WHAT INSPIRED THIS THESIS?
MY FAMILY

More accurately our yearly family road trips to National Parks.
These trips have cultivated a passion for these preserved areas and a longing to keep them for future generations to enjoy.
ONE OF THESE HAPPEN TO BE

YOSEMITE national park
SUB-ALPINE MEADOW
SUB-ALPINE MEADOW ecological zones

- SUB-ALPINE FOREST
- UPLANDS
  - Thread Leaved Sedge
  - Meadow Pussy Toes
  - Ross Sedge
- WET MEADOW
  - Black Sedge
  - Dwarf Bistort
  - Western Bistort
- DEEP STANDING WATER
  - Stika Sedge
  - Round-end Sedge
  - Sierra Willow Sedge

- NUTRIENT RICH TOP SOIL
- GROUND WATER
- GLACIATED BEDROCK
UPLAND
WATER TABLE DEPTH
0-10 INCHES

Meadow Pussytoes
Ross Sedge
Narrow leaved Sedge
Thread leaved Sedge
WET MEADOW
WATER TABLE DEPTH
10-36 INCHES

Dwarf Bilberry

Western Bistort

Nebraska Sedge

Tufted Hair Grass
DEEP STANDING WATER
WATER TABLE DEPTH > 36 INCH

Sitka Sedge
Sagebrush
Sierra Willow
Inflated Sedge
A keystone ecology is an ecology that has a disproportionately large effect on its surrounding environment relative to its abundance.

Alpine meadow ecology is one of the most complex sciences. According to the National Park Service, in Yosemite National Park, meadows only make up 3% of the National Park.
MEADOW DESTROYED THROUGH HUMAN INTERACTION

People walking on the meadow compacts the spongy top soil. This disrupts ground water flow & causes destruction of meadows ecology.

Compacted Soil creating a barrier for ground water.

- SOCIAL TRAILS
- VEHICLES
- LACK OF EDUCATION
SOCIAL TRAILS
VEHICLES

2007
Talking to Garret Dickman, a botanist and ecologist at Yosemite National Park. He claimed that most damage comes from people who don't know about the delicate meadow ecology.
How do I create a way for visitors to interact with the meadow while promoting conservation of the ecology?
1. **Conservation**
   - Preventing destruction or unhealthy interaction with the ecology

2. **Education**
   - Encouraging visitors to learn through interaction and experience

3. **Recreation**
   - Providing areas and ways for passive and active recreation
design
goals
conservation
education
recreation
providing areas and ways for passive and active recreation

CA
NV
OR
Yosemite National Park
San Francisco
Tuolumnne River
Tuolumnne Meadows
To San Francisco
To Lee Vining
To Merced
120
120
140
How do I create a way for visitors to interact with the meadow while promoting conservation of the ecology?

**Survey**

**Visitor Groups**
- 35% of visitors were in groups of 2.
- 31% of visitors were in groups of 3-4.
- 69% of visitors came in groups with *children*.

**Visitor Center**
- Only 45% of visitors said indoor exhibits were important.
- 62% of visitors said outdoor exhibits were the most important.

**Activities**
- 41% Viewing Scenery
- 27% Day Hike
- 11% Scenic Drive
- 5% Camping
- 3% Overnight Hike
- 1% Stay in Lodge
NATIONAL PARKS ALL HAVE THE SAME DESIGN AESTHETIC THROUGHOUT, YOSEMITE INCLUDED. EVERYTHING BUILT WITHIN THE PARKS HAVE A MINIMALISTIC RUSTIC DESIGN USING LOCAL MATERIALS. THIS ALLOWS THE STRUCTURES TO BLEND IN WITH THEIR NATURAL SURROUNDINGS KEEPING THEM FROM BEING A VISUAL DISTRACTION.
TOPOGRAPHY
Toultunme River declared by Congress a Wild and Scenic River in 1984, originates in the high country near the east side of the park.
SPRING FLOODING

Depth in feet
- Regular Water Level
- 0 - 1
- 1 - 3
- > 4

View sheds and destroyed meadow.
Areas where the meadow has been the most destroyed also correlate with areas containing the best view sheds.
Creating specific areas to stop and park at with places to view will help minimize visitors walking onto the meadow.
People are wanting to interact with the environment getting closer to it. Areas where the most destruction happened are places the river comes closest to the paths.

Area of most human impact

INTERACTION PROBLEMS
Raised pathways will allow people to go into the meadow getting a closer look while not damaging the ecology.
Using outdoor exhibits at the visitor center can help educate visitors about the meadow while giving children a place to explore the meadow without harming it.

69% of visitors came in groups with children.

62% of visitors said outdoor exhibits were the most important.
Learning through play and experience, the playground taking elements and characteristics from the meadows.
Before conservation can take place, re-establishment of destroyed areas must happen.
Seeds can be successfully planted after spring thaw till June 30th or September 1st until the soil freeze-up.

Planted by broadcast system (thrown out by hand) assures even natural spread.

No-till plantings minimizes disturbance of soil, and will allow less weeds to grow.

RE-ESTABLISHMENT
After One Year

Plants start to spread naturally interweaving with each other.

Sedges mature and proliferate.

Areas of bare top soil still open for new seeds to establish.

AFTER ONE YEAR
Plants have completely filled in the ground plane covering all exposed soil.

Plant varieties are made up of 70% sedges & 30% forbes.

Roots are fully established.

FULLY RE-ESTABLISHED
ONCE THESE AREAS ARE RE-ESTABLISHED, WHAT IS TO PREVENT THIS FROM HAPPENING AGAIN?
TRAIL & SIGNAGE

TRAILS ACCOMODATING MORE DESTRUCTIVE RECREATION SUCH AS BIKING, CROSS COUNTRY SKIING, AND HORSE BACK RIDING TAKE THE STRESS OFF THE MEADOW WHILE STILL ALLOWING VISITORS TO TAKE PART IN THESE ACTIVITIES.

WAYFINDING SYSTEM

THE WAYFINDING DRAWS FROM THE MINIMALISTIC DESIGN & RUSTIC MATERIALS UTILIZED THROUGHOUT THE SITE.
Tuolumne Meadows Shuttle Bus along Tioga Road

12
11 10
9
8
7
6
5
4
3
2
1

Visitor Center

24' width

dual colored concrete crosswalk

10' walk and waiting area
PARKING & SHUTTLE STOPS ON THE LESS DELICATE FORESTED SIDE OF THE ROAD FUNNEL PEOPLE ACROSS THE STREET TO VIEWING PLATFORMS KEEPING THEM OFF THE MEADOW ECOLOGY.

10 FOOT WALKWAY ACCOMMODATES FOR LARGE GROUPS OF SHUTTLE BUS TOURS.

Native "Lodgepole Pine" Timber

Colored Concrete

Brushed Concrete

DIRECTS PEOPLE ACROSS STREET TO VIEWING PLATFORMS.

5 FOOT WALKWAY TO ACCOMMODATE INDIVIDUAL VEHICLES.

10 foot walkway accommodates for large groups of shuttle bus tours.

Native "Lodgepole Pine" Timber

Colored Concrete

Brushed Concrete

5 foot walkway to accommodate individual vehicles.
RAISED VIEWING PLATFORMS STRATEGICALLY PLACED TO OFFER THE BEST OVERLOOKS TO VISITORS VIEWING THE SITE.

THE RIVER WALKS MINIMALISTIC DESIGN ALLOWS IT TO BLEND IN WITH THE SURROUNDING VEGETATION KEEPING THE STRUCTURE FROM BECOMING A VISUAL DISTRACTION.

VIEWING PLATFORM

GLASS WALL

Metal Grate

Native "Lodgepole Pine" Timber

METAL GRATE FLOORING ON VIEWING PLATFORMS AND RIVER WALK ALLOWS FOR SUN AND RAIN TO REACH THE MEADOW BELOW.
WITH PLANT RE-ESTABLISHMENT, VARIETIES OF PLANTS SHOULD AMOUNT TO 70% SEDGES & 30% FORBS IN ORDER TO BLEND INTO THE NATURAL PRAIRIE.
The river walk placement keeps the pathway above water all through the year, even during spring flooding. This allows visitors a unique experience all year long.
1. Tuolumne Visitor Center
2. ADA Compliant Ramp
3. Picnic Area
4. Parent Seating
5. Meadow Inspired Natural Playground
6. Dry Creek Bed
7. Playground Picnic Area
8. Alpine Amphitheater
The dry creek bed brings the flow, forms, & vegetation of the alpine meadow into the natural playground.

The poured rubber mimics the spongy feel of the meadow.

69% of groups visiting the meadow come in a group with children. The playground gives them an area to blow off steam while having meadow inspired educational experience.
AMPHITHEATER

NATURAL PLAYGROUND
THANK YOU FOR LISTENING

QUESTIONS?