

Brownfield Case Study

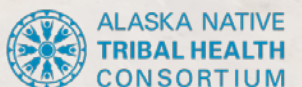
TSÉ NIKÁNÍ ROUND ROCK TRADING POST

Anthony Fettes PLA, ASLA, PDC

Associate Professor, Landscape Architecture
iD+Pi Faculty Affiliate
University of New Mexico



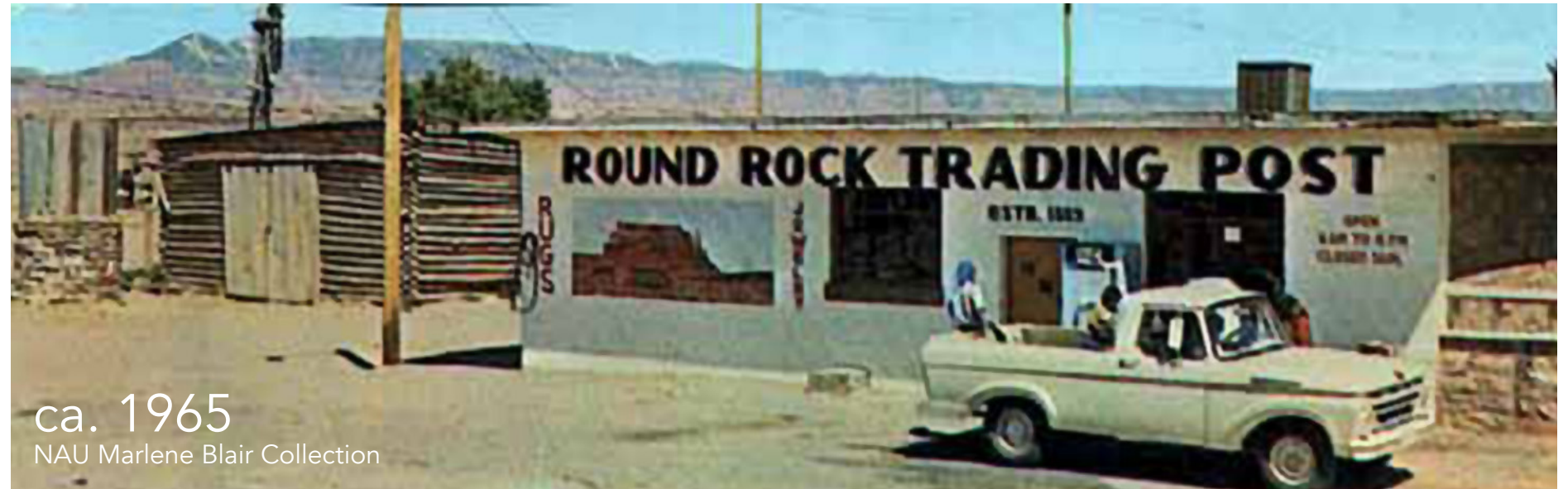
With Funding and Technical Support From:



Round Rock Trading Post

Originally established in 1887

Co-owned by Henry Chee Dodge





Diné College & UNM Indigenous Design + Planning Institute

Supporting the Round Rock Community in their efforts to revitalize their Historic Trading Post with Diné Philosophy to guide the process.

Tsé Nikani | Round Rock

Population: 1,566 (2020 Census) but estimated to be closer to 3,000

Area: 122,506 Acres (191 mi²)

Major clans: To'd'ch'inii, Kinyaa'áanii, Desch'inii, KinLich'inii

Challenges

Lack of businesses, especially with the loss of the trading post

Assets

Local schools, tourism potential, good location at US 191 & Rte 12, Role of artists in the community

Significance of the Trading Post

Community
Kinship
Heritage
Culture
Opportunity

Typical Brownfields Process

DRAFT



WHAT IT MEANS

Finding and documenting sites that may be contaminated	The community decides what they want the site to become before any cleanup work begins	A formal review is conducted to determine whether contamination might be present	Physical testing of soil, water, and air to confirm and identify contamination	Removing or containing contamination to make the site safe for intended reuse	Returning the land to a beneficial use aligned with the community's vision
--	--	--	--	---	--

WHAT HAPPENS

Sites are identified and logged with location, history, and known hazards. No testing yet.	Community meetings and engagement to define reuse goals.	A licensed professional reviews records, aerial photos, databases, and conducts interviews and reports if there is potential contamination (noted as Recognized Environmental Conditions or RECs).	If the Phase I finds potential contamination (RECs), sampling is conducted to determine what is present, the extent, levels, and is reported to the EPA.	A cleanup plan is developed based on the Phase II findings and input from the community and local standards.	Construction, restoration, or revitalization is followed through based on the community's vision.
--	--	--	--	--	---

FREE ASSISTANCE AVAILABLE

 KSU Tribal TAB - Nationwide assistance and guidance <https://www.tribaltab.org>

 Center for Creative Land Recycling - EPA Regions 9 & 10 (AK, AZ, CA, HI, ID, NV, OR, WA) | assistance and guidance <https://www.cclr.org>

 UNM iD+Pi <https://idpi.unm.edu>

FUNDING SOURCE

Covered under: Section 128(a) EPA grant covers inventory as part of Tribal Response Program	Covered under: Section 128(a) covers community engagement as program enhancement	Potentially covered under: Section 128(a) EPA Targeted Brownfield Assessment (TBA) Competitive: EPA Assessment Grant (CWAGST)	Competitive (List not comprehensive): EPA Cleanup Grant EPA Multipurpose Grant	Competitive (List not comprehensive): HUD, USDA, BIA, other Tribal/ local/state/federal programs depending on reuse
--	---	---	---	---

PLACES

Adapting the Process
Round Rock Trading Post
UNM Planning Studio (iTown)

PLACES

☒

Identification & Inventory

☒

Visioning



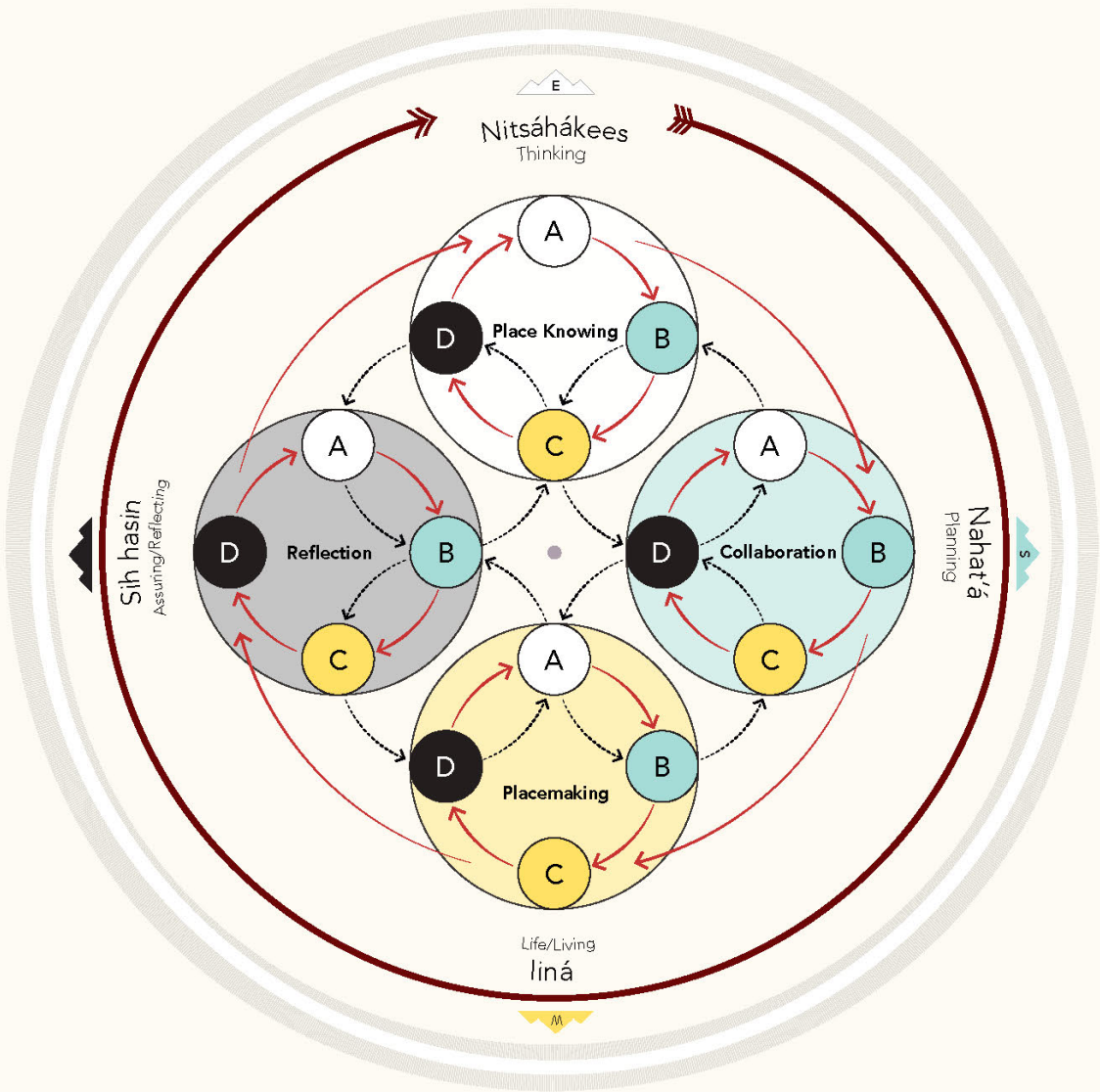
Adapting the Process

Round Rock Trading Post
Sa'ah Naaghái Bik'eh Hózhóón (SNBH)

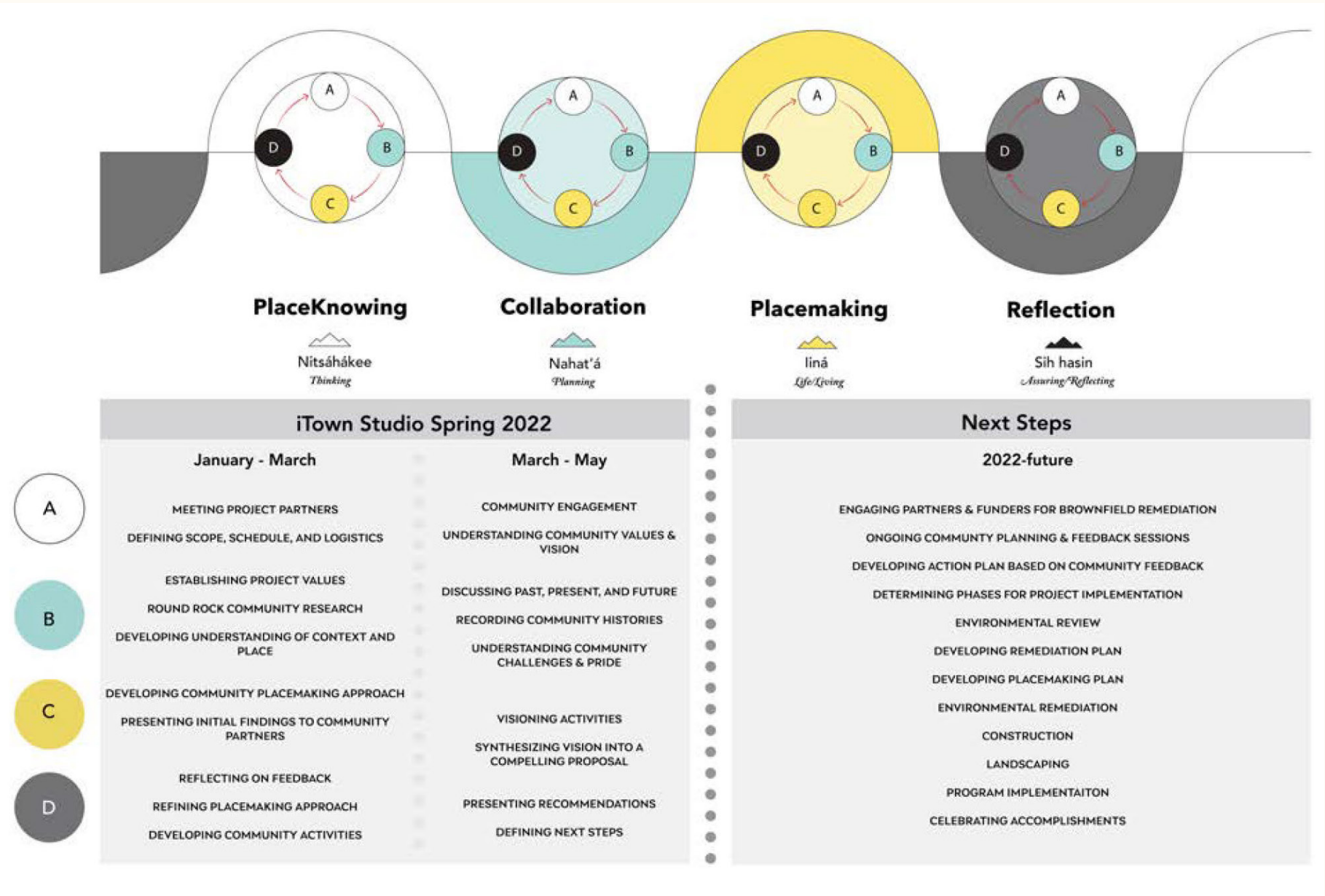
PLACES

☒ Identification & Inventory

☒ Visioning



Model adapted from a model developed by Nataani Garnenez



Adapting the Process

Guiding Principles

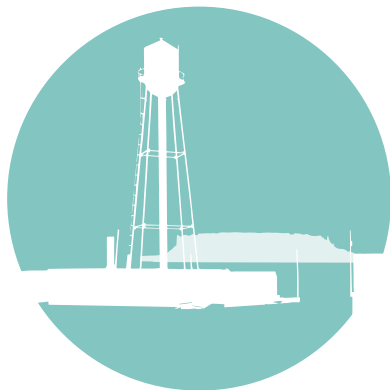
PLACES

- ☑ Identification & Inventory
- ☑ Visioning



Strengthen Sovereignty

Through strengthening agriculture and food systems, cooperative economic opportunities, cultural & eco-tourism



Ground in Place & Diné Culture

Ensure that planning and design ideas are unique to Round Rock and consider Diné worldview and Hózhó



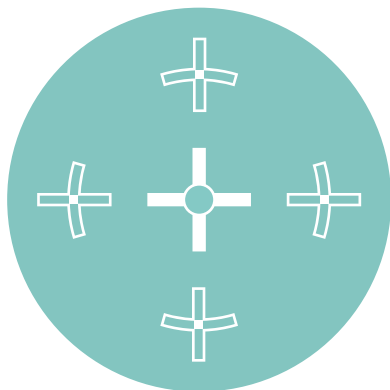
Regenerate the Land

All ideas should demonstrate how their design, construction, and use leaves the land better than it was before



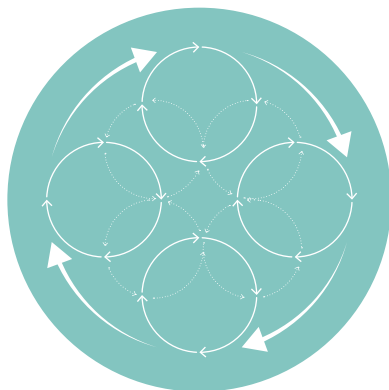
Foster a Sense of Community

From design to completion, integrate community input and feedback to create places for gathering, sharing, and opportunity



Cultivate Knowledge

Through intergenerational learning and considering the significance of past, present and future generations



Be Adaptive & Resilient

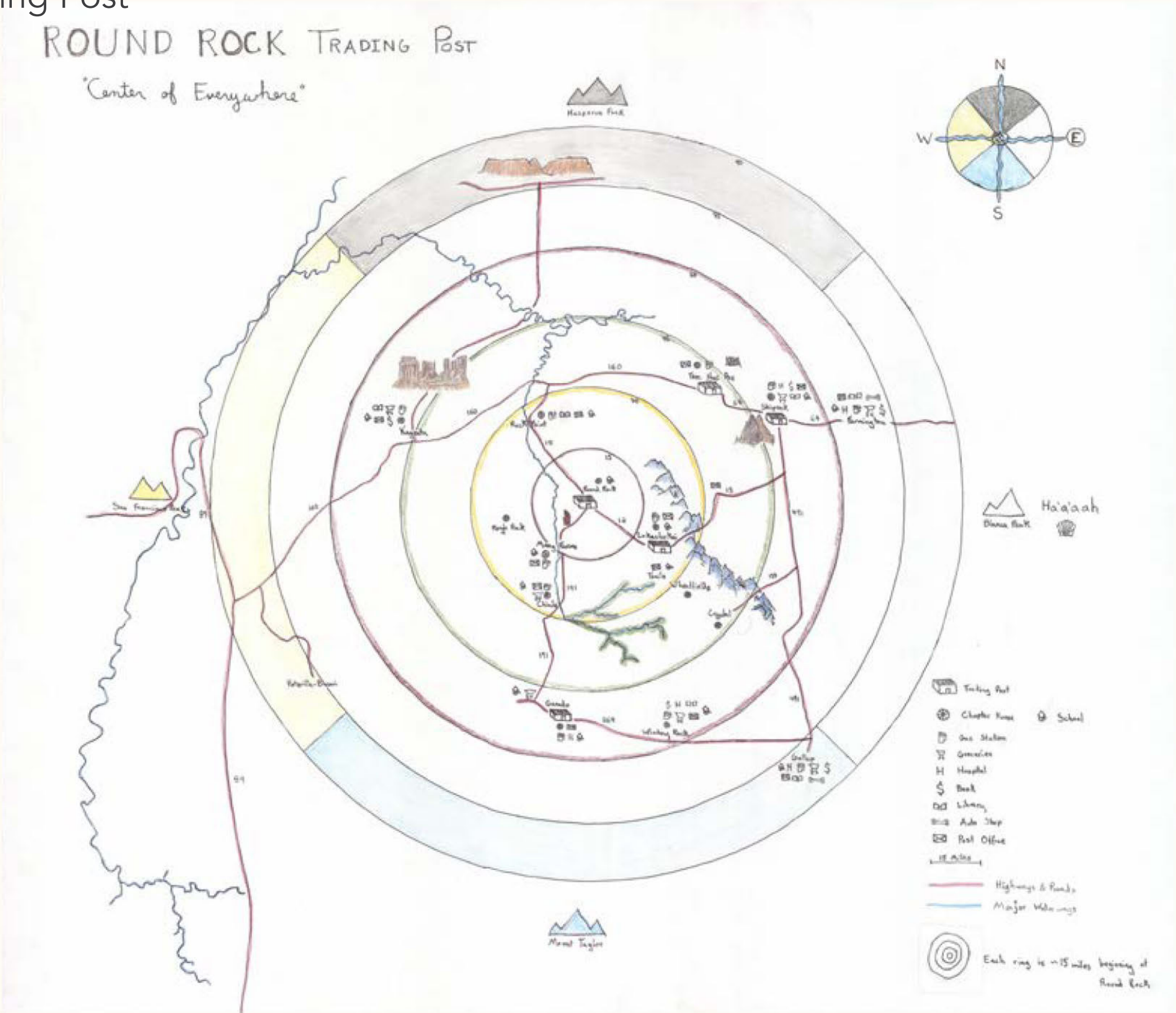
Create places and spaces that are adapted for all levels of ability, and changes we may see in use, needs, and climate

Navajo Nation Context

Round Rock Trading Post

PLACES

- ✓ Identification & Inventory
- ✓ Visioning



Community Context

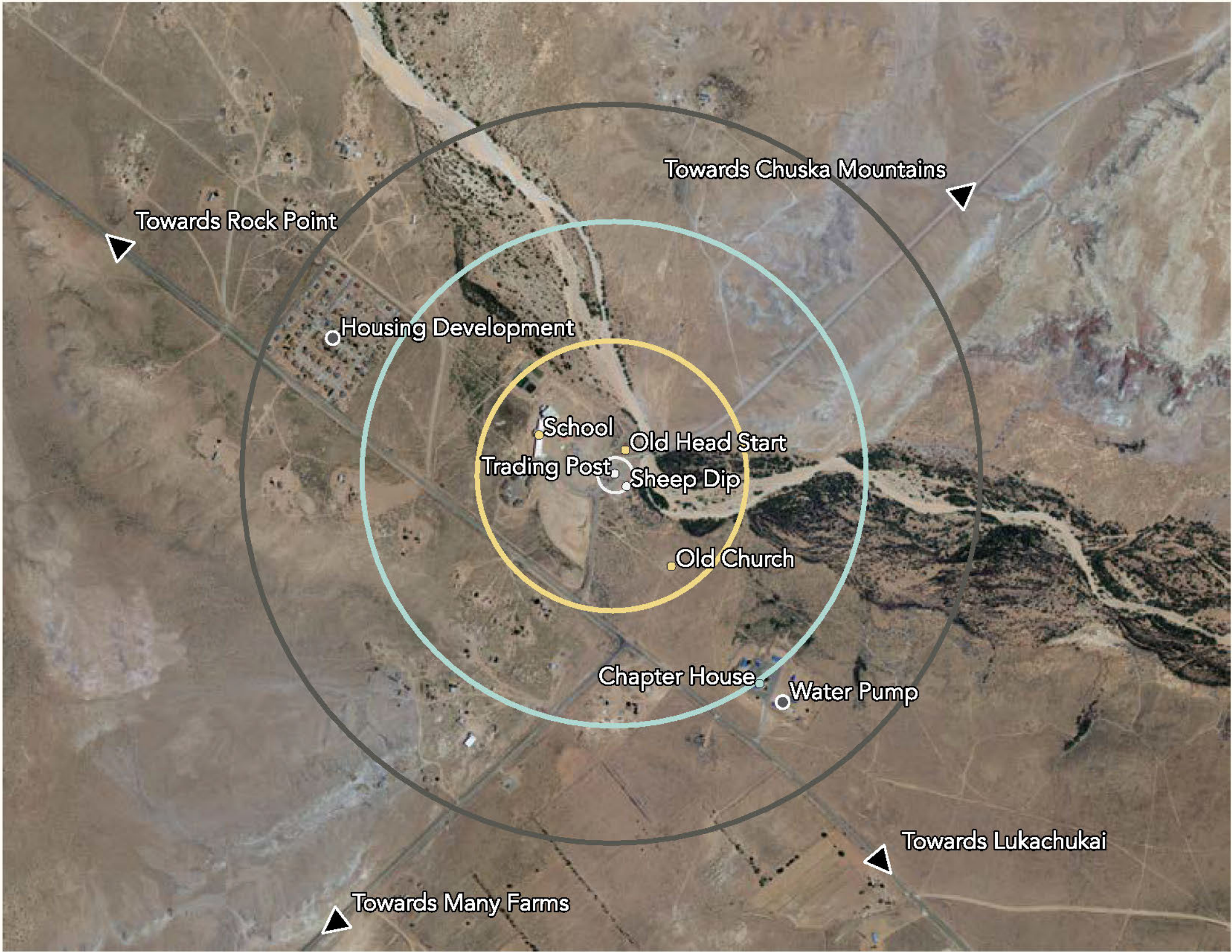
Round Rock Trading Post

PLACES

- ☒ Identification & Inventory
- ☒ Visioning

Local Connections

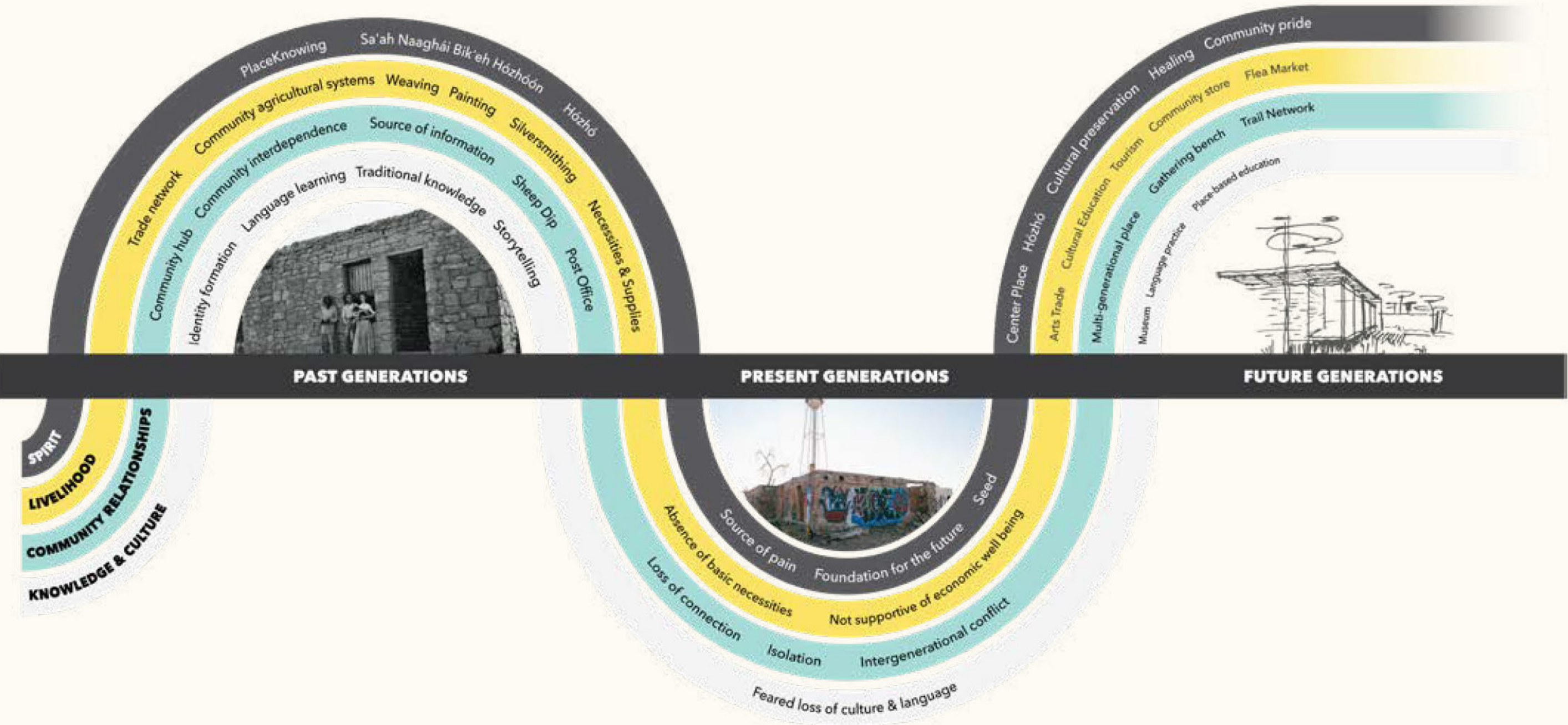
- Distances
- 200 ft / 1 Min Walk
 - 1000 ft / 3 Min Walk
 - 2000 ft / 6 Min Walk
 - 3000 ft / 9 Min Walk



Trading Post Timeline

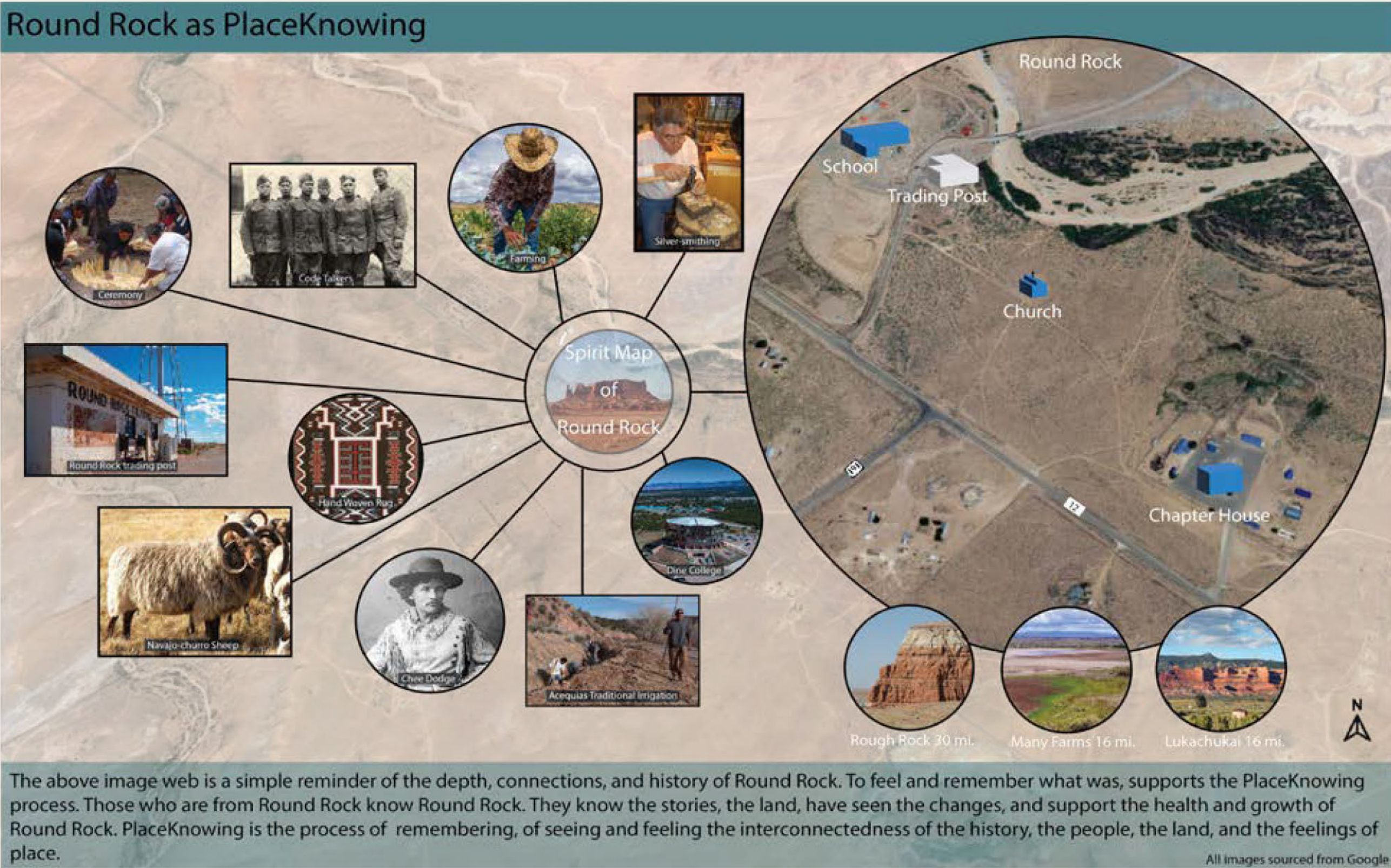
Round Rock Trading Post

- ☑ Identification & Inventory
- ☑ Visioning



PlaceKnowing

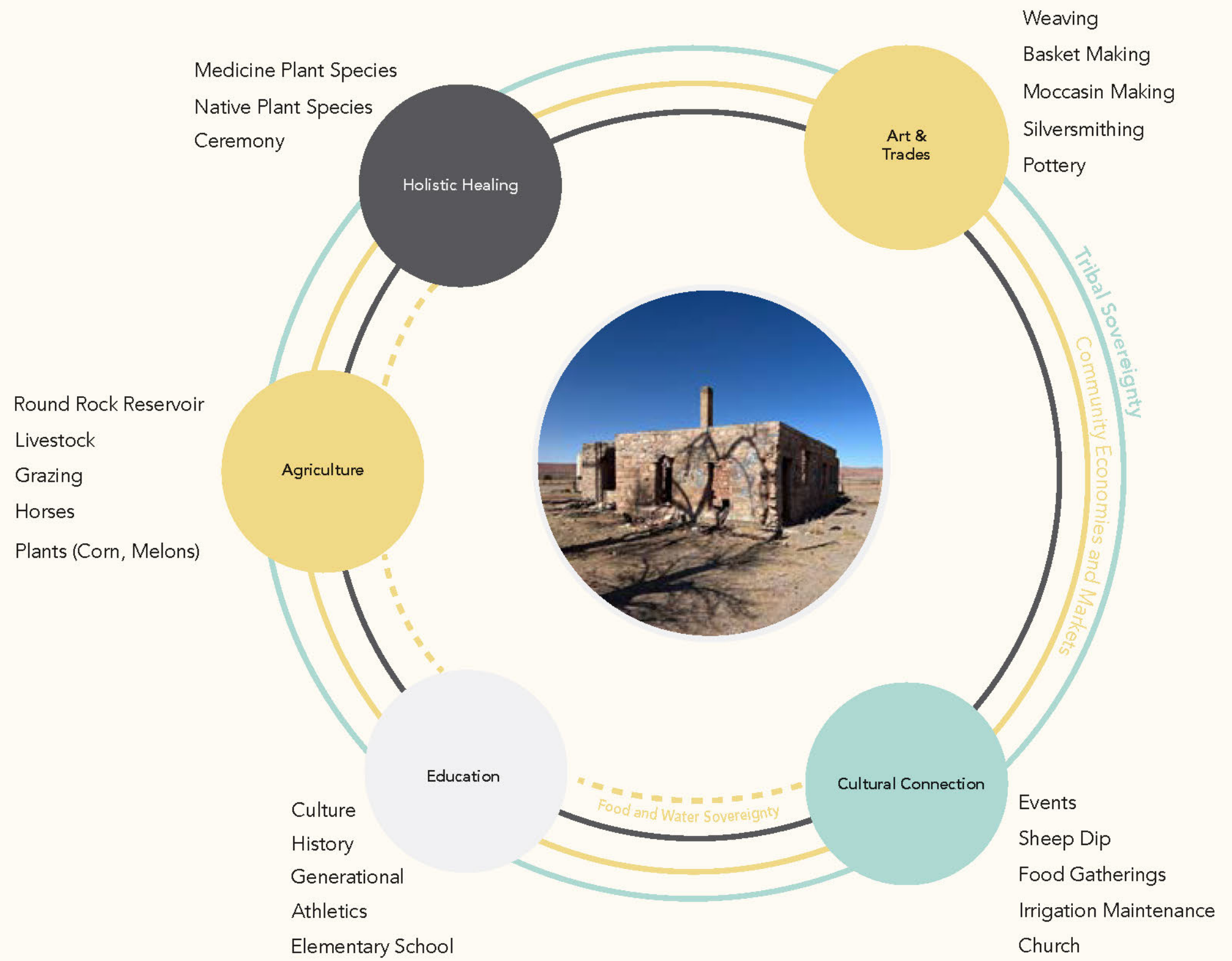
Round Rock Trading Post



Community Assets

Round Rock Trading Post

- ☑ Identification & Inventory
- ☑ Visioning



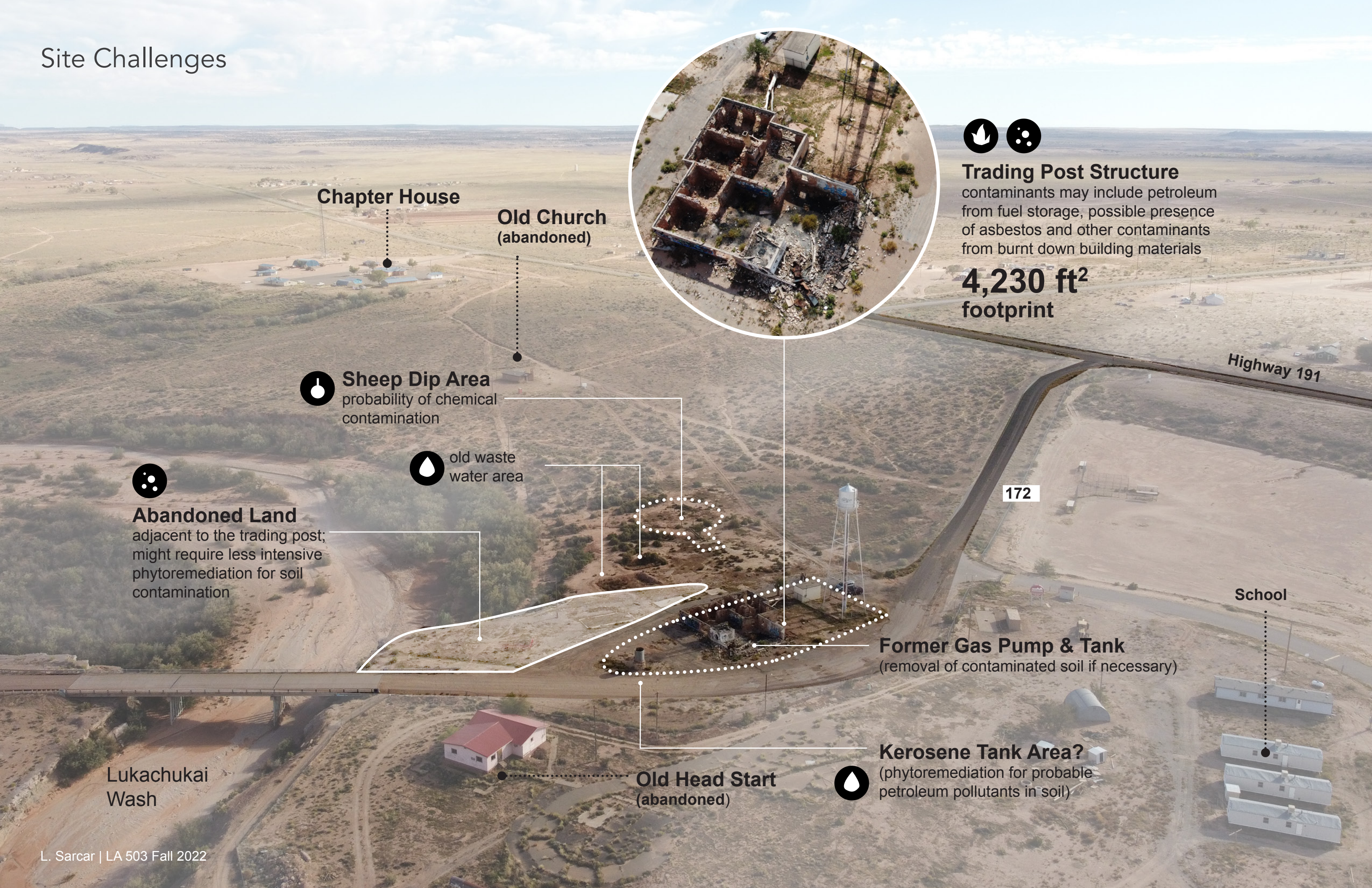
A Deeper Dive & Visioning
Round Rock Trading Post
UNM Landscape Studio

PLACES

- ✓ Identification & Inventory
- ✓ Visioning



Site Challenges



Chapter House

**Old Church
(abandoned)**



Sheep Dip Area
probability of chemical
contamination



**old waste
water area**



Abandoned Land

adjacent to the trading post;
might require less intensive
phytoremediation for soil
contamination



Trading Post Structure

contaminants may include petroleum
from fuel storage, possible presence
of asbestos and other contaminants
from burnt down building materials

**4,230 ft²
footprint**

Highway 191

172

School

Former Gas Pump & Tank

(removal of contaminated soil if necessary)

Kerosene Tank Area?

(phytoremediation for probable
petroleum pollutants in soil)

**Old Head Start
(abandoned)**

**Lukachukai
Wash**

Potential Site Hazards

PHYSICAL DEBRIS



STRATEGIC CLEANING

- Steps to consider:
- Assessment of remnant materials for contamination and structural stability
 - Decide what to keep
 - Contact with cleanup agency
 - Restoration procedure

HARMFUL MATERIALS



Asbestos
Dissolved organic matter can facilitate spread of asbestos fiber; chemical or phyto remediation as suggested by testing



Waste water areas have natural growth but intentional planting is suggested



Sheep dip area can have intentional plantings for phyto-remediation

TEST > REMEDIATE > CHM. EXTRACTION (IF REQ.)

- Steps to consider:
- Lab assessment of chemical contamination
 - Consultation with expert on remediation process
 - Can range from simple excavation and sun drying or phytoremediation to more complex chemical extraction process
 - Design decisions and implementation

TRASH



CLEAN-UP

Consider a community clean-up day when elders and younger people of the community come and work together!

Landscape Studio Framework Plan

US 191
Rock Point (17.5 mi)

Round Rock School
Trading Post Area Revitalization
Ideas for the historic Trading post and surrounding area

Trading Post
Old Sheep Dip Site

Lukachukai Wash

Brownfield Assessment
Inquiry into potential contaminants, the extent, and potential cleanup strategies

Connecting the Community
Potential ways to integrate and connect the school, historic Trading post, and Chapter House, while regenerating the landscape

Old Church

Chapter House

Additional Economic Opportunities
Future C-Store ideas, tourism/camping, and agricultural irrigation

Rodeo Ground

Irrigated Agriculture
Historically fed by the diversion dam on Lukachukai Wash and Round Rock Reservoir

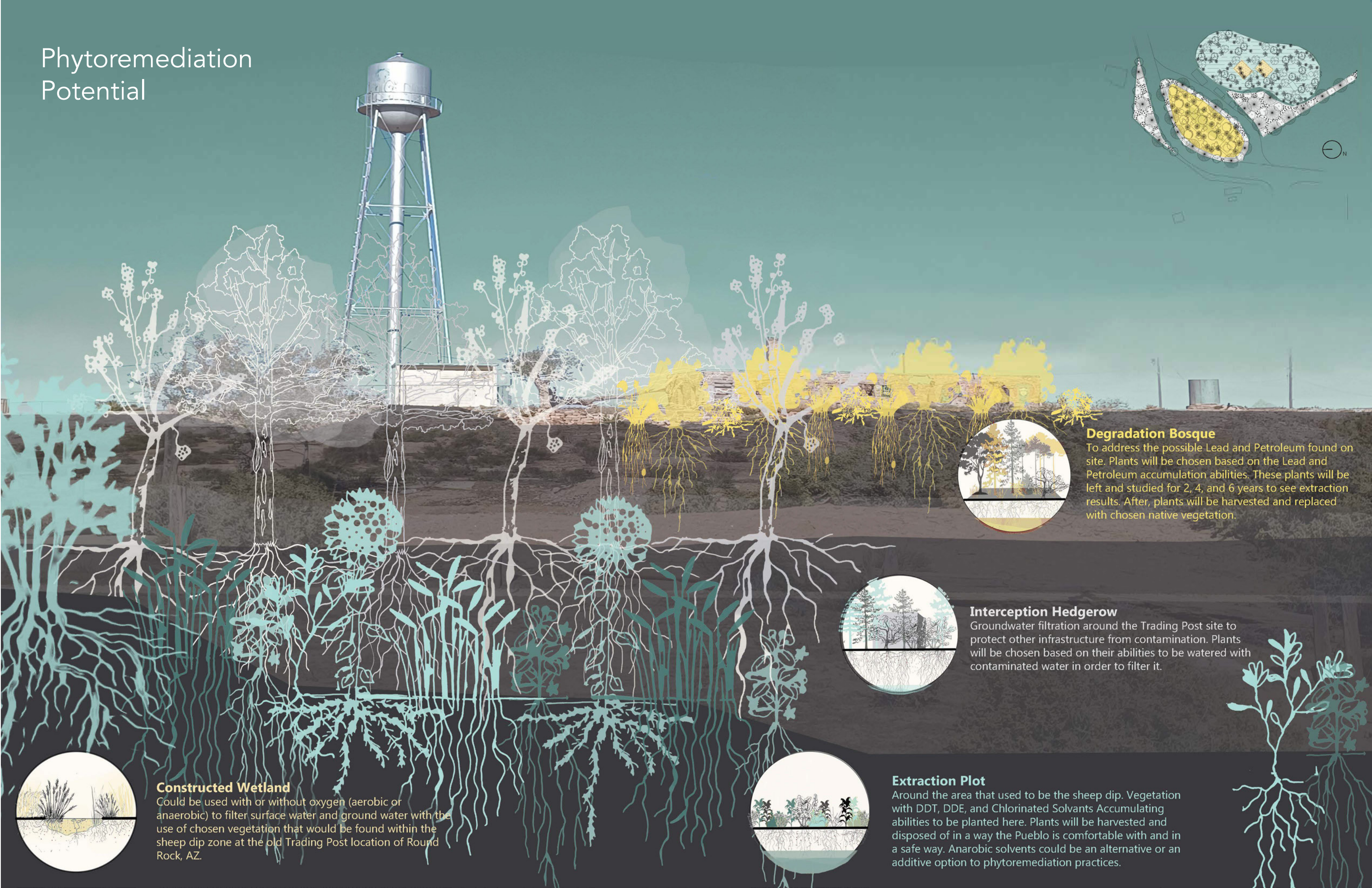
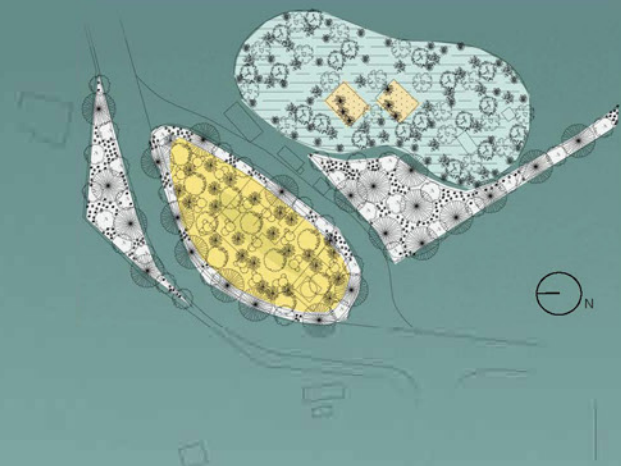
Route 12
Lukachukai (16.5 mi)
Tsaille (22 mi)
Window Rock (74 mi)

Future C-Store Location



US 191
Many Farms (17.5 mi)
Chinle (32 mi)

Phytoremediation Potential



Constructed Wetland
Could be used with or without oxygen (aerobic or anaerobic) to filter surface water and ground water with the use of chosen vegetation that would be found within the sheep dip zone at the old Trading Post location of Round Rock, AZ.



Degradation Bosque
To address the possible Lead and Petroleum found on site. Plants will be chosen based on the Lead and Petroleum accumulation abilities. These plants will be left and studied for 2, 4, and 6 years to see extraction results. After, plants will be harvested and replaced with chosen native vegetation.



Interception Hedgerow
Groundwater filtration around the Trading Post site to protect other infrastructure from contamination. Plants will be chosen based on their abilities to be watered with contaminated water in order to filter it.



Extraction Plot
Around the area that used to be the sheep dip. Vegetation with DDT, DDE, and Chlorinated Solvents Accumulating abilities to be planted here. Plants will be harvested and disposed of in a way the Pueblo is comfortable with and in a safe way. Anarobic solvents could be an alternative or an additive option to phytoremediation practices.



Re-Imagining the Trading Post

This new vision for the Round Rock Trading Post aims to center on the needs of the community. Round Rock residents deserve a place to connect with each other, purchase essential items, learn and share skills, and access Online resources to empower themselves and their community.

With access to Internet, a space for Artists of all media, and the ability to send and receive packages- Round Rock could have an online store! Programs for website development are available through Diné Colleges' BFA department.

The new and improved Trading Post could act as a local postal service, by sending and receiving larger parcels. Companies like Amazon will partner with small rural stores and hire them to make local deliveries. This could be a source of income for locals residents.

Náhookos
-Innovation, Goal Setting,
Comfortable Living
-Store/Tourism/
Economic Development

E'e'aah
-Living, Community
-Food Store, Kitchen,
Restrooms

Ha'a'aah
-Thinking, Creativity
-Classroom/Gallery

Shádi'ááh
-Planning, Self-Sufficiency,
Understanding
-Classroom/Outdoor Vending

Food Store

Bathroom

Kitchen

Gift Store

Gallery

A small computer lab would allow better connectivity for the Round Rock community. Because the Trading Post is located close to the school, this could be a space for youth to spend time after class.

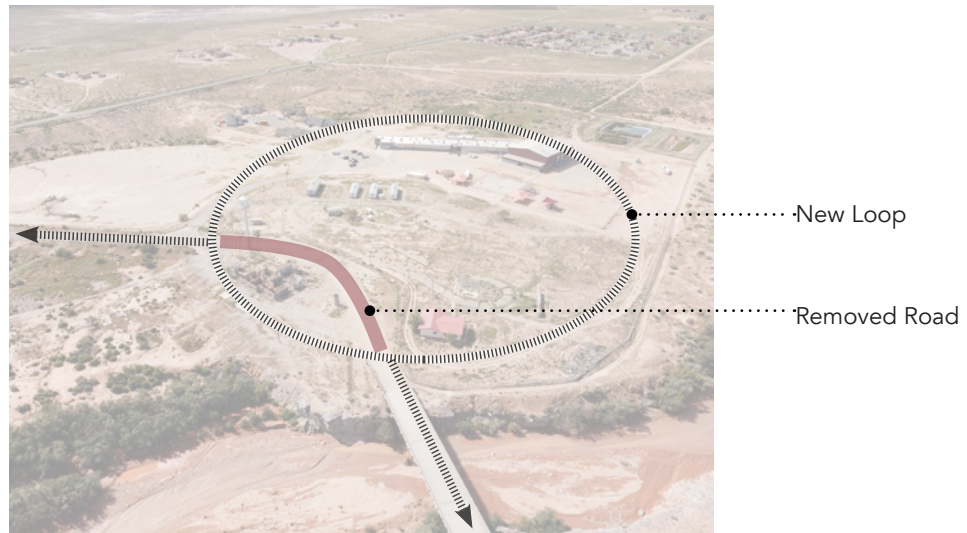
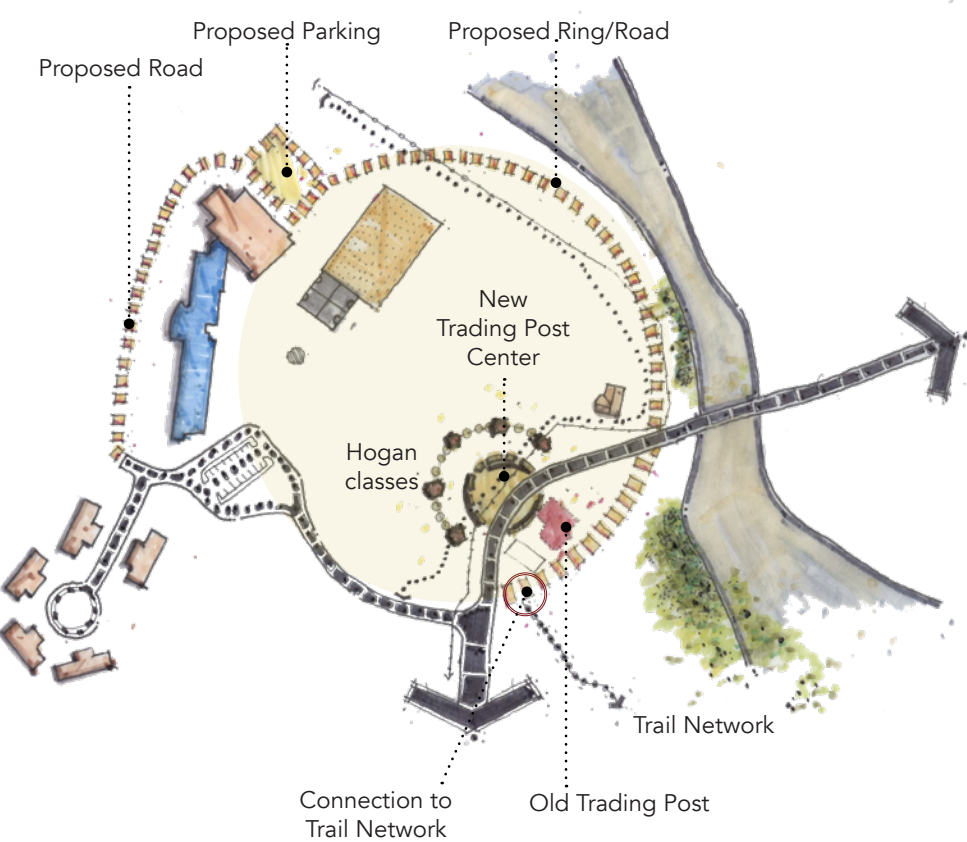
A community classroom space would allow for intergenerational workshops. This would ensure the traditional skills, art forms, and language knowledge remains in the community and is passed to the next generation.

Ideas for the Greater Site & Community

Three Planning Concepts

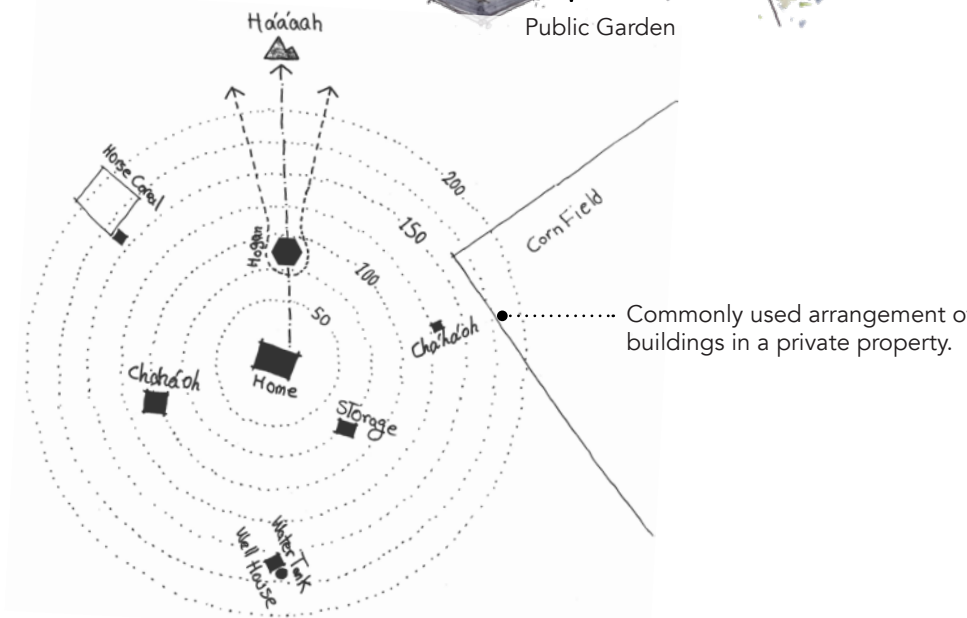
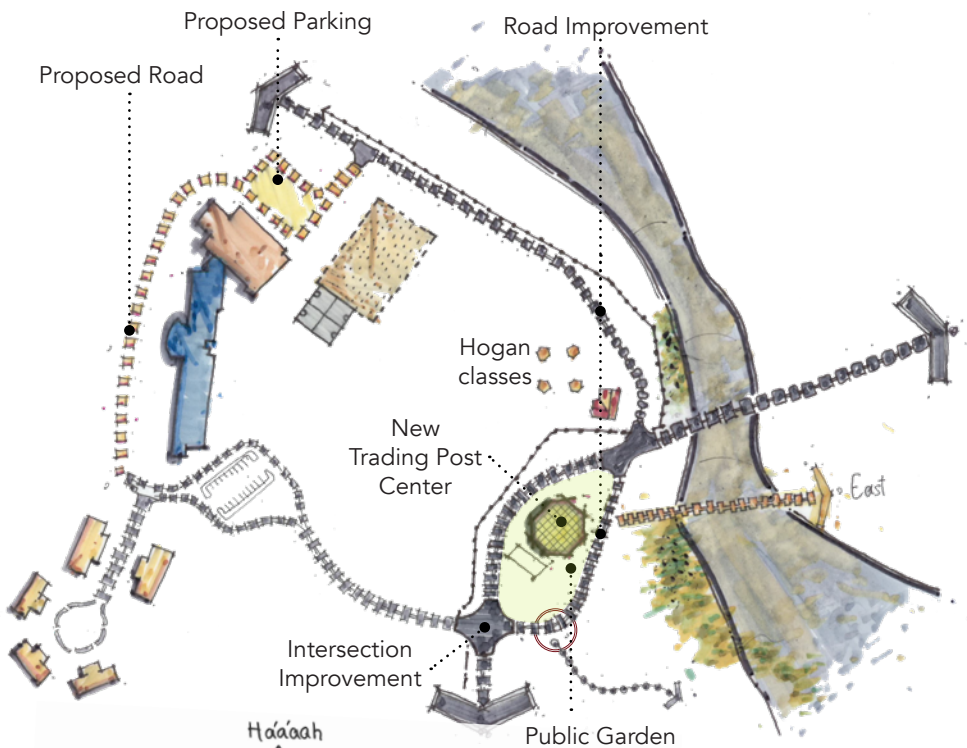
Circular Loop w/Existing Trading Post

- Provides better accessibility, security and intergenerational connectivity in the area.
- Integrates the school and prospective cultural center.



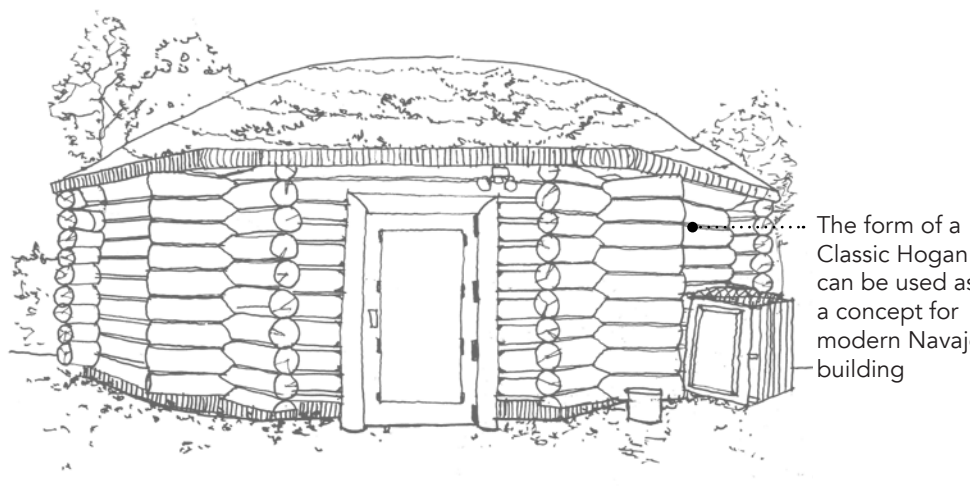
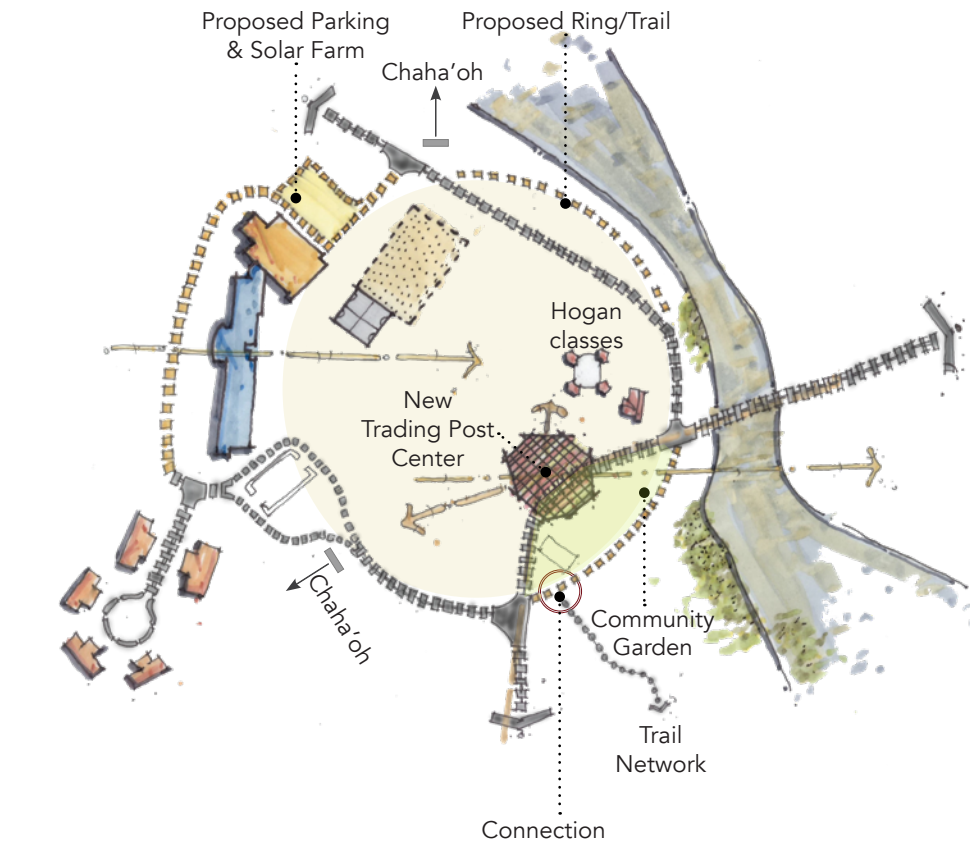
Expanded Cultural Campus

- New arrangement of buildings, revitalizing Trading Post in the same location
- Surrounded by a public garden
- Arts and craft galleries, and vendor parking
- Connected via paved pathways



Circular Loop w/New Trading Post

- Trail network expanded as a loop around the campus.
- Local architecture style of Chaha'oh, aliognd with significant views,
- Hogans, facing east, can also enriched the sense of community and identity.

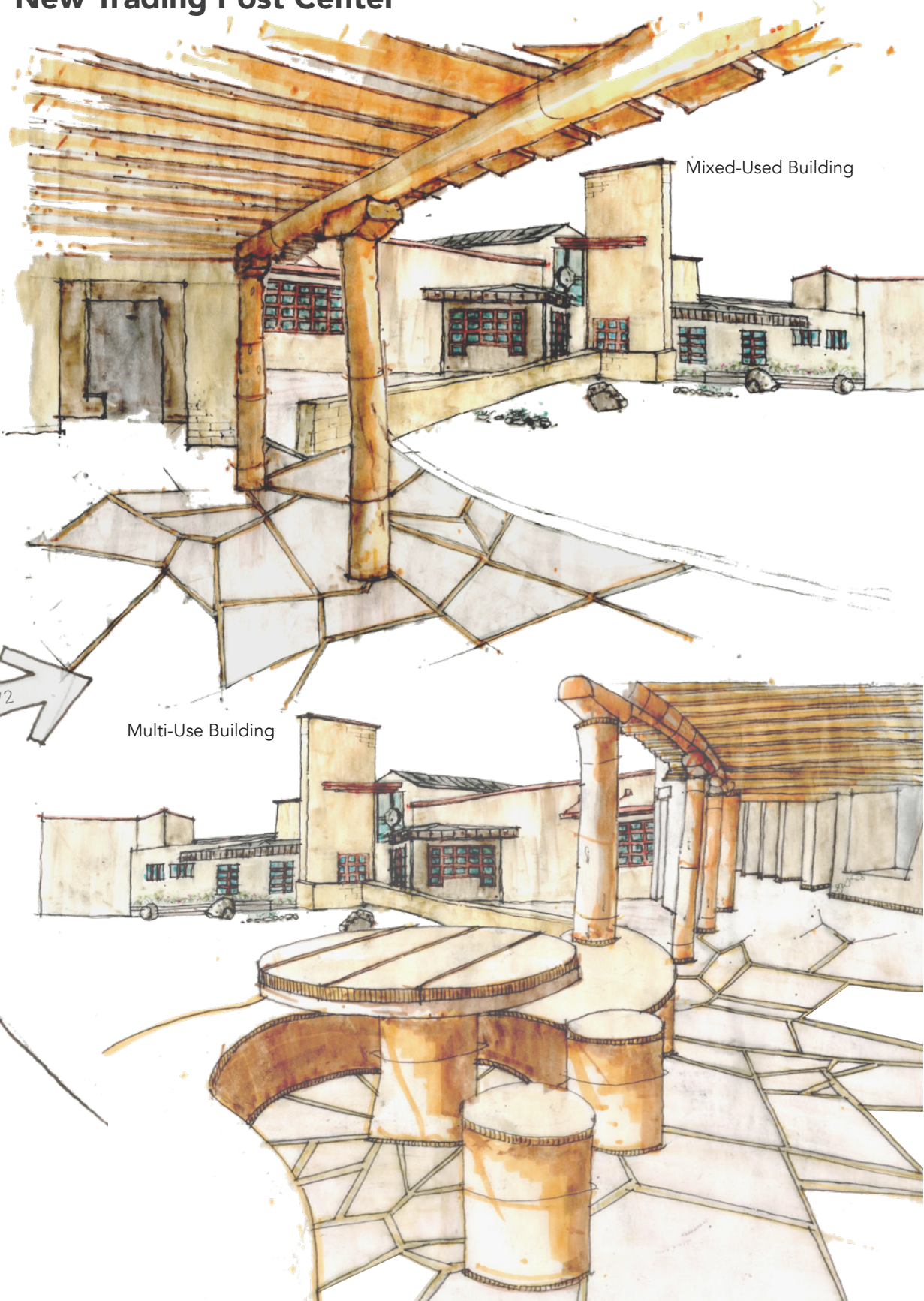


Conceptual Site Plan

Round Rock Cultural Campus



New Trading Post Center



The Broader Community

Round Rock
Reservoir

Route 12
To Lukachukai
Tsalle & Window Rock

C-Store Site

Fallow Fields?

US 191
To Many Farms & Chinle

Round Rock
Chapter House

Old Church

US 191
To Rock Point

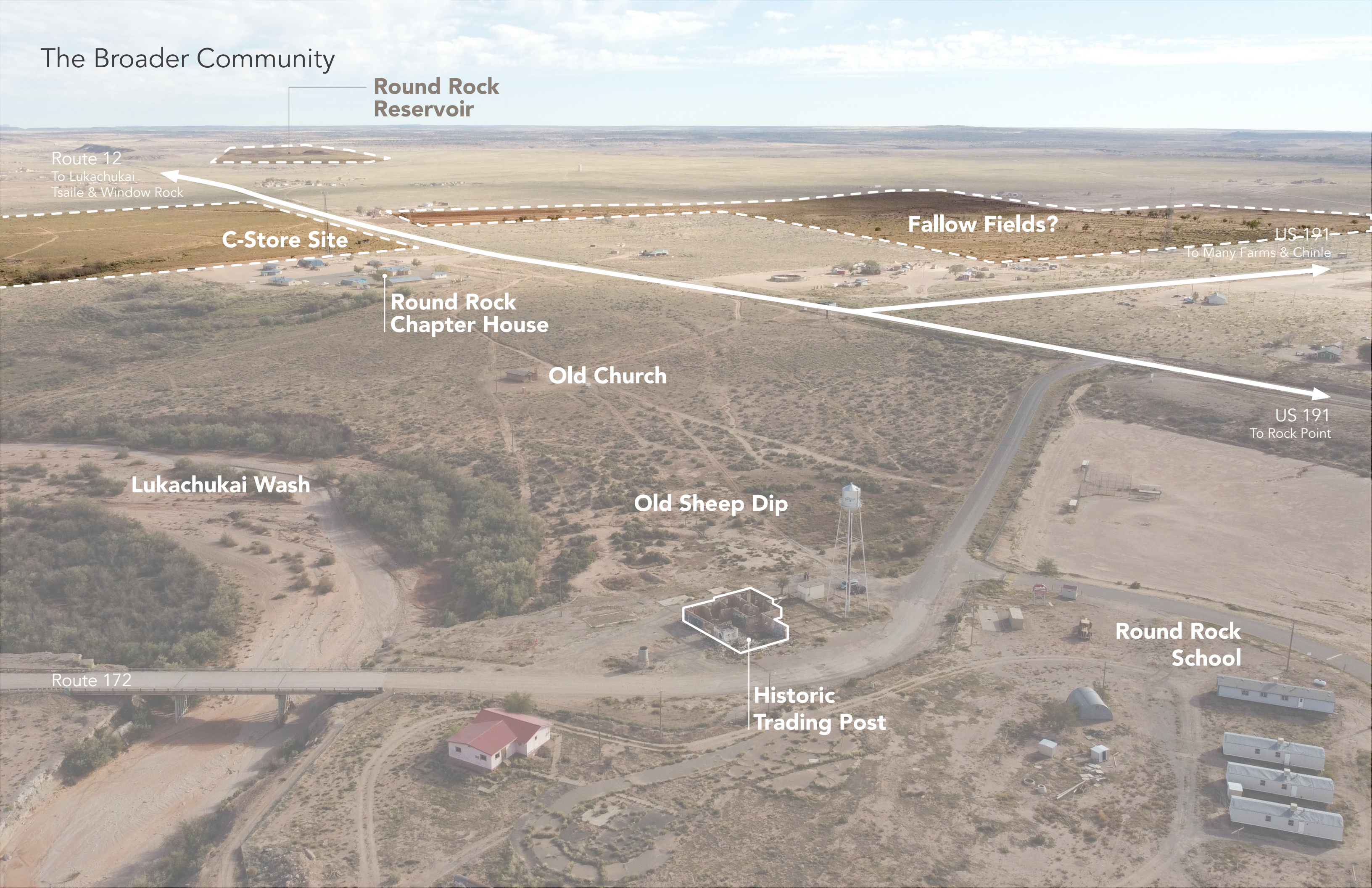
Lukachukai Wash

Old Sheep Dip

Route 172

Historic
Trading Post

Round Rock
School



Community Store & Vendor Market

The re-establishment of a community store at Round Rock could greatly improve the community's access to affordable goods and services, including gas, food, and other basic necessities. Many different types of store models can be found in rural areas and Native communities. Native-owned cooperatives support local, Native food producers and artisans, as well as can be a source for youth education and access to healthy foods. C-stores are also commonly found in Round Rock's neighboring towns as a way to provide for immediate, basic needs. Additionally, a community store could also be designed to include renewable energy infrastructure (solar panels, rainwater harvesting and/or greywater filtration), which could benefit both the community and tourism.

Outdoor Spaces
Incorporating outdoor, shaded seating areas into the design may create a natural place for community members and visitors alike to gather, sell goods, and rest. An intentional, shaded vendor market could be a valuable asset for improving the collective sales of goods by creating a consistent and enjoyable place for vendors to assemble.

PROGRAMMING CONCEPTS

Co-op or community-owned

Amazon Lockers (mail)

Cafe (with wifi)

Laundry Mat

Restaurant

Fresh-baked goods

Traditional food items (eg. blue corn mix, flour + juniper ash for Blue Corn Mush)

Community printer

Rental gear (eg. camping, tourism, etc.)

Outdoor seating

(Community) Solar

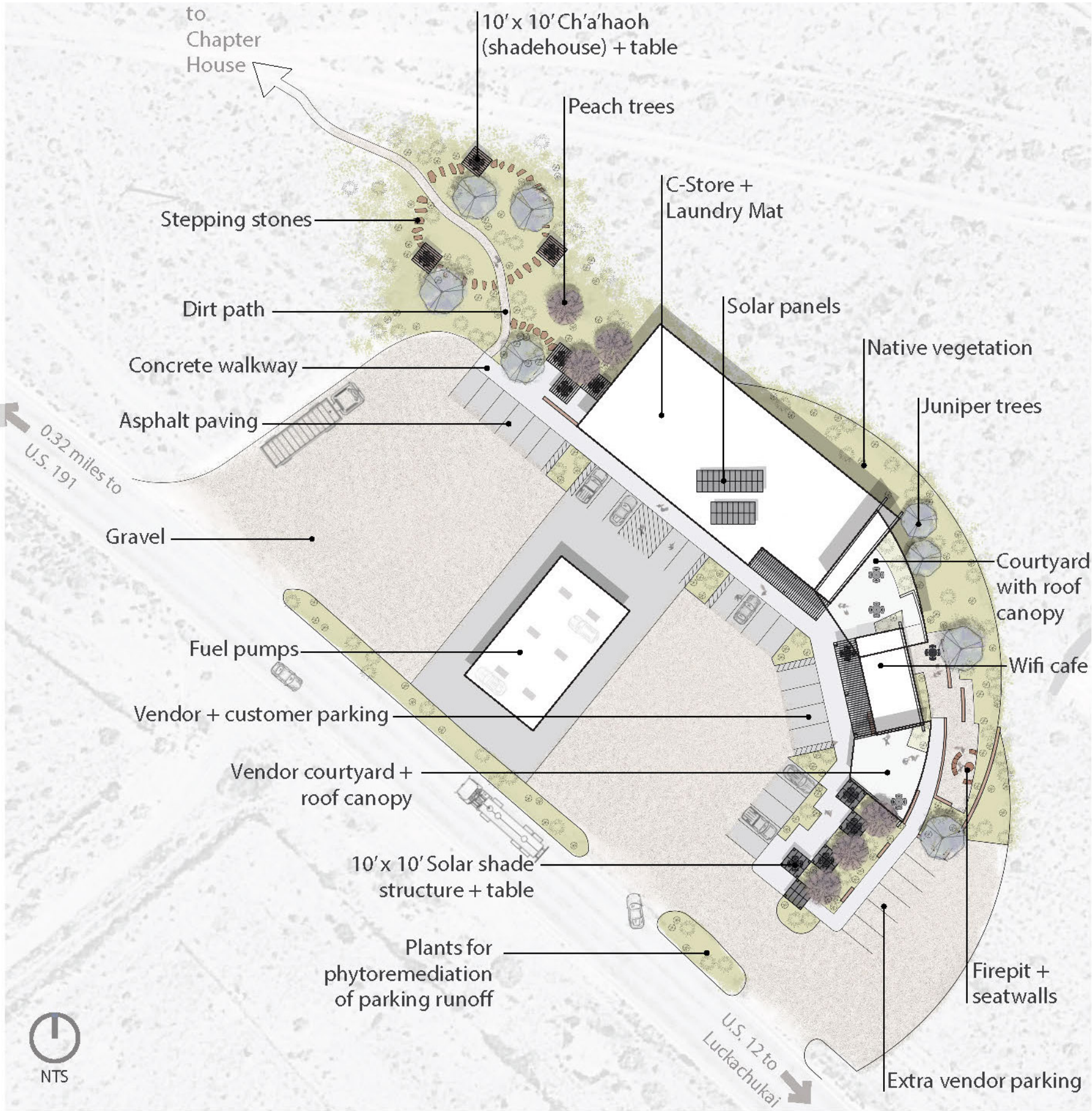
Rainwater harvesting

Intentional vendor spaces (eg. parking, flexible space, shaded areas)

Firewood

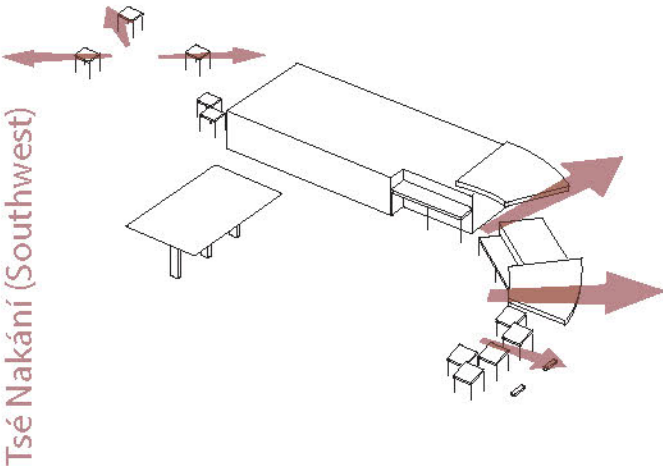
Artisans

Food



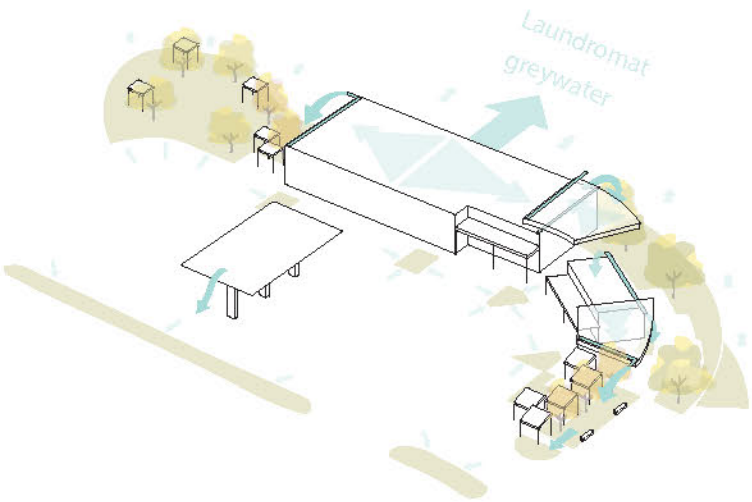
In this design concept of the community store, views looking towards the east to the Chuska Mountains are framed by courtyards with tall roof canopies, highlighting the beauty of the land. The southeastern courtyard, in particular, can be used as a shaded, flexible vendor area, supplemented by the nearby vehicle parking and shaded picnic tables. Roof rain channels direct rainwater to native vegetation beds, as well as to the small peach orchard situated between the solar shade structures.

Chapter House (Northwest)

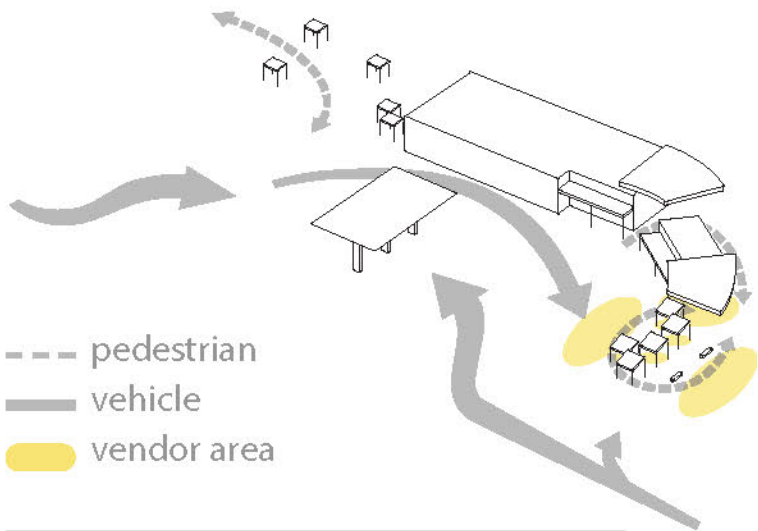


PROMINENT VIEWS

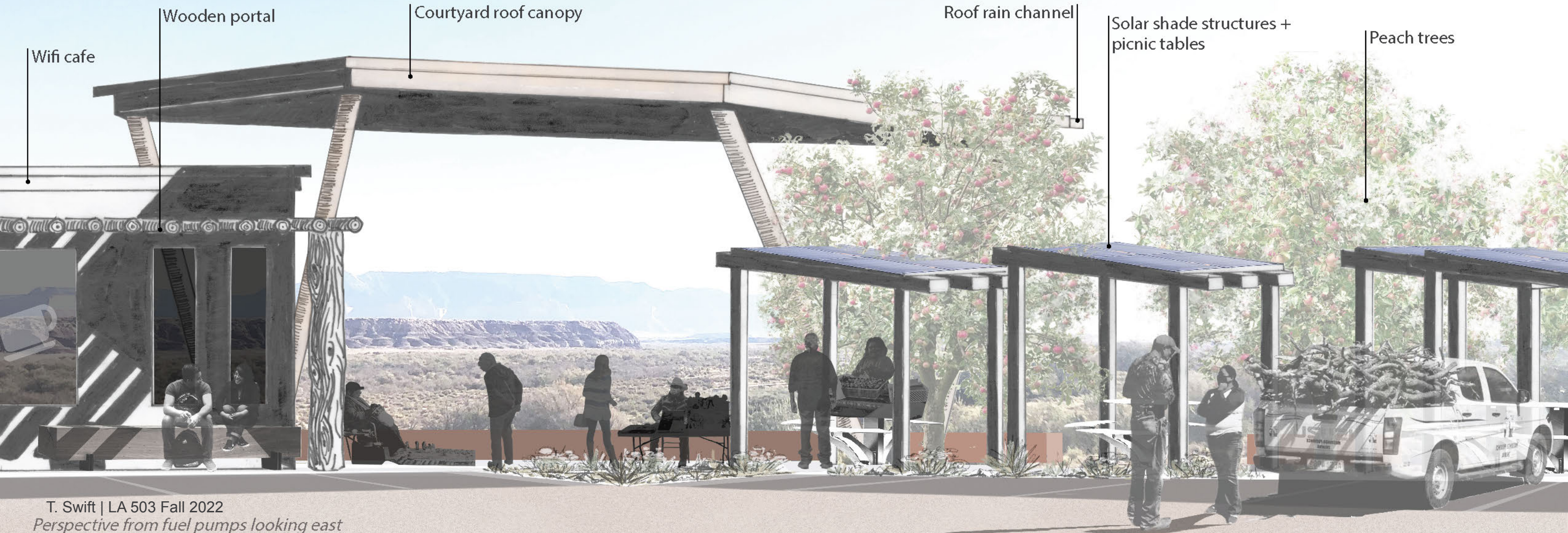
Chuska Mountains (East)



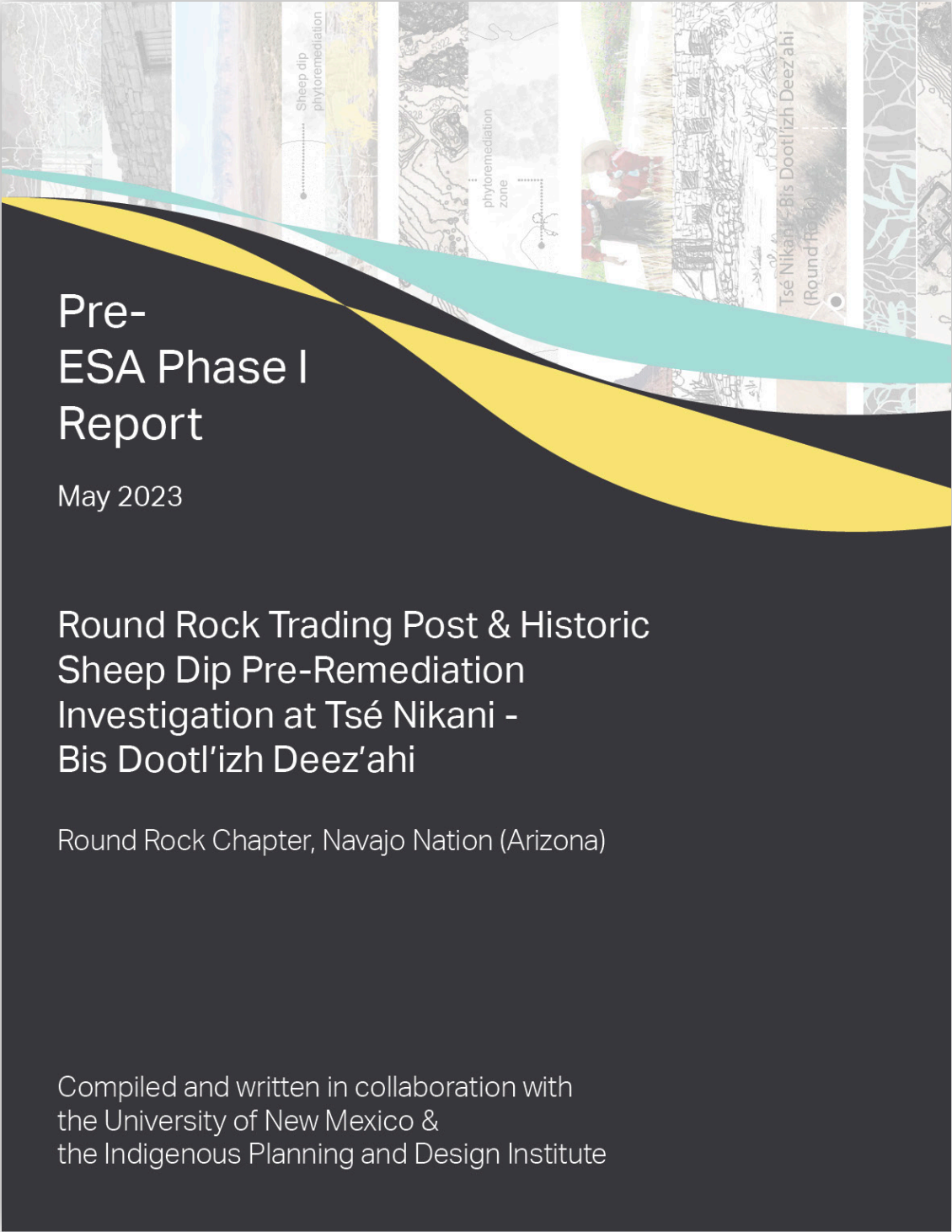
RAINWATER HARVESTING



CIRCULATION & VENDOR AREAS



Aligning With Regulatory Process



Pre-ESA Phase I Report

May 2023

Round Rock Trading Post & Historic Sheep Dip Pre-Remediation Investigation at Tsé Nikani - Bis Dootl'izh Deez'ahi

Round Rock Chapter, Navajo Nation (Arizona)

Compiled and written in collaboration with the University of New Mexico & the Indigenous Planning and Design Institute

have last been used in the 1970s⁴. The current site is also Chapter-run land.⁵ The approximate area encompassing the original sheep dip infrastructure is around 8,800 square feet. The area of the circular sheep corral is approximately 4,700 square feet.

The surrounding area to the Trading Post and sheep dip is primarily rural residential and Chapter-run land.



Figure 1. Tsé Nikani - Bis Dootl'izh Deez'ahi (Round Rock)

Figure 25. Historical Photograph of Navajo People Dipping Sheep

HISTORICAL DATA

The Trading Post

Information gathered by the University of New Mexico's iTown Studio in the Spring of 2022 speak to the historical importance of Trading Posts in the Navajo Nation. After the Long Walk, Trading Posts were places of much needed food and supplies when communities returned in the 1860s to the damaged fabric of their way of being, including disrupted lands and subsistence agriculture livelihoods. Trading Posts were connections between local communities and greater, outside markets, as well as tourist attractions by the early 1900s. Trading and goods were seasonal. Examples of goods included wool, weaving, silversmithing, meat, seasonal foods, firewood, and jewelry. Oftentimes, Trading Posts, like the Round Rock Trading Post, operated on lines of credit to community members.

The Round Rock Trading Post was founded in 1890/1891 by Chee Dodge and Stephan Aldridge. In 1990, "the trading post was sold to Thriftway, but was purchased several years later by the Yazzie family. The Round Rock Trading Post is one of the few trading posts to have been originally owned by a Diné person as well as being Diné owned upon its closure in 2013" (UNM iTown, 11).

Residents of Round Rock also reported a historic flour mill formerly located directly to the north of the Trading Post, across Round Rock School Road. No apparent remaining infrastructure of this historic mill exists today.



Figure 17. Round Rock Trading Post

BROWNFIELD REMEDIATION NEXT STEPS...

BIA is responsible party for the sheep dip contamination + remediation

- Acquire SDV141 soil sample documents from BIA in Gallup, NM

The Navajo Nation is the responsible party for the Trading Post contamination + cleanup as the end leaser of the land and site.

ESA Phase I

Sheep Dips → Arizona Department of Environmental Quality's Brownfield Assistance Program (ADEQ BAP)
P: 602-771-2296
website: <http://azdeq.gov/brownfields>

Trading Post → Navajo Nation Division of Economic Development (Tsaile and Peña are precedents of trading posts which have been properly demolished, but do not have any "replacement" development to-date).

Review ESA Phase I findings + recommendations

ADEQ BAP
Kansas State University Tribal TAB
Ms. Jennifer Clancey

ESA Phase II

Will require a contractor to sample soil and provide options for remediation.
U.S. EPA Region 9 (San Francisco) Targeted Brownfield Assistance

Funding Options

It is possible the Navajo Nation Division of Economic Development could fund the contractor and remediation of the Trading Post site. There may also be funding opportunities from the U.S. federal government.

The Round Rock community continues to have conversations about future visions for the Trading Post and sheep dip SDV141 sites, including but not limited to beginning to identify future collaborators, architects and/or develop plans for redevelopment.

Pre-ESA Phase I Report (May 2023)

51



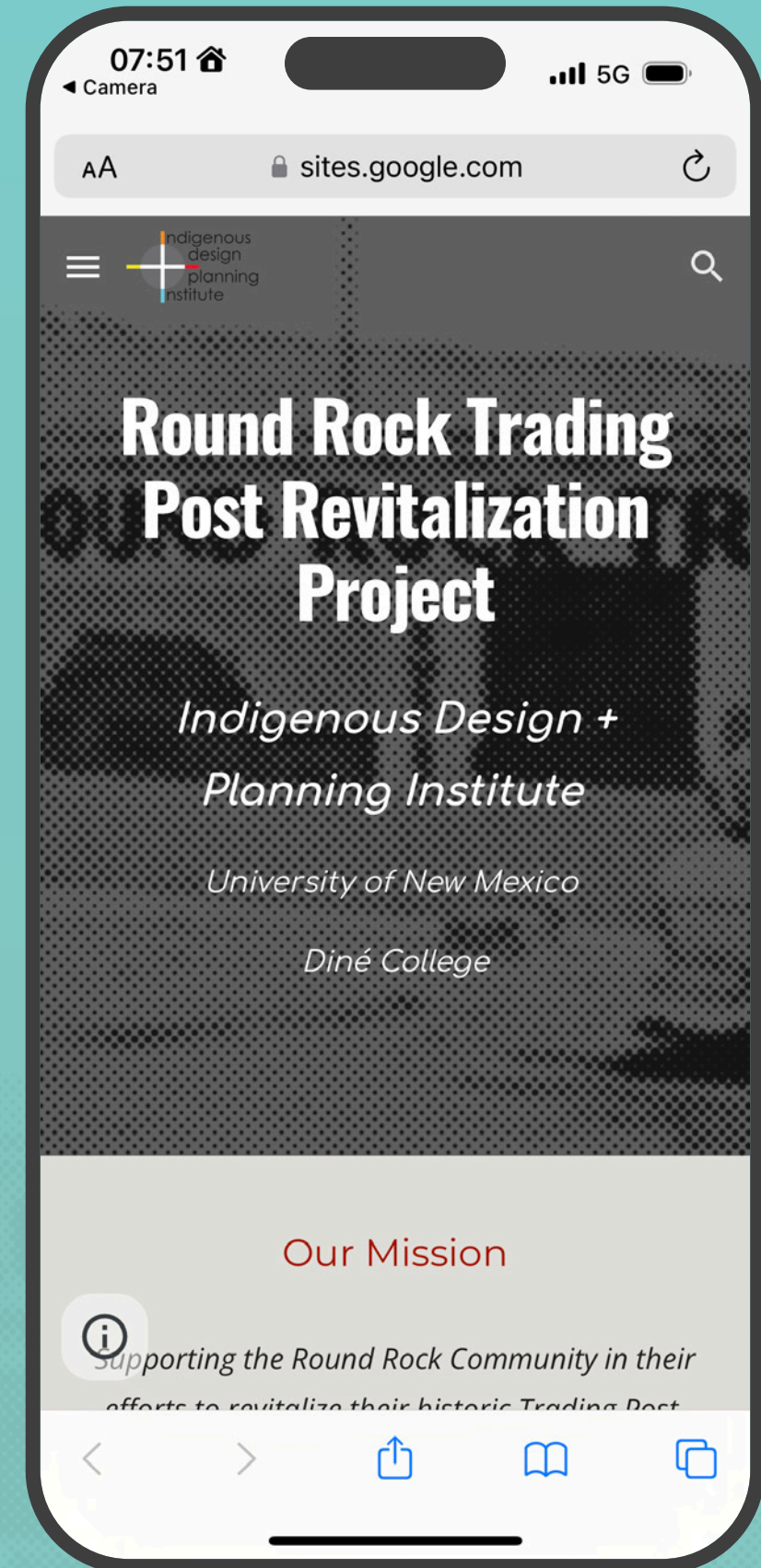
Turn on camera app



Frame the QR



Click the pop-up



Ahé hee'!

Thank you!

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement (TR-84085401) to Kansas State University. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

Anthony Fettes PLA, ASLA, PDC
Associate Professor, Landscape Architecture
iD+Pi Faculty Affiliate
University of New Mexico



With Funding and Technical Support From:

