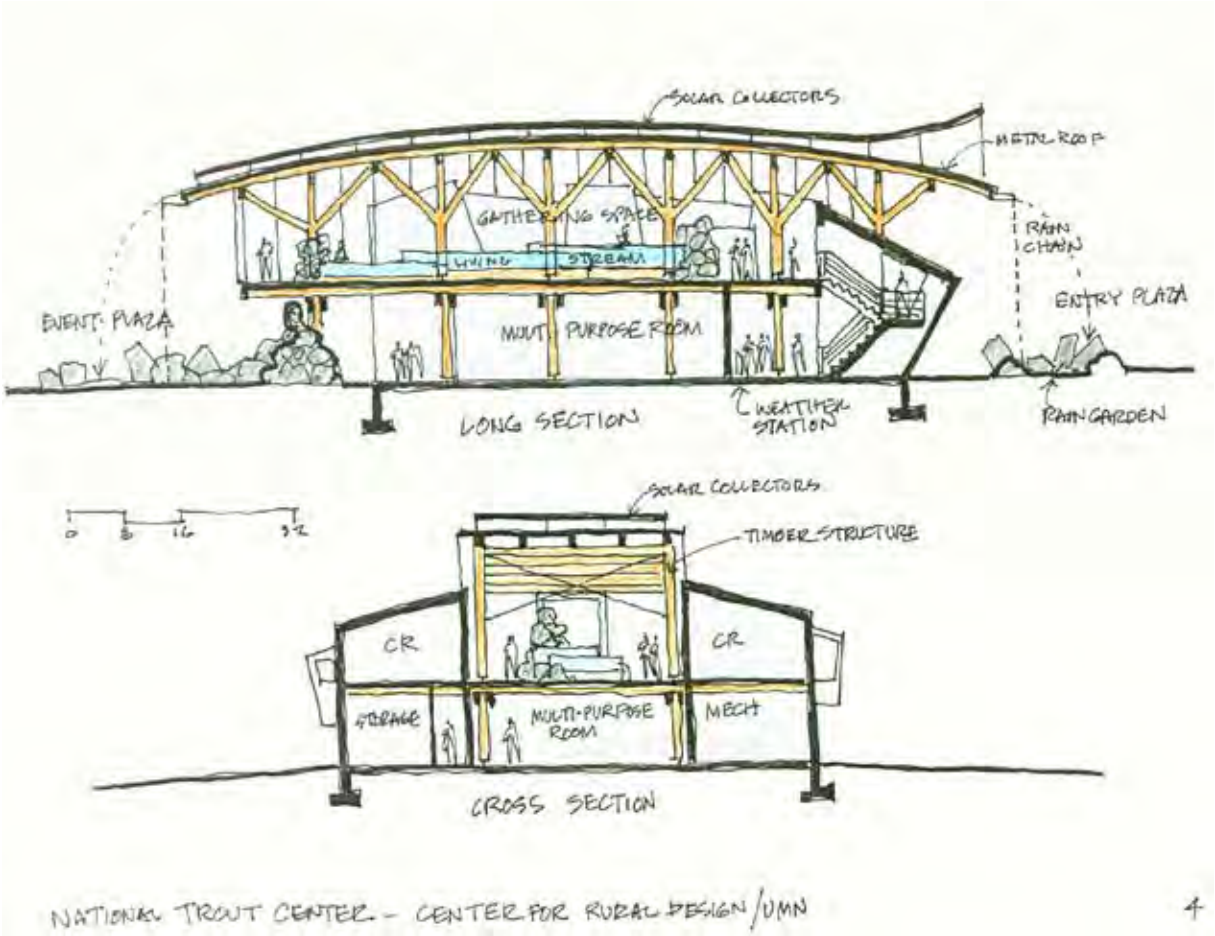
The architectural and site design concept supports the NTC mission with design principles that reflect leading edge sustainable and green design to meet at least LEED Platinum standards. The design concept is based on the unique ecology of its location in Preston, MN, adjacent to the Root River. Since the glaciers did not occupy the drift-less landscape of southeastern Minnesota, the region is characterized by rugged limestone and sandstone outcroppings with cold water springs feeding rapidly flowing streams harboring native trout.

Envisioned as a peaceful gathering place along the Root River, the NTC uses materials from the earth connecting it to the geological history of the site and its river location. The two-story building has walls resembling rock boulders at the edge of a stream. Between the boulders on the second floor is a glass enclosed gathering place focusing on the unique sandstone cold water spring wall on the opposite side of the Root River. Centered within the gathering place is a living stream aquarium exhibit with interpretive graphics that portrays the changing ecology of a cold-water stream from source to mouth. The gathering place is covered by a slightly curved wood roof with timber columns resembling trees along the river - or the profile of a trout, or the flexing of a fly-fishing rod.



The design incorporates sustainable issues of geothermal HVAC with energy recovery, evacuated tube solar hot water, photoelectric energy on the roof, certified wood, high performance glass, and super insulation. It is a building that learns as well as teaches with an energy monitoring kiosk and weather station in the lobby.

The site plan incorporates several educational features and demonstrates approaches to sustainable site development. Site grading reshapes the floodway to enhance floodwater flow and provide easy streamside access for education and recreation. Protection of the cold-water stream environment is achieved through strategically placed rain gardens and the use of permeable paving for site storm water management.



A constructed wetland infiltrates cooling discharge water from the geothermal system and captures the first flush of municipal storm water, further protecting the stream environment. Native plantings increase infiltration, add to local biodiversity, and reduce restriction of flood water flow. All of these features are designed to enhance education about trout stream ecology and management as well as broader watershed level management.

Facility and Operational Program Needs

Based on meeting with the National Trout Center (NTC) building committee, the preliminary program is a listing of suggested spaces for the NTC that reflects the discussion and is similar to other typical nature center facilities.

Because of the relationship of the site in Preston to the Root River and its flood-plain it is suggested that the mechanical spaces and some of the storage areas are on the ground level, established at 1 ½ feet above the 100 year flood level, with an entry lobby, stair and elevator to the main gathering, classrooms, and exhibit functions on the second level. The advantage is that the second level will provide a more visible overview and connection to the Root River and the lime-stone bluff on the other side.

The building is to be designed as a high performance facility of high qual-ity, rooted in place, energy efficient with lower maintenance costs, providing a healthy indoor environment for users.

Photo of June 2008 Flooding

Orange – Existing Floodway
Purple – Proposed Floodway

Building Spaces:	(units in square feet)
Lobby/Reception	560
Management Office	100
Staff offices (2)	170
Conference Room	180
Aquarium/Exhibit/Demonstration Space	1,800
Multipurpose Room	1,200
Catering Kitchen	100
Gift Shop	200
Classrooms (2 @ 550)	1,100
Toilets	575
Storage	170
Custodial	80
Stairs/Elevator to Main Floor on 2nd Level	650
Mechanical/Electrical	1,000
	7,885 Net SF
Add for Gross Area	2,365
	10,250 Gross SF

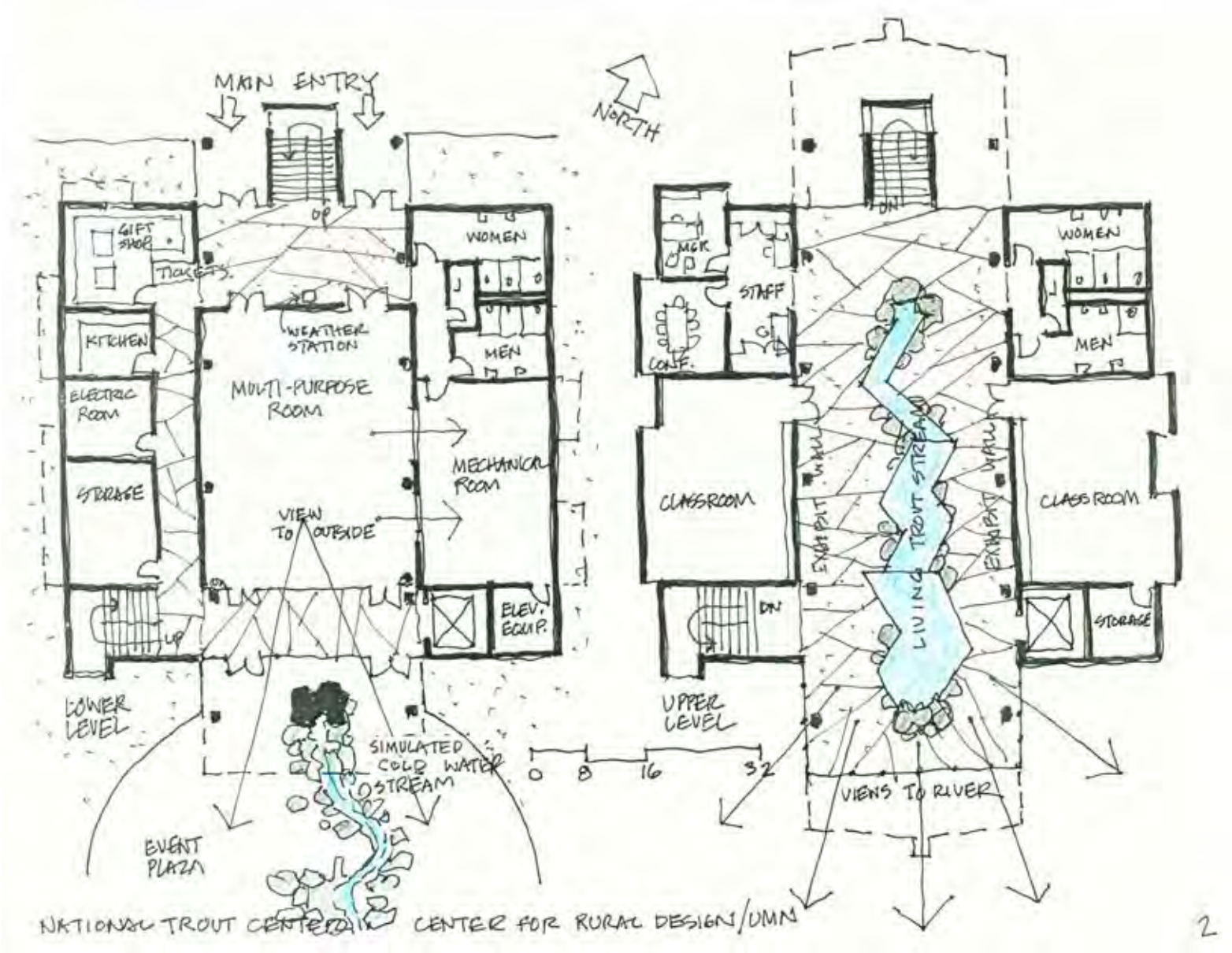
Parking and Site Areas

- Parking (35-40 spaces) for NTC and trail head for the DNR trail system
- Outdoor Reception/Entry Plaza with U.S.A. and Minnesota flags
- Site Landscaping
- Site interpretive graphics
- Open areas for demonstrations of fly fishing with access to the Root River
- River edge shelter for demonstrations/viewing
- Constructed stream and wetland
- Relocate DNR Trail to connect with NTC and parking
- Location for 30 foot tall sculpture of a trout

Cost Estimate

- $3.5 to 4.0 million for fees, site work, building, and exhibits/living stream aquarium

Appendices - *Concept Design Sketches*


MAIN ENTRY
NORTH
GIFT SHOP
TICKETS
UP
WOMEN
MEN
KITCHEN
WEATHER STATION
MULTI-PURPOSE ROOM
ELECTRIC ROOM
STORAGE
MECHANICAL ROOM
VIEW TO OUTSIDE
ELEV. EQUIP.
UP
LOWER LEVEL
SIMULATED COLD WATER STREAM
EVENT PLAZA
0 8 16 32
MCK
STAFF
CONF.
DN
CLASSROOM
EXHIBIT WALL
LIVING TROUT STREAM
VIEWS TO RIVER
UPPER LEVEL
NATIONAL TROUT CENTER
CENTER FOR RURAL DESIGN/UMN
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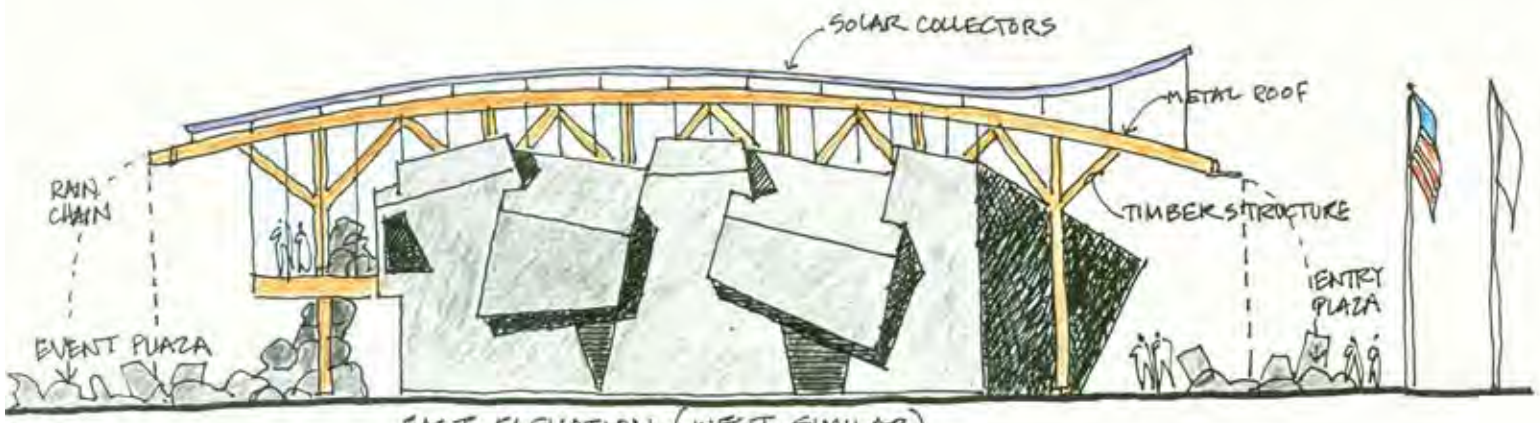
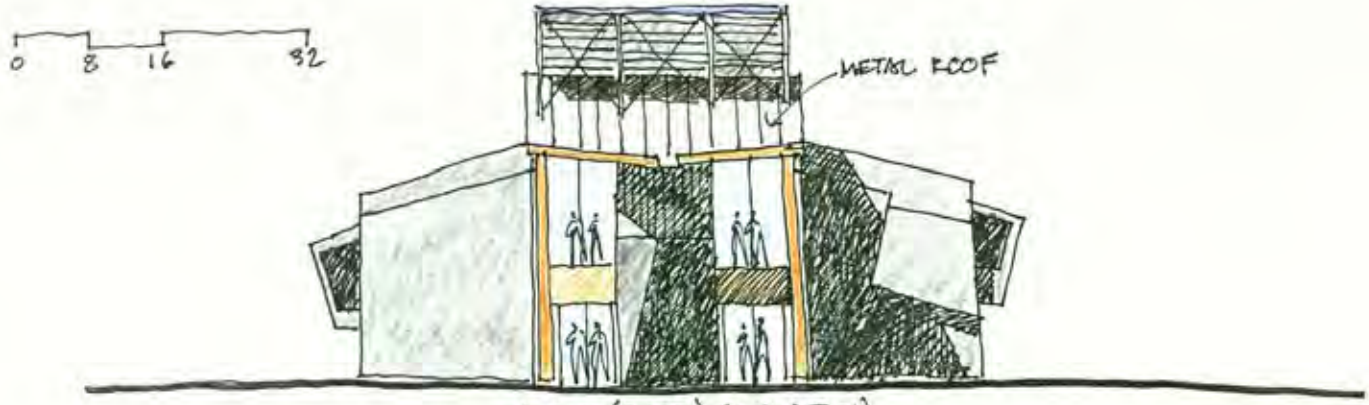
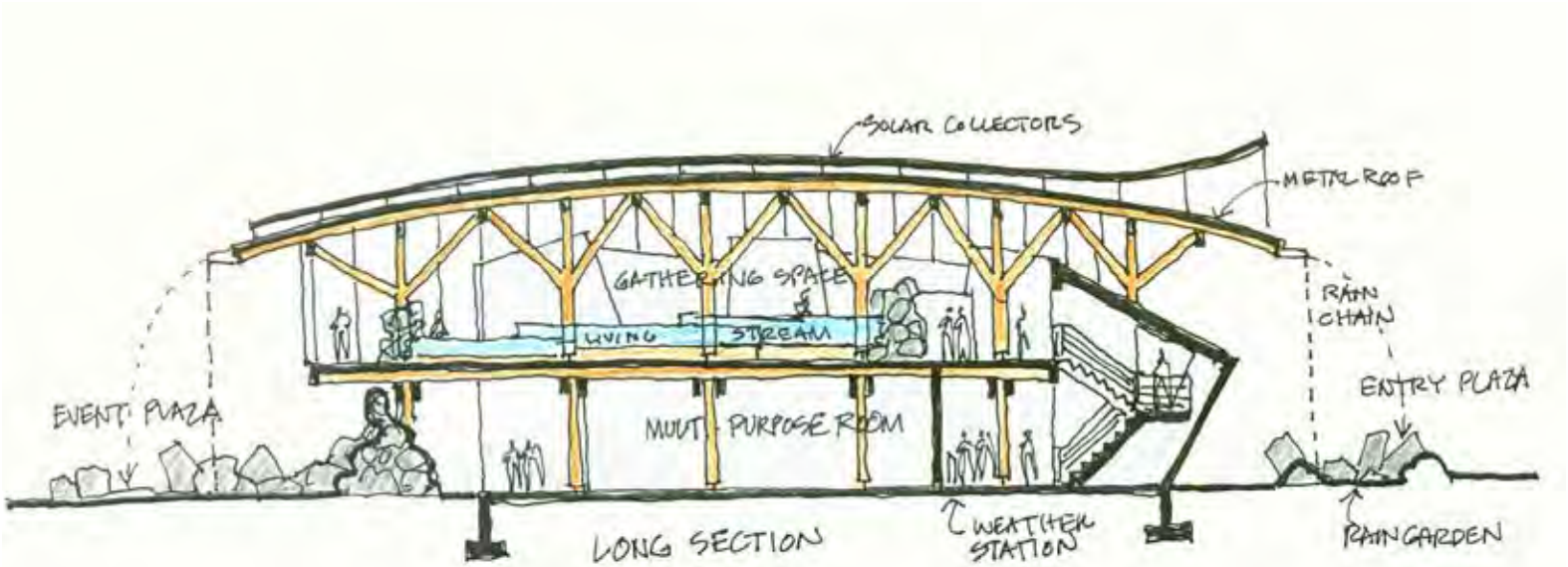
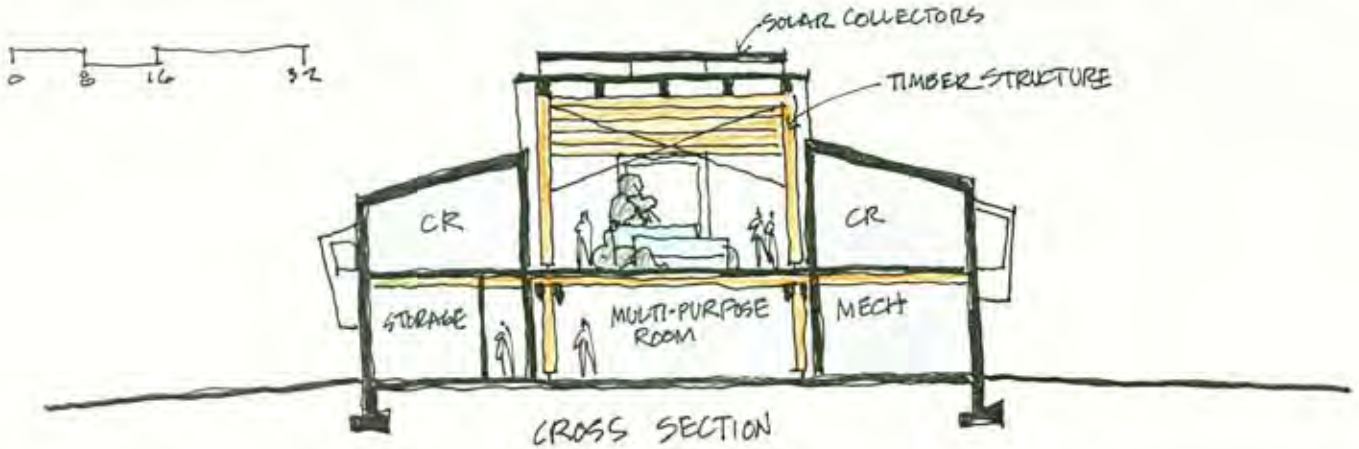


EAST ELEVATION (WEST SIMILAR)



NORTH (ENTRY) ELEVATION





NATIONAL TROUT CENTER - CENTER FOR RURAL DESIGN/UMN


VIEW FROM PATH
TO ROOT RIVER
NATIONAL TROUT CENTER - CENTER FOR RURAL DESIGN/UMN
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NATIONAL TROUT CENTER - CENTER FOR RURAL DESIGN/UMN

6

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EXTENSION

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