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SUSTAINING RESILIENCE IN THE RURAL LANDSCAPE
A CASE STUDY IN COMMUNITY DESIGN

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Abstract

As human populations have grown, so has the intensity of our intervention in the landscape. Since the industrial revolution, these interventions have been increasingly designed to facilitate the needs of the economy, impacting the way societies utilize and are connected to the landscape. Landscape Architecture is a broad field that encompasses all scales of design, and is not limited to the aesthetic. The physical composition of elements within the landscape has tremendous impact both on ecosystem function and community dynamics. Since the industrial revolution, human interventions in the landscape have encouraged commerce beyond the human scale, degraded local and global ecologies, undermined communities (both rural and urban), and contributed to epidemics of disease, food insecurity, and mass instability. In the rural United States, a shift in the way land uses are arranged and emphasized can simultaneously restore ecological function and community resilience, creating rural landscapes that are more diverse, independent, and capable of supporting each other. Many rural communities simply lack an infrastructure for community-scale action; they have become dependent on larger networks of production, processing, and distribution. This thesis attempts to demonstrate that by utilizing design to build relevant local infrastructures, rural communities can be strengthened through place making. Chapter 1 of the thesis is an account of the impacts past design and policy decisions have made on the landscape. Chapter 2 details specific impacts to rural communities. Chapter 3 puts forward strategies to retrofit rural communities in order to foster resilience and sustainability. Chapter 4 and Appendices describe a case study undertaken to inventory and analyze the specific factors affecting the Williams Creek Watershed in Southern Oregon and the design steps proposed to revitalize the community.

Table of Contents

Acknowledgements

This thesis represents a synthesis of my passions for art, design, nature, and agriculture, formed through my education and experiences. Among the many who have influenced me – my family, my teachers, and my friends – there are some individuals to whom I owe explicit thanks for helping me along this path.

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Chapter 1 | Post-industrial Design and Policy

Introduction

Since the industrial revolution, a change has taken place in the American landscape. As the policies of the United States have shifted, favoring large-scale production and industry, the design and uses of the landscape have reflected that change. The rise of the automobile, coupled with the development of the interstate highway system after World War II, set the stage for the modern industrial network. Post-war, an abundance of petrochemicals were repurposed for the farm-field, resulting in a boom of pesticides, herbicides, and fertilizers. During the 1970's, this system was given a massive boost by the policies implemented by then Secretary of Agriculture Earl Butz, who renovated farm policies to lower food prices, while simultaneously encouraging the cultivation of large-scale mechanized monocropping.

Together, the technology and policies of this Green Revolution have shaped the modern agricultural landscape. From these policies arose the modern food industry, based primarily on heavily processed products that have been the subject of multiple critical works. Aside from the health effects of such a food culture – modern diets are noted for their links to obesity, diabetes, and other diseases – the renovated modern landscape had other impacts (Harvard School of Public Health 2009). The rise of agribusiness appears to be a form of positive growth, but while industry benefitted, small communities and individuals within the system suffered. Environmental damage in the form of habitat, species, and biodiversity loss, along with erosion and pollution, created shifts in American ecologies, threatening some of this country's most iconic landscapes. Further,

the destruction of these landscapes and the disempowerment of those who reside on them have degraded rural culture and human connections to the landscape. Fundamental to these connections is the relationship between an individual, their community, and their food. Wendell Berry said "Eating is an agricultural act (Berry 1990, 145)" and most literally, the act of eating is synonymous with the act of an individual internalizing nature. As such, the act of eating becomes the most basic connection between an individual and their environment. Today this act can be quite confusing to consumers, as agricultural debates and trends take center stage, and terms like *organic, locavore, Commuity Supported Agriculture (CSA), pasture-raised, whole,* and *natural* describe the simple necessity once universally known as *food.*

Shifts in Landscape Composition

Ray Oldenburg writes:

> What may have seemed like a new form of community – the automobile suburb – multiplied rapidly after World War II. Thirteen million plus…qualified for single-family dwellings… In building and equipping these millions of new private domains, American industry found a major alternative to military production and companionate marriages appeared to have found ideal nesting places… We did not live happily ever after. (1999, 3)

Following WWII, the modern American suburb was founded. Characterized by winding streets, cul-de-sacs, and the frequent absence of civic amenities such as employment opportunities, libraries, and shops, these suburbs have come to define the American lifestyle. As they provided safety, luxury, and privacy, they created a vast separation

between the main realms of the human experience, the home, the workplace, and what Oldenburg deems the "third place," the social gathering space (1999). Prior to the industrial revolution, two of these facets were often one in the same (the home and the workplace), and the third place was never very far removed. However, with the advent of the convenience-based (or car-based) neighborhood, the relationship between individual, family, and community shifted from one of inclusion to one of exclusion (Oldenburg 1999).

Simultaneously, the same manufacturing processes used to create weapons were repurposed to manufacture fertilizers, pesticides, and herbicides that enable crop yields that far exceed those achieved by natural nutrient cycling (Conway 1999). Following an advance in breeding that allowed crops to be grown in close proximity, and mechanization that allowed for greater efficiency in the farm field, agriculture took on a new look as well. Smallholdings were aggregated into large tracts, and farmers saw harvests per acre double and triple. Between 1950 and 1984 grain production increased by 260%, with unprecedented yields carrying into the 21st century (Kindall and Pimentel 1994). With a change in distribution and a shift in the production of food, the rural landscape, once dotted by farmhouses and hedgerows, was denuded as farmers increased their holdings and demolished anything that would impede their combines. The result is a geometric monocultural landscape, shaped by efficiency and post-war technological advances. Today, monocropped landscapes can be found in many rural areas (Fig. 1).

Unfortunately, designing for efficiency and technology caused a massive imbalance within the landscape. A cultural landscape marked simultaneously by abundance and desolation was formed. This change destroyed the once self-sufficient small rural community, and lively towns were vacated as families flocked to suburbia. In both instances, communities suffered in the name of convenience.

Figure 1: Aerial photographs showing the same farmland in 1948 (at left) and 1959 (at right). Note shift in landscape composition, field size, and reduction of natural features. (Hawthorne Valley Farm n.d.).

Ecological Impacts

With America's agricultural shift came a shift in the overall matrix of the landscape. The impacts of this spatial rearrangement have not only been social, but ecological as well. Marked increases in pollution, soil erosion, and habitat loss have resulted in shifts in species composition and biodiversity loss.

Pollution

Paul Hawken, author of *The Ecology of Commerce,* writes that in the process of industrialization, "the land, water, air, and sea have been functionally transformed from life-supporting systems into repositories for waste (1994)." Indeed, for the entirety of the earth's history, cycles and processes were dependent on renewable resources. Organisms, separated into categories of producers, consumers, and decomposers all operate within a closed-loop system that derives its energy from the sun. With the introduction of non-renewable fossil fuels, the human species began to operate outside of nature's closed-loop. Although the energy stored in fossil fuels and mineral resources originally came from the sun, its modern use represents a significantly greater solar investment. Today, we burn approximately 27 years worth of stored solar energy every 24 hours (Hawken 1994). The energy requirements of agriculture alone has increased over 100-fold since the Green Revolution. Additionally modern industry has, for the first time in world history, created a system that generates waste that cannot be utilized by any other species or process. The earth's capacity to absorb this waste is highly limited, especially in the case of pollution stemming from the application of agrichemicals (Hawken 1994). Many pesticides in use worldwide contain chemicals in the organochlorine group (including dichlorodiphenyltrichloroethane, commonly known as DDT). These compounds are known to persist for thousands of years, and as they are released they build up both in the environment and in our bodies (Hawken 1994). Wetlands, and shallow lakes in Iowa turn shades of brilliant red and green when runoff containing nitrogen-rich fertilizers causes algae blooms that dominate entire ecosystems and create hypoxic zones. As the collective waters drain to the Mississippi River, they cause one of the most well known of these

hypoxic zones in the Gulf of Mexico. Such pollution resulting from the application of fertilizers and pesticides has resulted in the closure of fishing grounds, the discovery of whales riddled with tumors, global decline in fertility, increases in cancer rates, and neurologic damage to many species (Hawken 1994). The full effects of the creation and discharge of these wastes are still unknown, with multi-generational health consequences a strong possibility (Bromer, et al. 2010).

Soil Erosion

Although chemical pollution is one consequence of industrial agriculture, another related consequence is soil erosion. In the landscape soil naturally erodes, carried away by wind and water. In order to maintain balance, the rate of erosion must be equal to or less than the rate of soil creation, but in most modern agricultural systems the rate of erosion vastly exceeds the rate of soil creation, resulting in global losses of 25 billion tons of topsoil yearly (Hawken 1994). In the United States, the Dust Bowl of the 1930's was the result of drought combined with extensive soil erosion stemming from poor agricultural practices. Today erosion is far more insidious, with loss of topsoil threatening agriculture in some regions, and sedimentation reducing water quality in lakes, wetlands, stream, and rivers. Annually, millions of hectares are abandoned due to soil degradation, and global topsoil depth has decreased overall (McNeely and Scherr 2003). In addition to sedimentation of water bodies, these losses contribute to eutrophication of water bodies, and fertility loss as agricultural lands are literally washed to sea. Likewise, ecosystem services provided by soils are compromised. Ecosystem services are natural functions that provide benefits to humans, and these include production of food, storage of organic

matter, water, and nutrients, and provision of habitat for macro and microorganisms (which themselves provide a variety of ecosystem services) (Davidson 2005). Soil erosion has also been shown to reduce agricultural yields by up to 62% (D. Hicks 1995). Primarily, poor management practices exacerbate erosion. A farmer within the industrial agriculture system is encouraged to farm as efficiently as possible; this includes practices such as mono-cropping, the removal of hedgerows and vegetated buffers, the cultivation of slopes and soils that are not suitable for planting, and the use of chemicals to improve fertility rather than true soil building.

Water Usage

Fresh water is quickly becoming one of the scarcest resources on the planet, with some researchers predicting future wars as a result of water shortages and water hoarding (Leslie 2009). The United States is a fairly fortunate country in hydrologic terms, but a history of poor water management has left much surface water contaminated by pollution or disease, with groundwater receding at alarming rates. In the Midwest region of the United States, an area once characterized by its ability to absorb and infiltrate water through its vast network of wetlands and shallow lakes, drainage tiles flush water out of agricultural fields and into drainage ditches, which carry the water directly to streams, the Mississippi River, and eventually the Gulf of Mexico. This drainage network does not allow water to infiltrate or charge underground aquifers; instead, in times of precipitation the drainage system is easily overwhelmed and flooding ensues. Rushing volumes of water contribute to erosion in the field and the riverbank, and great human cost has been incurred in downstream areas as a result of rising water levels. Flooding in Iowa in 2008

reached 500-year levels, though the storms that caused them were not of 500-year intensity; agricultural damage alone for the flood event was estimated at $3 billion (Service 2008; Hicks and Burton 2008). Drainage tiles reduce the capacity of the ground to store water, and so paradoxically farmers must also irrigate their lands, further draining aquifers that are not being recharged. The Ogalala Aquifer, the water source that irrigates America's breadbasket, is being drained at a rate of 20 billion gallons per year, leading to estimates that in forty years it will run dry (Hawken 1994).

Diversity

Diversity within the landscape describes both biodiversity – a measure of variety and genetic variation in species – and diversity of management. Heterogeneity within the landscape ensures a unique landscape mosaic, with opportunities for a variety of species and land uses. However, land use practices have evolved to the detriment of all diversity within the landscape, increasing competition within communities and threatening valuable ecosystem services that are dependent on species interactions (McNeely and Scherr 2003).

European settlers in the United States were amazed at the abundance and diversity they saw when they arrived in the New World. Many accounts exist detailing massive herds of buffalo, and flocks of birds that extinguished the sky (Wilcove 1999). These accounts fueled beliefs that the exhaustion of resources in the New World was impossible, and set the stage for a massacre of epic proportions as settlers hunted and clear-cut to make way

for the field and the plow. The following example details the diversity and abundance of fauna that once existed in Pennsylvania:

> In 1760...north of Harrisburg, Pennsylvania, two hundred settlers encircled an area of approximately 700 square miles and slowly marched inward, shooting any animal they saw…By the end of the hunt, the settlers had killed "41 panthers [mountain lions], 109 wolves, 112 foxes, 114 mountain cats [bobcats], 17 black bears, 1 white bear, 2 elk, 198 deer, 111 buffaloes, 3 fishers, 1 otter, 12 gluttons [wolverines], 3 beavers and upwards of 500 smaller animals" (Wilcove 1999).

With the reduction in population size of many iconic species, the mountain lion, buffalo, and grey wolf were removed entirely from the Appalachians, with the populations of many other megafaunal species compromised across the country. Today, the landscape is far different from what it was when European settlers first arrived, with massive shifts not only in urban landscapes, but in rural ones as well. It is systematically more difficult for individuals across the United States to find quiet areas of respite, native landscapes, and expanses of natural ecosystems. The change is hard to measure, but one indication comes from the cover of old growth forest, which remains a symbol of untrammeled nature (Fig. 2). The direct impacts of hunting on species composition can still be seen today, but indirect impacts of landscape management have also played a massive role in the re-composition of species in the United States. Diversity loss is significant because variation in both species and genetics contributes to resilience (McNeely and Scherr 2003). More variety within a given system translates directly into the ability of that system to withstand trauma. As diverse natural ecosystems are replaced by homogenous

monocultures, the landscape becomes less dynamic and more vulnerable. The habitat loss that also results from the establishment of barren monocultures threatens biodiversity on a massive scale, the implications of which are hard to predict; all species contribute in some way to ecosystem services, and the threshold for the function of global ecosystems in relation to biodiversity loss looms (McNeely and Scherr 2003).

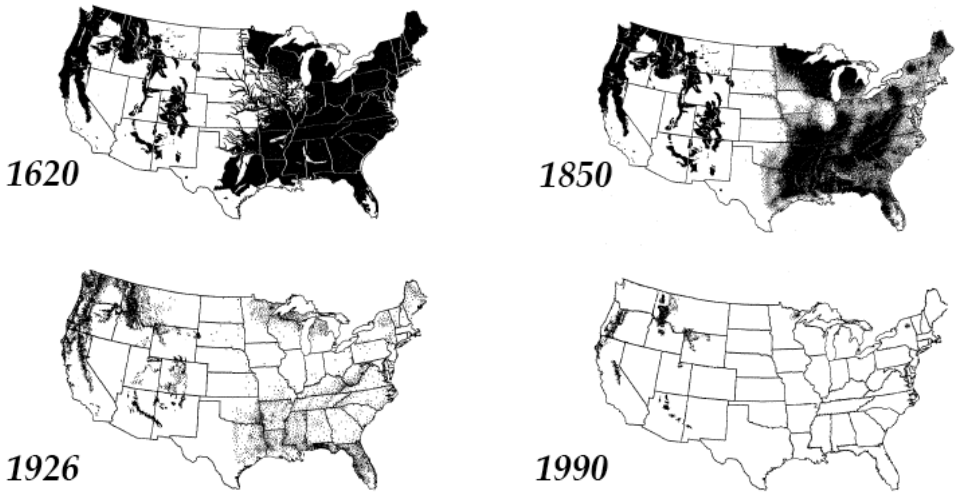

Figure 2: Reduction of old growth forest in the United States, signaling a massive shift in landscape composition (University of New Hampshire 2006).

As resource extraction began on a large scale, forests were felled for the dual purposes of extracting timber and extracting fertility in the form of agriculture (Wilcove 1999). Specifically, changes in the landscape related to agriculture resulted in a more homogenously ruderal landscape, marked by constant disturbance, human intervention, and pioneer and non-native "weed" species (Wilcove 1999). Native diversity gave way to the favored and introduced species of Europeans. Although the landscape moved toward homogeneity, individuals were still limited in the amount of land they could cultivate; diversity in crop choice and management still persisted, and practices varied greatly by region. Landscape diversity as impacted by humans has been recognized as an

important contributor to landscape ecology, as well as strengthening the resilience of communities that practice diverse forms of agriculture (Marsden, Sonnino and Morgan 2008).

Today, farm policy encourages the cultivation of commodity crops like corn and soy, and in many places these crops blanket the landscape. The rise of commodities coincided with the fall of specialty regional crops. Likewise, regional management practices fell by the wayside, as did vernaculars of design and aesthetic.

Human Impacts

As industrial agriculture took hold in the Unites States, the shift in landscape composition translated directly into cultural shifts. As noted previously, food represents a direct connection between an individual and their environment, and the act of eating can be seen as an act of internalizing nature. But everywhere mechanization took hold, deterioration of individual connections to the landscape took place. Historically, procuring food has been the primary activity engaged in by humans. Only in the past century has the responsibility for food production been taken out of the hands of individuals, families, and communities along with the human heritage of social ritual, pattern, and relationship. The result has been a terrible loss in rural communities.

Connection to Nature

If the act of eating represents the literal consumption of nature, the act of procuring food directly from the land constitutes the most intimate connection an individual can

undertake with the environment. The works of Wendell Berry and Aldo Leopold extol this mentality, drawing connections between individual connection with nature to notions of ritual, family, community, and spirituality. Leopold famously wrote in his *Sand County Almanac* "There are two great dangers in not owning a farm, one is the danger of supposing that breakfast comes from the grocer, the other that heat comes from the furnace (Leopold 1949, 6)." In 1790, 90% of the workforce was associated with agriculture, while in 1990 only 2.6% of the population was employed on farms (Utah State University n.d.). As the scale and intensity of agriculture has increased, mechanization and other technological advances have required less human labor to produce food (Kindall and Pimentel 1994). Inherent in the modern agricultural system is a scale that has removed most individuals from the process of growing food, and with the advent of highly processed foods the responsibility of preparing food has declined as well. Concepts of food culture, *terroir*, seasonality, and practicality are no longer relevant, and as a result other cultural ties to the land have suffered.

Health

Health impacts of the industrial agriculture system occur as a result of both production and consumption of its products. In both cases, the impacts on individuals, families and communities constitute externalized costs of the system, which are not reflected in the monetary value of the product.

The industrial agriculture system depends on a variety of inputs to maintain soil fertility and high yield. These inputs range from chemical fertilizers to pesticides, fungicides, and

herbicides that reduce competition and disease within the desired crop or species. Many of these chemicals are synthetic, and even products approved for use on certified Organic fields are known to pose risks to individuals and ecosystems (Wratten 2010). A farmer who uses herbicides increases his risk of contracting certain types of cancer by six times, and his children are significantly more likely to contract certain forms of leukemia (Hawken 1994). But the health risks associated with agrichemicals do not stop at the farm gate. Compounds that are known to persist in the environment indefinitely drain into waterways and are even consumed in trace amounts on the produce to which they were applied; one study found up to 50 different pesticides on a single peach (Eng 2009).

Summary

The Green Revolution was undoubtedly a boon to the global population and economy. Its innovations allowed for unprecedented harvests, increasing the global food supply and expanding food access in developing countries (Conway 1999). However, the force of growth has not also proven to be a force of stabilization; prior to 1960, most nations were self-sufficient in their food production, yet following the Green Revolution only a few are capable of meeting the nutritional and caloric needs of their populations (Kindall and Pimentel 1994). These technological advances have come at great human and environmental cost. In order to reestablish functional communities and ecologies, it is necessary to seek solutions that strengthen community connections to the environment, while restoring human and environmental health, and empowering communities to provide for their own nutritional needs.

Chapter 2 | Rural Communities Today

Abundance and Scarcity

With the advent of agricultural policies of the 20th century, one major benefit described by proponents is the low-cost of food as a result of subsidies that support maximum production. Today, Americans spend around 10% of their income on food, representing the lowest investment in sustenance to be found in any industrialized country (Pollan 2006). The money saved theoretically can be utilized to support a growing economy and allow Americans to enjoy a lifestyle marked by wealth, luxury, and leisure. Indeed, the American population's insistence on low food prices (so low that they often do not cover the cost of producing the food itself) places nourishment low on the priority list, far behind entertainment and communication[1]. As we examine modern agricultural policies and land-use decisions however, it becomes evident that the environmental and cultural costs of our agricultural production are externalized, and paid by the health of ecosystems and communities both rural and urban.

Of the two environments, rural communities have traditionally experienced a measure of regulatory neglect, possibly due to their low population density, and most likely in recent years because of their poor tax base. As a result many rural communities experience

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[1] Close to 90% of households own televisions, and more than half of Americans own cell phones, while 11.1% of the U.S. population remains food insecure, and currently the United States does not grow enough produce to provide the five daily servings of fruits and vegetables to the entire population. (Pollan 2006; Nestle 2002; Nord, Andrews and Carlson 2008)

unsavory consequences of the industrial system, with high rates of poverty, disease, and drug use, and low rates of education. Immigrant populations that labor in industrial fields and live in rural communities suffer from reproductive abnormalities, birth defects, and have higher mortality rates and a lower life expectancy than the rest of the population (Peña 2005). In rural populations, 14.2% live in poverty as compared to 11.6% of metropolitan populations, and the pattern of higher poverty rates persists across all demographics of race, ethnicity, gender, and age (USDA Economic Research Service 2004). Economic hardships borne by rural communities are inherent to the nature of agriculture and other resource-based systems. Agriculture is one of the only occupations that buys retail and sells wholesale, and the modern agricultural system disempowers farmers further by placing production ahead of quality, environmental impact, sustainable practices, and the ability of farmers to earn a living wage.

Rural Disparity

Health

The nature of health in rural communities is not only affected by occupation. The landscape shift that resulted in smaller, less vibrant, and more secluded rural communities has also worked to affect the health of individuals living in rural communities. Far fewer individuals are needed to maintain modern farming operations; as a result the manufacturing industry now employs the majority of rural populations (Johnson 2006). Today, although 20% of the population lives in rural areas, only 9% of medical professionals practice in rural areas, with other vital services disappearing from the rural landscape as well (Agency for Healthcare Research and Quality 2009).

Many characteristics of rural America have adversely affected the health of people living there. The employment shift in rural areas literally altered the day-to-day lifestyles of rural residents. Highly mechanized agricultural jobs require less physical activity, as do sedentary manufacturing positions. The secluded nature of rural communities has also lead to a dependence on roads and the automobile. Residents of rural areas often cannot walk to a neighbor's home or to a community center, and must rely on cars as their primary form of transportation. Nutritionally, rural populations have suffered as well because the industrial agricultural system requires a mass export of goods to lucrative markets and processing facilities. For the first time, rural communities lost the potential to feed themselves. Today, food markets across the United States are flooded with highly processed food products originating from distant locations

The combination of the modern Western diet, the layout of rural communities, the lack of care providers and educational facilities, and the lifestyle of rural individuals has lead to great disparities between the health of rural populations and their urban counterparts. Residents of rural counties were 5% more likely to report fair to poor health status than those in urban areas (Bennet, Olatosi and Probst 2008). Rural adults experience higher rates of diabetes and obesity, were less likely to be insured or receive adequate care or preventative care, and less likely to meet federal recommendations for physical activity than those living in urban areas (Bennet, Olatosi and Probst 2008). As out-migration from rural areas increased, especially in younger populations, rural births decreased and the rural population has subsequently become an aging demographic (Johnson 2006).

Economic

The conglomeration of property as a result of modern agriculture, mechanization, and farm policy of the late 20th century resulted in the out-migration of people and amenities from rural areas. Where rural areas were once self-sufficient communities, today many small rural communities can accurately be described as *ghost towns*, with de-centralized economic drivers, low community capacity, and few opportunities for growth. Community capacity is not simply defined as economic wealth; it is also composed of skills, abilities, relationships, resources, and other tools that may be utilized to contribute to quality of life and resilience within a community. Prior to the introduction of industrial agriculture, communities may not have had great amounts of accumulated wealth, but other factors contributed to a strong community capacity. As the social and economic dynamics of rural communities shifted, community capacities declined (See Figs. 3 and 4).

Today, many rural regions are economically depressed. Forty-eight out of the fifty counties with the highest child poverty rates are rural (Johnson 2006). Still, opinion polls indicate strong preference among Americans for small town life, but today the idyll of life in a rural small town is almost certainly a myth (Johnson 2006).

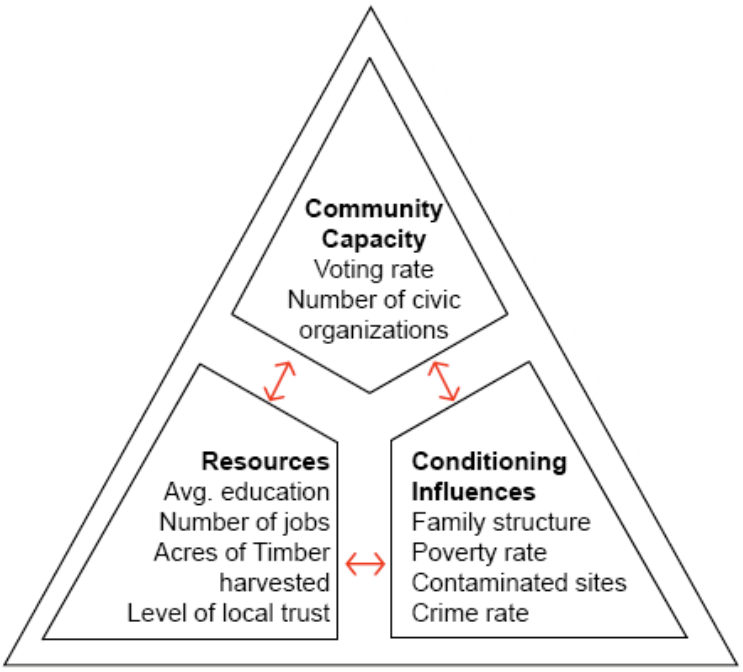

Figure 3: An example of factors affecting communities (Oregon State University n.d.).

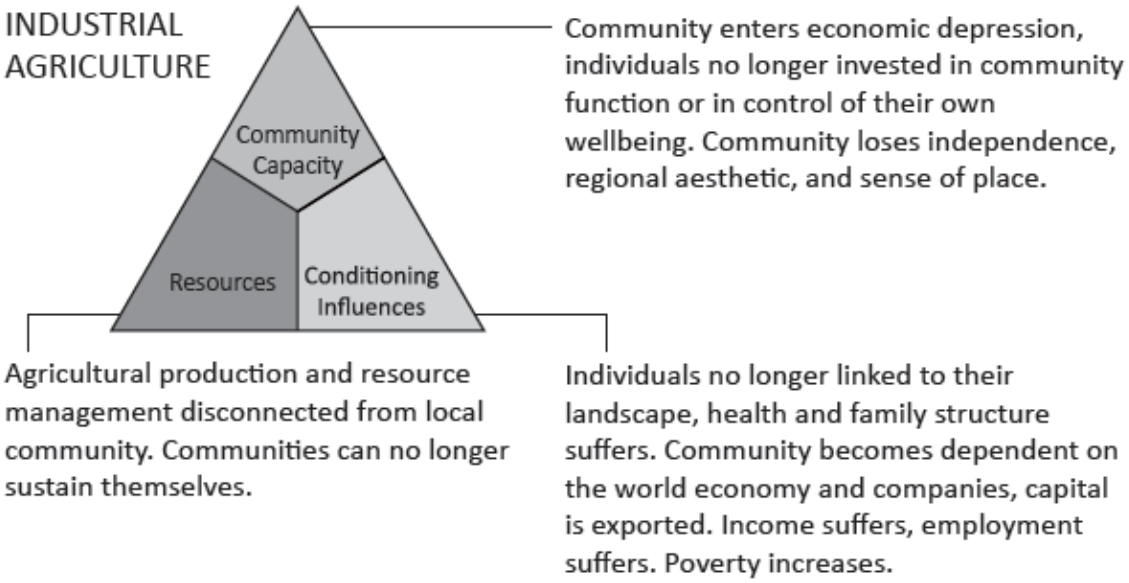

Figure 4: Applying Oregon State University's community model to rural communities impacted by industrial agriculture.

Contemporary Movements

Recently, a number of movements centered on agriculture, food production, and sustainability have emerged. Some terms used to describe these movements are: CSA, locavores, sustainable, green, low-impact, 100-mile diet, organic, whole, natural, slow food, and pasture-raised, to name a few. At their core, these movements represent manifestations of the contemporary emerging ecological worldview, characterized as a holistic response to the modern industrial worldview (Audirac 1997). Table 1 details the differences between these worldviews, depicting a clear paradigm shift from one to the other. For the most part, the movements that embody the emerging ecological worldview have been popularized in the media by authors such as Michael Pollan, and represent responses to perceived shortfalls of the industrial food system discussed previously. The book *The Town That Food Saved* describes one such movement in the town of Hardwick, Vermont, in which budding "agrepreneurs" have utilized these new markets to profit from the sustainable food movements (Hewitt 2009). Often, products of these movements carry a higher value because of their small-scale, specialty processing and the inability of producers to externalize costs. Specialty certifications such as *organic* also carry a cost that adds to product value, inevitably excluding potential buyers. In Hardwick, although the author notes that while the community has benefitted from its emphasis on local agriculture, the exclusion of part of the community is unsustainable, and in some ways contradicts tenets of sustainable agriculture movements (Hewitt 2009). Indeed, economic and social exclusion is a problematic symptom of rural development through new alternative markets (Marsden 2008).

Table 1: A comparison of the Modern Industrial Worldview and the Emerging Ecological Worldview (adapted from Audirac 1997).

The Modern Industrial Versus the Emerging (Postmodern) Worldview

	Modern Industrial	**Emerging Ecological**
Scientific Paradigms	Mechanistic, determinism, linear causality	
	Atomism	
Dominant Discipline	Economics	Ecology
Human/Nature Relation	Conquest of nature	Living in nature
	Domination over nature	Co-evolution symbiosis
	Resource Management	Ecological stewardship
	Nature has utility value	Nature has intrinsic value
	Anthropocentric	Biocentric
Social system	Cultural homogeneity	Cultural diversity
	High consumption life-style	Minimize superfluous consumption
	Metropolitan oriented	Community, bioregion oriented
Decision-making	Top-down	Bottom-up
Economic system	Competition	Cooperation
	Limitless growth	Biophysical limits to growth
	Export and trade	Self-reliance
Technology	Open system; waste disposal	Closed system; recycle and recover
	Large scale, capital intensive	Small, appropriate
Agriculture	Monoculture farming	Poly- and permaculture
	Agribusiness, Industrial farms	Community and family farms
	High input: chemicals, pesticides	Low input: organic
	High-yield hybrids	Preserve genetic diversity

Obstacles to Revitalization

In most cases, innovation in rural communities is attempting to function within the existing physical and economic structure – a structure that was literally built to facilitate large scale, inter-state and transnational commerce. This system was not designed specifically to benefit small communities or business, and often hampers these efforts. These physical limitations present unique challenges to contemporary movements to

shrink the scale of agriculture and commerce. Three of these obstacles are the deterioration of community centers, which serve as a basis for community-based efforts and relationships, scarcity of processing facilities, and lack of retail facilities and markets.

Rural communities have systematically been weakened economically and socially. The exodus of amenities, employment opportunities, and businesses has drained rural communities of the bulk of their resources, and this is most evident on Main Street (Johnson 2006). Privately owned storefronts sit vacant, some replaced by gas stations or chain grocery stores that rarely source produce from local areas. In the Midwest, small towns are dominated by the local grain elevator, and Main Streets in rural communities throughout the United States have lost their luster. There is no space to qualify as a "Third Place" (Oldenburg 1999) and no opportunity for recreation or entertainment. In many of these defunct rural communities, the only element that differentiates one town from another is an embellished sign or sculpture. Sense of place in these rural areas has been wiped out, with Main Streets no longer operating as functional community destinations or significant settings for commerce and interaction.

The United States industrial agriculture system gives financial incentives for farmers to grow commodity crops; these raw products are then processed institutionally into value-added products. Each step increases the value of the product above what was paid to the farmer. Value-added operations can greatly improve the potential of a small farming operation, but stringent food safety policies and the cost of processing equipment

represent disproportionate burdens for small-scale producers. Mills, abattoirs, dairy-processing equipment, and small-scale producers have all but vanished from the landscape as rural communities became dependent on cooperatives, distributors, and industrial processing plants. Diversity within rural communities has greatly diminished.

Chapter 3 | Designing for Rural Resilience

Setting the Stage for Sustainability

With the disparities facing rural sustainability and resilience in mind, I propose that the solution to these obstacles lies in design. While many of these obstacles are social or based in policy, the physical landscape is extremely limiting to the resilience of rural communities. These communities have been systematically neglected by policy and design, and suffer economically and socially as a result.

Another challenge in considering sustainability in rural areas is the vague definitions of both *rurality* and *sustainability* (Lapping 1997). Both terms have certain strong implications, but neither has a concise definition, and no definition considers both terms simultaneously (Lapping 1997). Also contributing to the rural design problem are misconceptions that because space in rural areas is abundant, planning is unnecessary. The importance of rural landscapes to the wider population (in terms of the environmental services they provide) and their direct impact on rural residents suggests that planning for development in rural landscapes is essential. It is widely understood that rural revitalization contains both physical and social design problems. Taken within the contemporary context of wider economic and policy issues, environmental degradation and climate change, the issues inherent to rebuilding rural communities are unique. The Organization for Economic Cooperation and Development asserts that "No nation will have lasting conservation on private lands until landowners are excited about the land and understand that environmentally sound land use is not a limit on personal freedom but a positive exercise of skill and insights (McNeely and Scherr 2003, 233)." There is a vast

array of tools available to designers and communities that facilitate resilient and sustainable community functions, and encourage connections between people and nature. Some programs undertake whole-farm and landscape planning approaches to of viewing a piece of property, community, or watershed to identify areas for conservation, production, or other land uses (McNeely and Scherr 2003). Moreover, they employ a participatory design process has includes communities in their own revitalization, from conserving biodiversity to ensuring efficient and functional infrastructures and the security of local livelihoods.

Integrating Agriculture by Design

Due to the importance of food in the daily life of individuals, and the extraordinary impact of our agricultural system on the environment and on communities, it is necessary to implement a new agriculture that simultaneously nurtures people and the landscape, and to integrate this approach to agriculture in such a way that it contributes to ecosystem services. Many have advocated a retrofit of the global food system, asserting that the causes of ending global hunger and preserving biodiversity are not at odds. Case studies in successful ecoagriculture have been undertaken around the globe by agriculturalists such as Masanobu Fukuoka, Bill Mollison, and P.A. Yeomans, and even though methods of agriculture that preserve biodiversity and ecosystem function while maintaining yield have been demonstrated, their methods are not conducive to mechanization and so they have not been widely adopted. Vandana Shiva discusses such aims as she champions a cultural shift from oil-based economies to soil-based economies dominated by small-scale, independent farms. She writes:

> The most creative and necessary work that humans do is to work with the soil as co-producers with nature. Human effort and knowledge based on care for the soil prevents and reverses desertification, the root collapse of so many historical civilizations…It is our work with living soil that provides sustainable alternatives to the triple crisis of climate, energy, and food (2008, 6).

Permaculture, natural farming, ecoagriculture, and the organic and fair trade movements are all responses to the environmental deterioration and injustice seen as consequences of poor corporate management practices. These land ethics are sometimes rooted in design, as is the case with Bill Mollison's Permaculture, and they attempt to support a shift to an agriculture that works with ecology through a closed-loop system. The design ethic advocated by Permaculture (based on the phrases *permanent agriculture* and also *permanent culture*) aims to cultivate abundance in every human intervention with the landscape. It emphasizes diversity, intention, and above all care for the soil. Mollison encourages observation to build knowledge that can be specifically applied through design mechanisms within the landscape (Mollison 1979). Mollison's principles are not only applicable to food-producing situations; they include directives such as: catch and store energy, produce no waste, design from patterns to details, use and value diversity, and creatively use and respond to change (Korn 2010). Beyond the farm field, these design principles can be utilized to engineer highly productive, integrated landscapes that support community interaction and ecosystem function.

Sense of Place

With the removal of the bulk of the population from agricultural production, so followed removal of local land-based influences, and a dramatic shift in landscape composition. Blanket farm policies eradicate regional agricultural differentiation, as blanket farm policies do not take into consideration crop suitability, local markets, or other regional considerations. Market development potential exists for regional products that increase biodiversity while being more conducive to local landscapes. Such strategies cultivate a sense of a unique local *flavor* based on appropriate crop choice, management practices, and seasonality. Regional certifications, such as the Salmon-Safe program, help notify consumers of local environmental issues and ensure the prudence of management practices. The development of commerce based on truly local products works to promote genetic diversity, increase the value of ecosystem services provided by farmland, and increase the diversity and incomes of farmers in sustainable ways. When design is utilized to forge a unique local aesthetic combined with a functional infrastructure for the production and distribution of regional goods, opportunities for agroecotourism increase. In Switzerland and Italy, policies promote diverse agricultural practices mixed with wild land; these policies enhance the value of the landscape, and enable the generation of critical revenues from tourism (McNeely and Scherr 2003). The promotion of regional planning and design on relatively small scales increases economic cooperation and diversity also works to create self-sufficient communities and vibrant ecological systems.

The Soul of the Community studies produced by the John S. and James L. Knight Foundation examined the factors that influence individual connection to place (2010). In

three years of gathering data related to communities across the United States, the study identified social offerings, openness, and aesthetics as being most closely related to individual attachment to their community (Knight Foundation 2010). They posit that residents who are highly attached to their location are more likely to remain in a given place, and in the case of productive individuals this often leads to economic growth over time. These findings have strong implications for the importance of design within communities, demonstrating that the sense of place generated by planning and design is highly influential in communities.

Connectivity

A critical impact of industrial agriculture on the rural landscape has been fragmentation that limits the movement of native and beneficial species. Important species become isolated, as do communities who become dependent on the automobile and large-scale distribution networks.

In any social landscape, the notion of connectivity is paramount. The rural landscape poses specific challenges relating to connectivity, especially as contemporary practices, design decisions and policies work to divide rather than connect residents of rural areas. Some key areas to consider are recreation, education, and commerce. Utilizing these three areas can work to forge stronger connections between people, their communities, and their environments.

Greenways and trails are one strategy that shows great promise in contributing to rural sustainability. The very nature of the greenway in consistent with such an aim: connecting separate, isolated, but important areas combats negative impacts of fragmentation and enhance the landscape's aesthetic value. One of the most notable greenway projects was lead by Landscape Architect Frederick Law Olmsted, Boston's Emerald Necklace serves as an excellent example of the potential of design to revitalize space and connect people to the landscape (Starnes, Mark and Sexton 1997). During the advent of the greenways movement in 1987, the President's Commission on American Outdoors envisioned a cross-country network of recreation corridors, the implementation of greenways on such a large scale would greatly enhance the natural landscape and provide immeasurable benefits to society (Starnes, Mark and Sexton 1997). The benefits of greenways are not only symbolic. They also protect habitat, increase genetic diversity, conserve water resources for use by rural communities, and provide opportunities for tourism thereby supporting necessitating various services that are of economic benefit to rural communities (Starnes, Mark and Sexton 1997). The process of designing and implementing a greenway or trail is highly participatory, and in itself serves to strengthen community bonds and reinforce sense of place.

Gathering

The "third place" as defined by Ray Oldenburg is especially crucial in rural communities due to the relative isolation of residents (1999). The creation and protection of community spaces in the rural context serves as a backbone for community operations. It is on this neutral ground that rural communities forge bonds, friendships, and business

associations, as well as define social capital (non-monetary assets). Third places in which residents can exchange information and opinion, eat and drink, and observe the community as a whole have been identified as successful in cultivating positive relationships and associations among residents (Oldenburg 1999; Hewitt 2009). Although in cities the creation of green public spaces is tantamount, in the rural setting gathering social spaces are perhaps more appropriate, given the relative abundance of green space. Traditionally, the human density of urban areas has resulted in a more concerted effort to successfully develop effective public spaces successfully, though much of the population still resides in rural landscapes.

Integrating gathering space with other positive programs can work to increase rural social capital. Take for instance a town center: by itself it is simply a structured public outdoor gathering space, but the organization of other uses such as schools, libraries, and businesses adds immeasurably to the value of the place. In the rural context, the Third Place should also be an economic space that fosters commerce through the utilization of local skills, products, and materials.

Chapter 4 | Case Study: Williams, Oregon

Background

Post industrialization, rural America has experienced degraded local and global ecologies, and disempowered communities. Largely, these consequences have been influenced by policy, but they have been given shape within the landscape, resulting in dramatically homogenous landscapes and the destruction of human connection to nature and community. The Williams Community in Southern Oregon (see p. 41) represents a community centered in a declining resource-based economy. As individuals within the community strive to create a system based on local agriculture, they are directly faced with the challenges of functioning within a landscape that is better suited to large-scale industrial operations. Williams has developed largely without a guiding plan or design objectives, and faces challenges because of the discrepancy between the physical condition of their environment and the goals of the community. The Williams Case Study is characterized by this juxtaposition between the small-scale goals of the community and the large-scale implications of the composition of the landscape. Thus, Williams presents a problem that is mirrored in rural communities across the United States.

An inventory and analysis was carried out on the Williams Watershed (see Appendix A), detailing the circumstances of the Williams community and targeting areas where design solutions would have the greatest benefit to strengthening individual ties to the community food sovereignty and to the natural environment. Identified within the case study are two important landmarks within the community. The first is White Oak Farm and Education Center, a non-profit agricultural venture that has great potential to

strengthen community connections through direct experience. The second is the informal community core, a collection of privately owned properties that house the Williams Store, the Sugarloaf Community Association (which includes the Grange, recreation fields, and educational space), and a vacant piece of land that sits in a prime location to develop a design that would strengthen the connectivity between the other respective community spaces. In order to craft a design at an appropriate level of detail that could utilize design decisions that align with a local aesthetic, implement local materials, and could realistically be constructed affordably by residents of Williams, the vacant property was identified to possess the most potential as a space that could be positively improved by design.

Summary of Inventory and Analysis

The Williams Creek Watershed is fairly typical in its cultural history relative to other regions in the Pacific Northwest. Conflict with indigenous populations resulted in removal the latter, which was followed by large-scale mining, logging, and damming operations in the region. The activities of that time period have left many residual forms within the landscape, such as two Layton hydraulic pits (long ditches used to extract gold) and patterns of logging, development, and regrowth (see p. 42). Later, the area became a destination for the Back To The Land movement, and today is represented by a growing population of residents with similar ideals. Although the population is growing, with new residents (the majority of whom moved from out-of-state) contributing to 34% of the population, the region still experiences high poverty and food insecurity rates, and low education rates (Oregon State University 2010).

Environmentally, the Williams Creek Watershed resides in a unique place. Situated within the Siskiyou-Klamath forest range, it is on the fringes of one of the most biodiverse temperate forests in the world. The grandness of the local forests and the iconic native species lend themselves to notions of wilderness, regardless of intensive management by the U.S. Forest Service and landowners (including fire suppression).

There are a number of organic and small farms in Williams, but currently there is not a functional infrastructure to support rural distribution, and the community has no regional plan or policies to promote ecoagriculture or biodiversity conservation. However, the community is environmentally conscious and several initiatives are taking place that demonstrate the cohesion of Williams. Among these initiatives are the Sugarloaf Community Association (SCA), a community-based association that facilitates activities at the Williams Grange and on the SCA land; White Oak Farm and Education Center, a land-based non-profit organization dedicated to agricultural and environmental education; and Lomakatsi, a forest-restoration organization with active projects in the Williams area. Additional community undertakings include an active community farmer's market and a community effort to ban herbicide spraying in drainage ditches within the watershed.

Noted in the analysis is a heavy dependence on automobile transport; not only are roads the only transportation network within the community, but the community center lacks strong amenities, making it necessary for residents to travel to dispersed locations in order to shop for groceries or see a doctor. A regional plan that would increase

opportunities for pedestrian and bicycle circulation as well as recreational circulation through both agricultural and forested land would greatly add to the experiential qualities of Williams while reducing dependence on the automobile. To increase environmental cohesion, I am recommending that Williams undertake a regional plan to identify critical areas for conservation, implement habitat corridors, and recommend types of management to private landowners.

The most critical site identified for revitalization is the Williams community core at the intersection of Tetherow Road and the Williams Highway. This area is home to the Williams General Store, the SCA property (including recreational fields, a private school, playgrounds, and an amphitheatre), the Williams Grange, and a number of small businesses, a post office, and a vacant piece of land. As was previously discussed, the vacant piece of land was identified as having the most development potential, as it could serve as a strong community space that would connect the various amenities at the intersection and could provide a valuable recreational gathering space.

Summary of Design Solution

Currently, the Williams community core is lacking in structure and hierarchy. It is made up of various elements and land uses that happen to be adjacent to one another. Utilizing the Williams Farmers Market as a crucial community-sustained activity, I identified the vacant lot on the corner of Tetherow Road and the Williams Highway as a space that could provide a multifunctional destination for the Williams Community. By working at a relatively small scale, design decisions on the chosen parcel could be demonstrated to

Williams residents as a strategy that would increase community cohesion and create an inclusive recreational space. Utilizing forms inspired by the history of logging in the area, materials chosen for their practicality and ease of installation, vegetation that will increase biodiversity, and program uses that are both functional and educational contributed to the vision for the Williams Park (See Appendix B).

Conclusions

The Williams Case Study emphasizes the need for intentional design and management within rural areas. Because of their economic status and isolated populations, rural areas have experienced a history of neglect, exacerbating issues of environmental degradation and community disempowerment. Although changes in policy to promote more cohesive systems is desirable, fundamental design changes can strengthen individual connections to the land and thus lead to more conscientious decision-making by farmers and residents in rural areas. Design strategies to increase self-sufficiency of community and decrease conflict between agricultural land use and conservation planning will ultimately work to the benefit of rural communities. Part of these design strategies must include changes to infrastructure to facilitate distribution of goods and diversify rural markets. A fortified sense of place resulting from such design solutions has the potential to increase agroecotourism, support rural livelihoods, and cultivate resilient, healthy communities.

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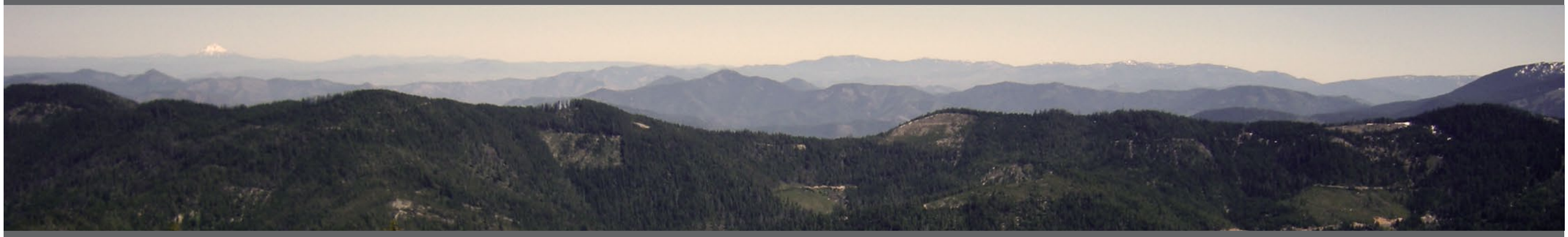
SUSTAINING RESILIENCE IN THE RURAL LANDSCAPE
A CASE STUDY IN COMMUNITY DESIGN

SARAH PARKER

Appendix A

Williams Community | Josephine County | Oregon | United States

DESIGN STUDY



CONTENTS

VISION

INDUSTRIAL AGRICULTURE AND THE FRAGMENTATION OF COMMUNITY

Since the Green Revolution, intensive agriculture has been hailed as a triumph of humanity and science. While the shift to industrial, high-input systems has resulted in the production of more food than ever before, it has also contributed to the demise of small communities. Agricultural communities in the United States have over the last 60 years witnessed the wholesale consolidation of land into the hands of a few, the replacement of native biodiversity with vast monocultures, the destruction of regional vernaculars and sense of place, and the degradation of ecosystems and human health. Today, the United States is host to countless agricultural communities in decline, characterized by aging populations, low community capacity, and an overwhelming sense of placelessness. Nearly 3,000 acres of farmland are lost daily to development, while simultaneously the aging population of farmers nears retirement age and no one stands to take their place. As the scale of agriculture has increased, individual and community control has diminished, while food costs and risks have multiplied. Communities now stand powerless as they enter a quickly changing world (including new challenges such as climate change and peak oil), but the possibility of a human-scale agriculture and deliberate design stand to restore independence, food sovereignty, and vitality.

AGRICULTURE AS FACILITATOR

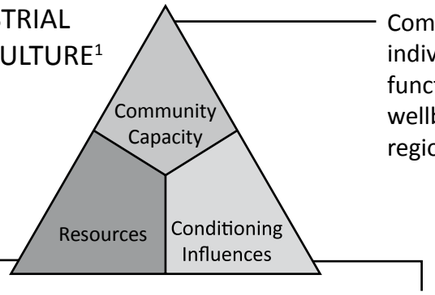
The consumption of food is the single most intimate action an individual can undertake in participation with the environment. Eating is the literal intake of energy and nutrients from the world and into the body. By extension, the production and gathering of food becomes a facilitator for all human interaction with nature, from harvest to fertilization. As the production and consumption of food become disconnected from individuals, so do individuals become disconnected from their surroundings. Members of a community are no longer reliant on each other for comfort or survival, and likewise the community is no longer reliant on its unique context. In order to revitalize these connections, first this most fundamental connection between individuals, food, and the immediate landscape must be realized.

RE-IMAGINING A RURAL COMMUNITY

What follows is a case study of a rural community in Southern Oregon. This community faces many challenges; economic, social, and environmental. By viewing this landscape holistically, a functional development plan for the community will emerge. Utilizing themes of conservation, stewardship, self-sufficiency, symbiotics, and connectivity, it is my hope to visualize a landscape in which people work cooperatively and in accordance with natural processes. Key areas of focus within the site are community areas, namely the Community Core and home of the Sugarloaf Community Association, and White Oak Farm. Both of these organizations own land which has great potential for enhancing community capacity through education and agricultural infrastructure. This study shall comprise a process, beginning with this document which operates at the landscape scale to identify contextual patterns. Following its completion, this design study will function as a guide for a smaller site selection and a more detailed design process.

This study has been inspired by many ideas and images. The words of Wendell Berry, Aldo Leopold, Rachel Carson, William Cronon, and Michael Pollan, combined with the philosophies of A Pattern Language, Permaculture and the Transition Town movement have enabled this vision of a resilient community based on a connection to and respect for our shared natural environment.

INDUSTRIAL AGRICULTURE[1]

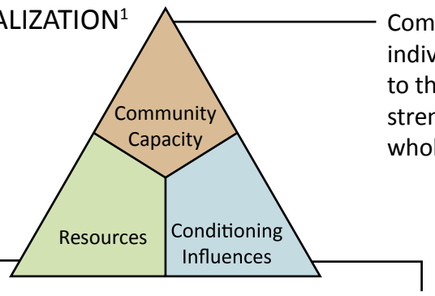


Community enters economic depression, individuals no longer invested in community function or in control of their own wellbeing. Community loses independence, regional aesthetic, and sense of place.

Agricultural production and resource management disconnected from local community. Communities can no longer sustain themselves.

Individuals no longer linked to their landscape, health and family structure suffers. Community becomes dependent on the world economy and companies, capital is exported. Income suffers, employment suffers. Poverty increases.

REVITALIZATION[1]



Community capacity is strengthened as individuals recognize their contribution to the whole. Community gains economic strength and becomes a participatory whole.

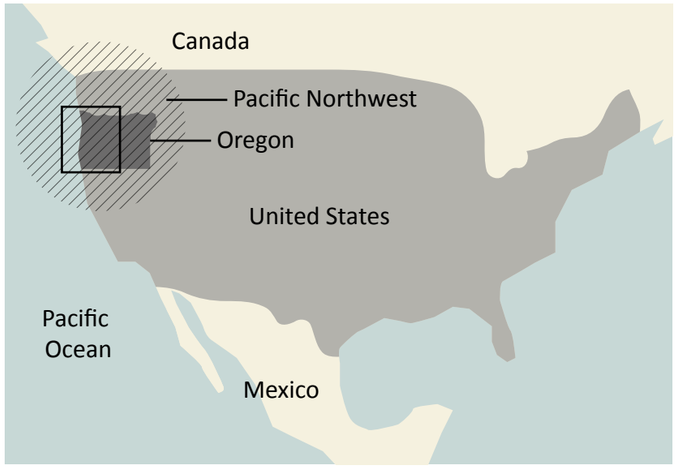
Community regains control of agricultural production and resource management. Nutrients, capital, and skills reinvested in the local landscape.

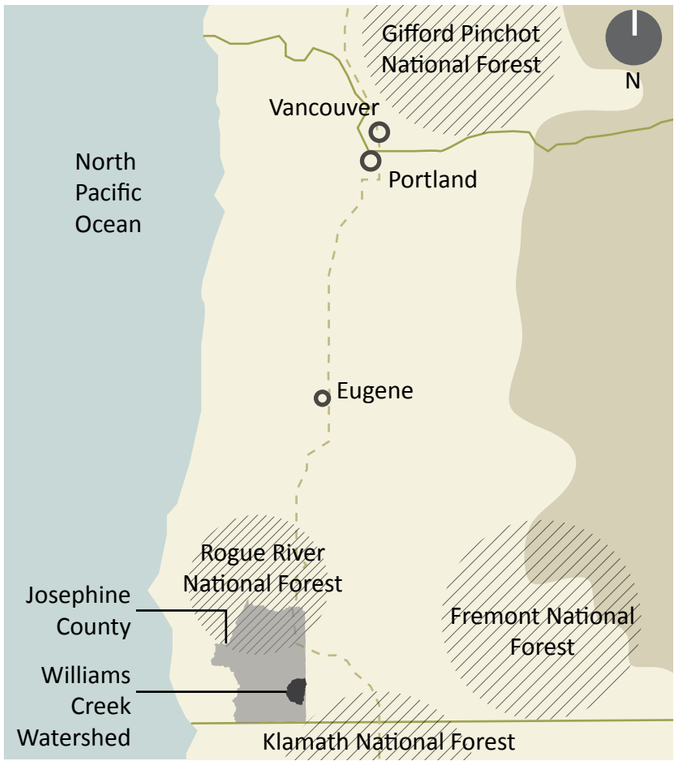
Linkages between community members and the landscape are strengthened as the community relies on its surroundings for sustenance and income. Local economy is strengthened and the community gains independence. Sense of place emerges.

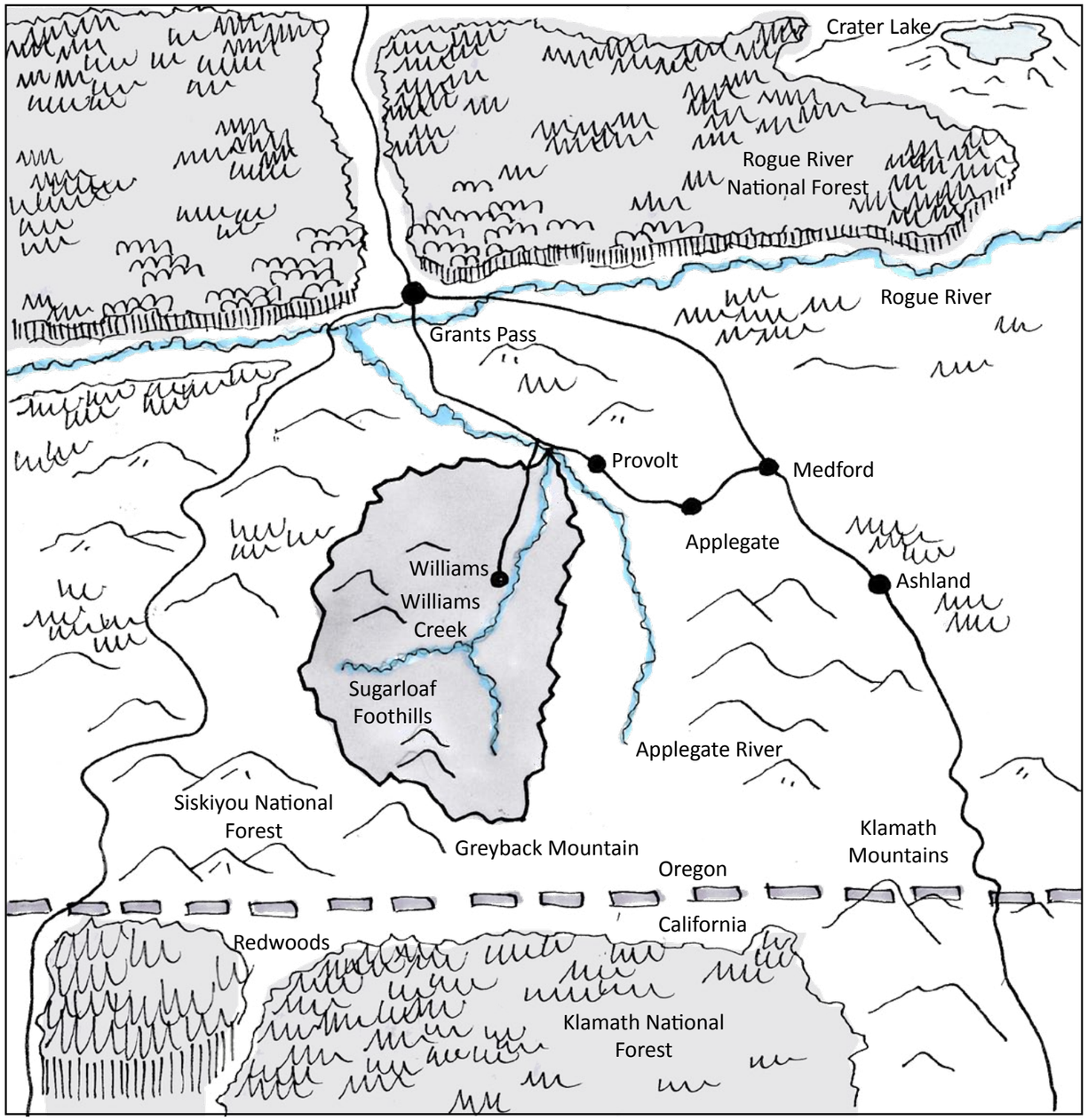

Fig. 1


Fig. 2

SITE IN CONTEXT







← SITE
The Williams Watershed within its larger context. Note close proximity to cultural and economic centers as well as protected natural landscapes.

SITE PROFILE

The Pacific Northwest of the United States is characterized by a persisting frontier identity. Oregon is known for its wilderness areas and associated species and systems. Josephine County is an isolated rural polity, with abundant wilderness, scarce industry, and high poverty.

Known for its alternative nature, the Williams community has great potential to serve as a model for transition towns, utilizing sustainable methods of agriculture, community planning, and symbiotic living.

SURROUNDING CITIES[2]

City	Population	Notes
Grants Pass	23,003	County seat, tourism and timber-based economy
Provolt	< 1,500	Not a significant influence
Applegate	< 1,500	Secondary educational facilities
Medford	76, 850	Economic and industrial center
Ashland	21, 630	Tertiary education, cultural center

INITIAL BRIEF

CLIENT: The Williams Community Council
The Sugarloaf Community Association
Residents of Williams

OBJECTIVES:

To craft a development plan for the Williams Creek Watershed that reflects its unique community character while emphasizing public space, recreation, and conservation networks.

To renew the Williams community socially and economically using agricultural infrastructure to revalue local natural resources, facilitate meaningful relationships between people and the environment, and create a more independent local economy.

To prepare the Williams community for the impacts of peak oil and climate change by enhancing community and landscape resilience.

To implement a structure plan based on sustainable theories inspired by Permaculture, Transition Towns, extensive agriculture, and agroecology.

HISTORY

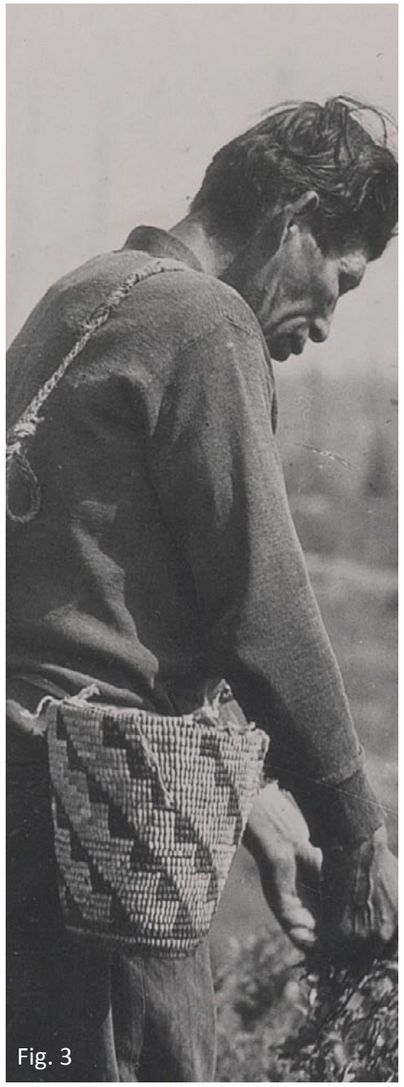


Fig. 3

1400
PRE-EUROPEAN[3]
18 different Native American tribes resided in the region, today known as the Confederated Tribes of Siletz Indians. Ten base languages were spoken in countless dialects. These peoples were known for their diet of salmon, roots and berries, basket weaving, and bow hunting.


Fig. 4

1805
LEWIS AND CLARK[3]
First overland journey to the region. By this time contact with European pathogens had already decimated many Siletz villages. Trading in fur had been underway for quite some time.


Fig. 5

1850
EARLY SETTLEMENT[3]
An influx of gold prospectors caused dispute which resulted in the six-year Rogue River War. Treaties ensued between the tribes and the US Government. Eventually the entire region was ceded and the tribes relocated to the Siletz Reservation on the Pacific coast.


Fig. 6

1880
MINING TOWN
Around 11 families lived in Williams, with a relatively high population of Chinese immigrants working in the marble mines. Layton Hydraulic pits remain as tangible imprints on the landscape. Logging also becomes a major industry, fueled by demand for timber from Eastern states.


Fig. 7

1950
LOGGING
Logging continues under sustained harvest. Oregon becomes nation's largest producer of timber.

Large-scale damming of Oregon's rivers commences.

The dust-bowl brought many migrants to the West.

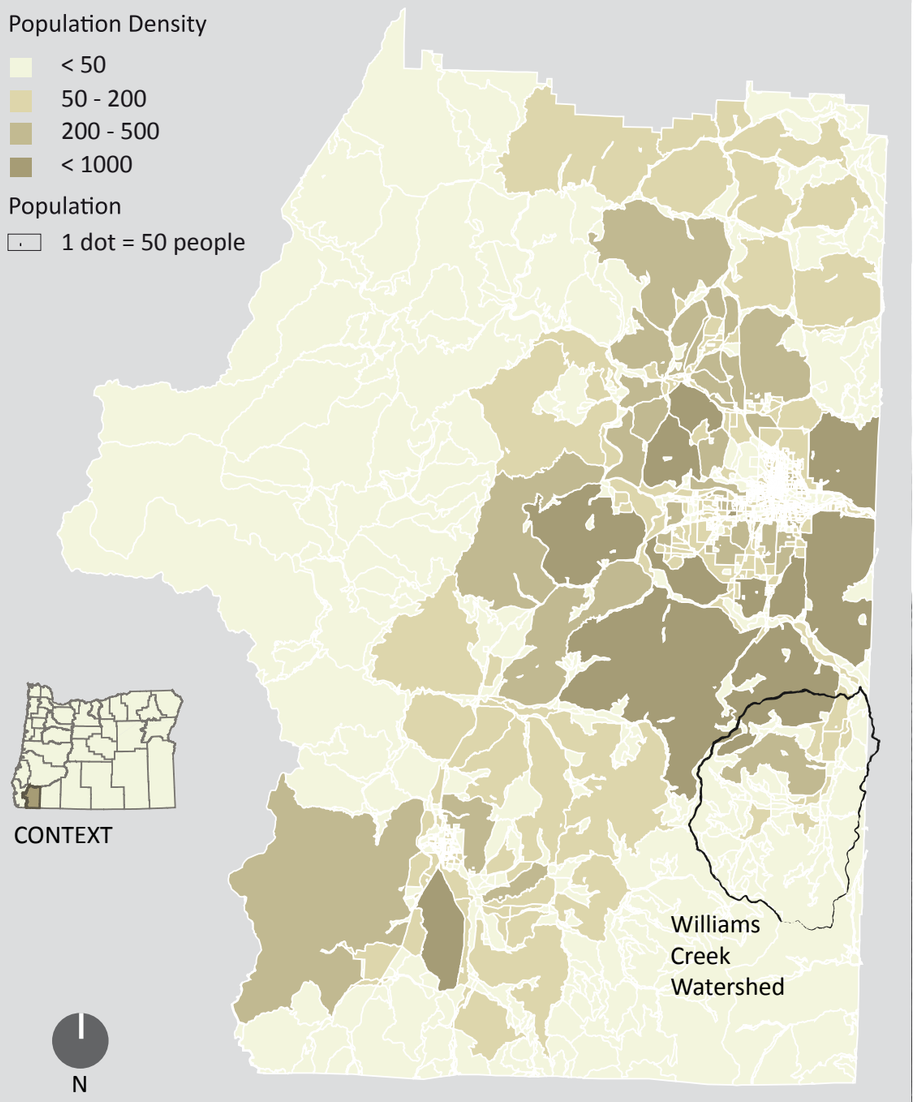

Fig. 8

1960 - 2000
CONSERVATION
Logging remains a major industry but slows considerably. 10% of old growth forests remain. Oregon becomes a destination for the back-to-the-land movement, and today is a principle source of sustainable thought and practice. The region is known for its alternative communities.

RESPONSE
- Revive land ethic through design.
- Phenomenological opportunities?
- Hydraulic pits as educational and recreational opportunity.
- Reflect conservationist attitudes.
- Preserve resource-based economy.

DEMOGRAPHICS

JOSEPHINE COUNTY[2, 5, 6]



DEPENDENT COMMUNITY

Williams has been classified as a **community at risk** due to low population density. The nearby cities of Ashland, Grants Pass, and Medford serve as major hubs in the region and sources of education and diversity.

WILLIAMS COMMUNITY[2]

2,829 TOTAL POPULATION

81% HIGH SCHOOL GRADUATES

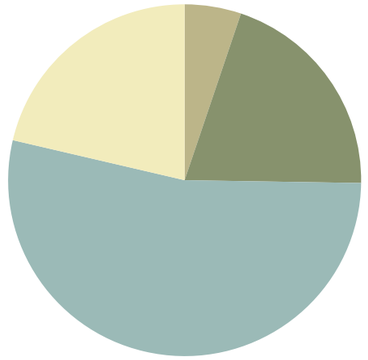
14% COLLEGE GRADUATES

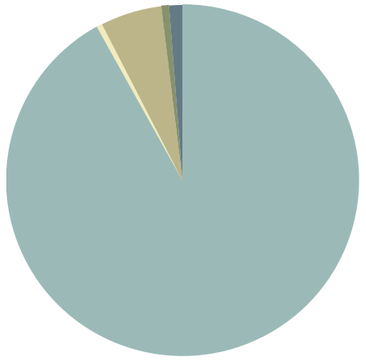
70% HOME OWNERSHIP

19% BELOW POVERTY LINE

14% FOOD INSECURITY

34% NEW RESIDENTS





RESPONSE

- Strong potential for public gathering space, bring all ages together.
- Positively channel new development to benefit community.
- Center design strategy around the investment in local trade and skills.

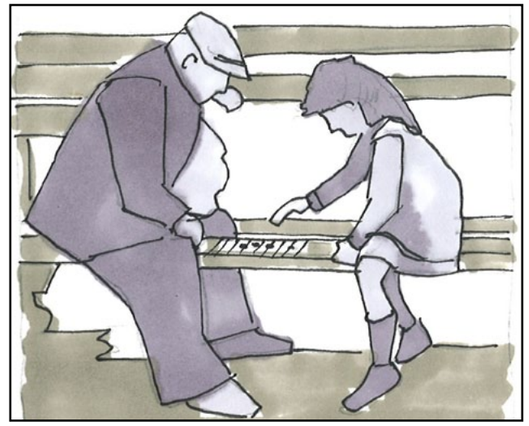
POPULATION DYNAMICS

Forestry, agriculture, and tourism drive the economy, though Williams itself lacks an **economic infrastructure**. Many residents rely on external areas for income and commodities.

Josephine county is one of the poorest counties in Oregon, reflected by **high food insecurity**, and **low education rates**. However, the region still attracts new residents who often identify with the landscape and culture that is characteristic of the area.

Over time, Williams has represented about 3% of the population of Josephine county, with a twofold increase over the last 50 years.

Williams has a good age distribution, but lacks **developed public gathering spaces** for people of all ages.



INTERACTION

Between all age groups is to great community benefit, but people need a place to gather.

COMMUNITY PROFILE

← FRONTIER IDENTITY

Since the pioneers entered the Great American West in the 1800's, the Western States have been perceived as frontier States, valued for their rich natural resources, breathtaking scenery, and expansive wilderness. While early settlers sought to exploit natural resources in the region, a wave of development in the latter half of the 20th century was spurred by the back to the land movement. Southern Oregon is noted particularly for its social diversity, with many residents leading alternative lifestyles.

COMMUNITY RESOURCES

Sugarloaf Community Association
- Elementary education (Private)
- Events

Williams Elementary School
- Public education

Williams Creek Watershed Council
- Water quality education and outreach

KS Wild
- Conservation
- Habitat restoration
- Native vegetation

Big Wildlife
- Carnivore conservation

Salmon Safe
- Watershed protection and restoration
- Aquatic life

United Plant Savers
- Native medicinal plant education and protection

Pacifica Garden
- Native biodiversity education

White Oak Farm
- Sustainable lifestyles education and outreach

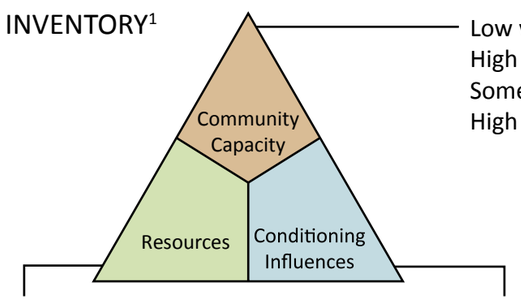
VALUES

Residents of Southern Oregon place a high value on the scenic landscape and the perception of **wilderness**. Typically, there is an undercurrent of **seclusion**, **self-sufficiency**, and **independence** associated with such **rural living**. These notions are especially relevant in Williams' rugged landscape, which can most certainly become dangerous in some contexts. A staunch desire to conserve and **protect** the natural surroundings may be a response to historic **exploitation** and depletion of the region's natural resources. Part of this response manifests as a will to live "off the land," in a **low-impact** manner. Additionally, local residents have a shared interest in the recreational value of the Watershed. Easily accessible, these opportunities still impart a sense of **remoteness**.

The Williams valley is known for its fertile riparian soils and expansive forest ecosystem. Both of these qualities contribute well to goals of **sustainability**, as the land possesses the capacity to support many needs.

Accordingly, residents of Williams share a similar land ethic and thus a community driver. Individuals are able to relate on issues of **stewardship**, conservation, and **rehabilitation**, and this is apparent in the strong **community bonds** and various environmentally-themed community associations.

INVENTORY[1]



Low voting rate
High number of civic organizations
Some public buildings
High availability of financial support

Low education rate
Poor employment infrastructure
High landscape quality
Abundant agricultural land
Abundant fresh water
Timber and tourism industries

Strong family structure
High poverty rate
Lower than average income
Low crime rate
Fragmented landscape
High ecological quality/diversity

AESTHETIC

Settlements in southern Oregon are a distinct combination of frontier-style architecture and modern alternative home building. Predominant materials are locally sourced wood and stone with little ornamentation and simple lines. Rural decay is prevalent, and dilapidated barns or other structures are common.

Sloped roofs, wide overhangs, and the use of **weather-resistant materials** are characteristic of built forms as precautions against the elements. While the majority of buildings are built of simple **conventiona**l construction, there is a small faction of earthen **hand-built** homes, which show promise for larger scale implementation in the region as a cheap and efficient building method. Caravan, tipi and other temporary housing types can be found as well.

Fig. 9


Fig. 10

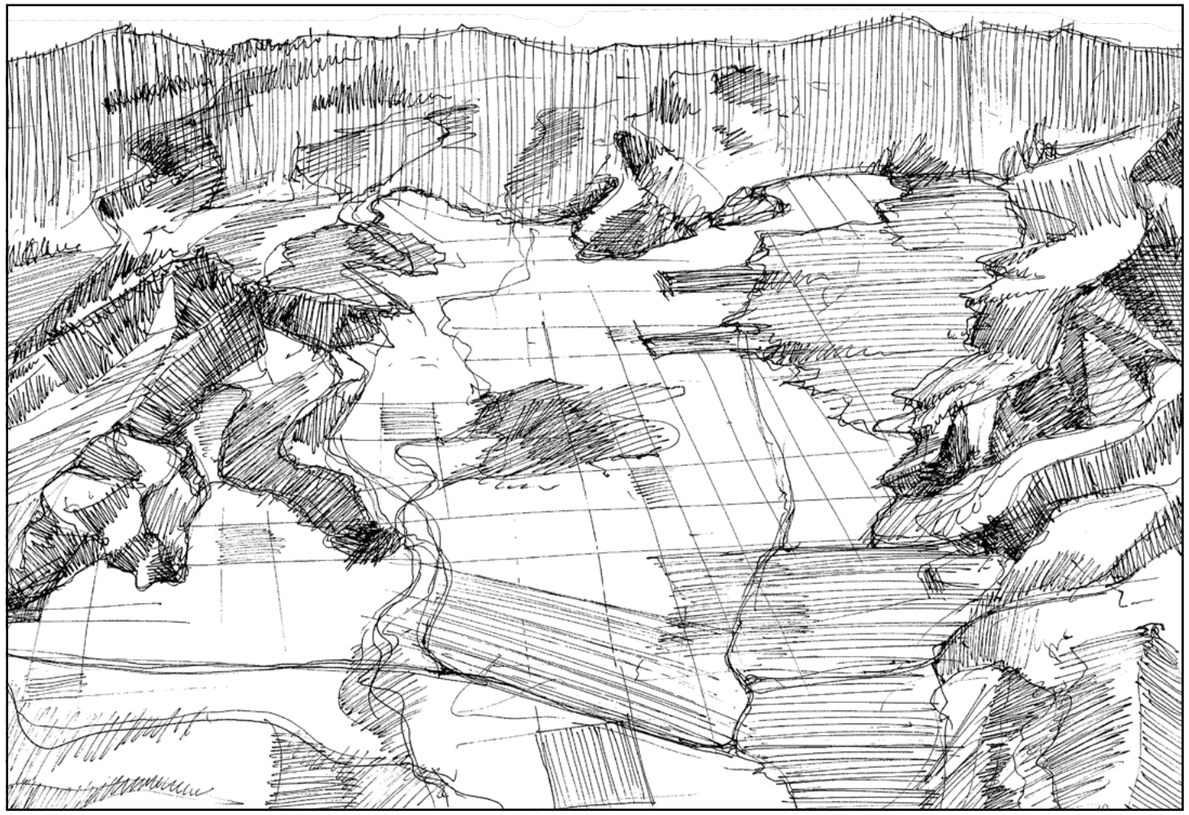

Fig. 11


Fig. 12

RESPONSE

- Strong opportunity for strengthening community core.
- Strong opportunity to enhance existing agricultural framework, especially via White Oak Farm.
- Existing aesthetic highly adaptable to sustainable construction methods and materials.
- Reverse cultural attitudes concerning the separation between man and nature.
- Strengthen public use network by utilizing farmland as parkland.

LANDSCAPE CHARACTER



← MOSAIC

Williams exhibits a form that is classic of Western US settlements. Rectilinear property boundaries flex and give way to the mountainous landscape.

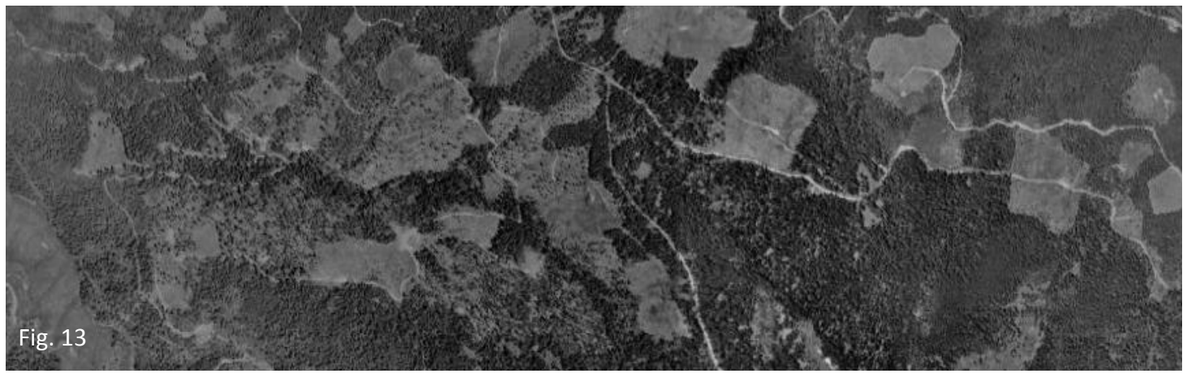
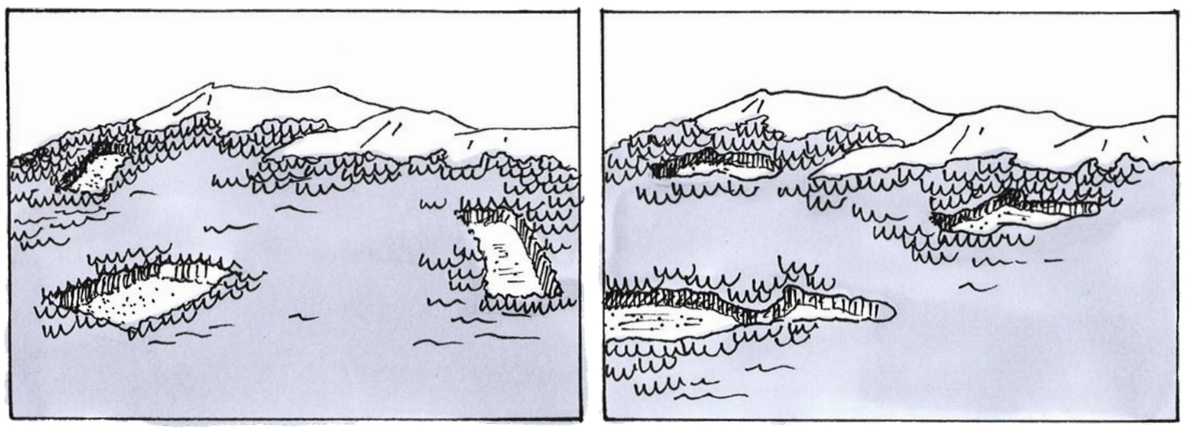


Fig. 13

← FORESTRY

The harvest of wood products is an iconic practice in the region and a major economic driver. Current practices are ecologically destructive, but create a distinct pattern within the landscape.



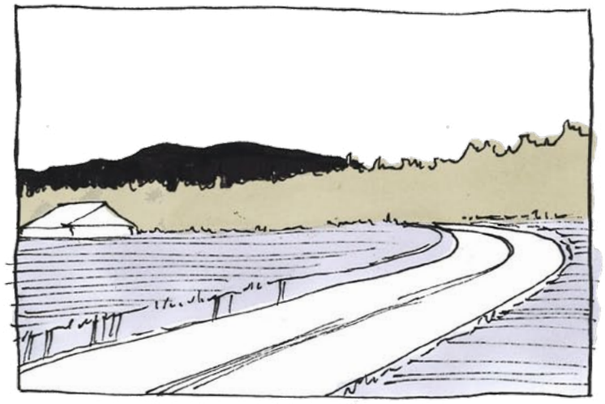
← AESTHETIC

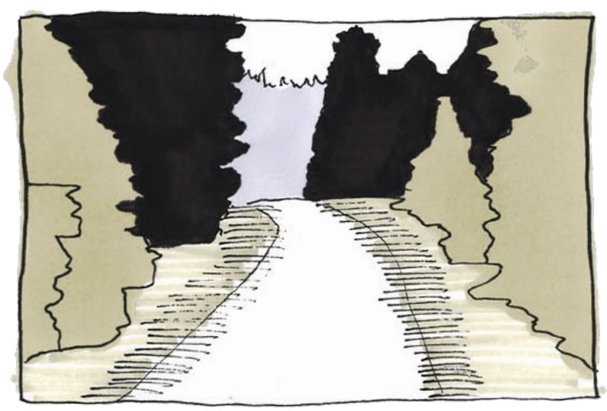
From left:
(1) Existing forest character as a result of logging. (2) Potential forest character working with logging to shape an aesthetically pleasing and ecologically enhanced landscape.

SERIAL VISION →

The experiential qualities of travel through the Williams watershed are enriched by the landform and variety of vegetation. Roadways twist and turn through woodland, simultaneously offering fleeting views of iconic scenery and more intimate surroundings such as dense forest.

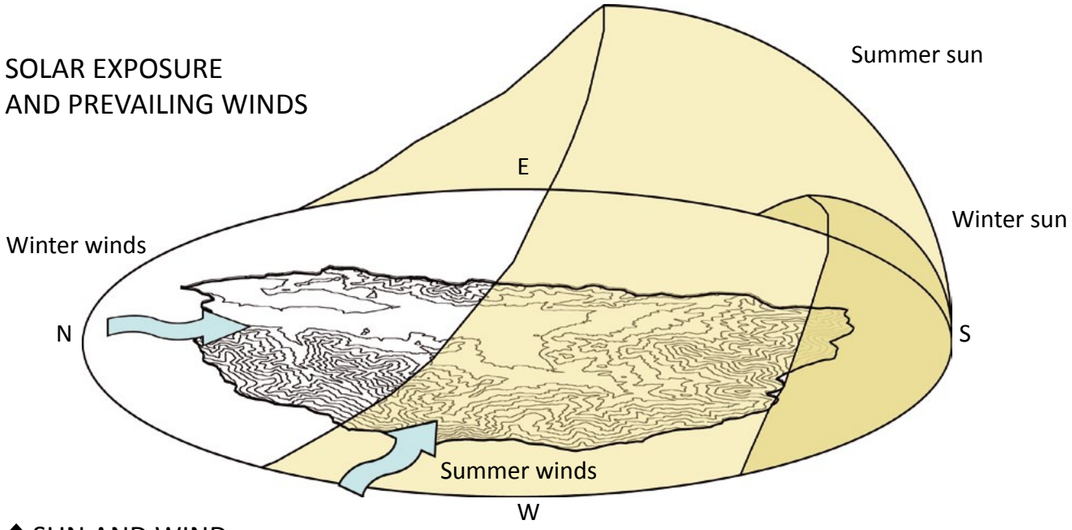
From top:
(1) Entering the Williams valley, moving through pasture and into woodland.
(2) Woodland imparts strong sense of enclosure.
(3) Exiting the woodland, the Sugarloaf foothills come into view in the distance.
(4) Leaving the settlement, logging roads become narrow and the coniferous forest encroaches. The mountains move out of view as they grow closer.





CLIMATE

SOLAR EXPOSURE AND PREVAILING WINDS



↑ SUN AND WIND

Even though Williams' solar exposure is greatly reduced during winter, its location relative to the Pacific Ocean results in a landscape shaped by a mediterranean climate. Williams is characterized by short, wet winters and long, warm, dry summers. Melting snow pack in spring contributes to a wealth of **surface water** which becomes scarce later in the summer season.

USDA Plant hardiness zone: 8b Solar Degree-days: 2035

Fig. 14

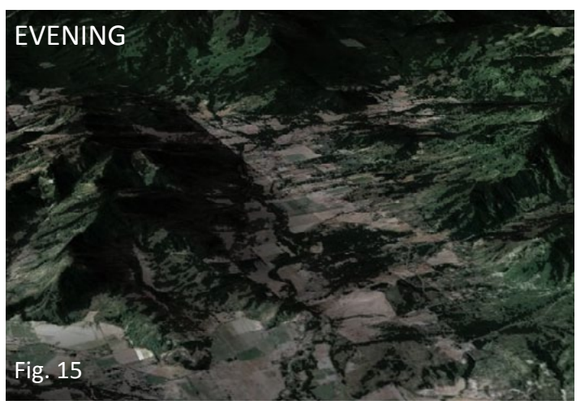


Fig. 15

← SUN AND SHADE

Varied topography contributes to many atmospheric qualities throughout the day. As a result, the valley contains many microclimates suitable for a variety of uses.

MICROCLIMATES[7]

SCALE: 1:200,000

0 2,500 5,000

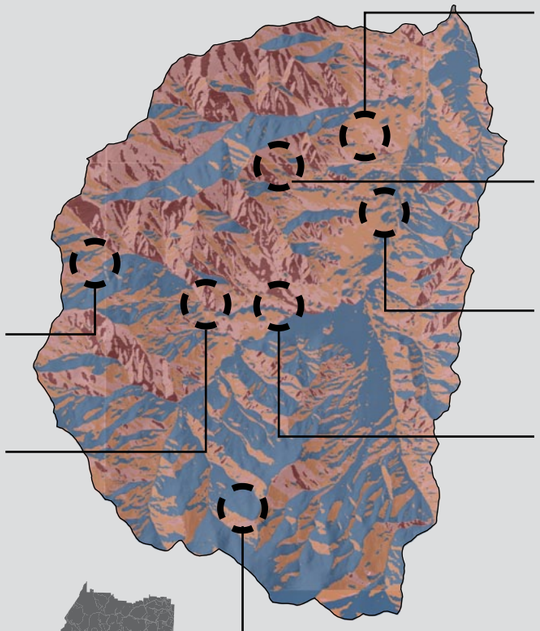
Meters

Aspect

- North
- East and West
- Southeast and Southwest
- South

Munger's creek area receives triple the amount of **precipitation** on average.

Sub-alpine forest mosaic, occurs at upper elevations and is heavily influenced by the changing environment. Valuable for resources and as habitat. Grazing in these areas should be reduced and natural succession allowed to take place.



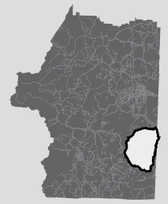
Pastures and fields, introduced patch type in lowland areas. Potential high diversity of land use types. Implementation of riparian buffers needed.

Chaparral brush occurs on dry, south facing slopes at low elevations. Fire hazard can be reduced by thinning.

Riparian woodland, a valuable vegetation type along stream corridors. Re-vegetation of buffers is a high priority.

Oak savannah, high aesthetic value. Diminished range due to absence of fire.

Industrial forest, old growth coniferous forest, and **managed forest,** iconic vegetation types that can be detrimental if poorly managed. All present potential quality habitat, especially if more site-specific management is implemented.

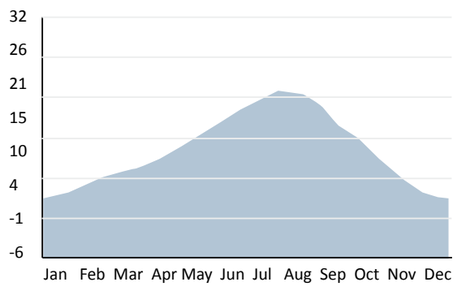


CONTEXT

N

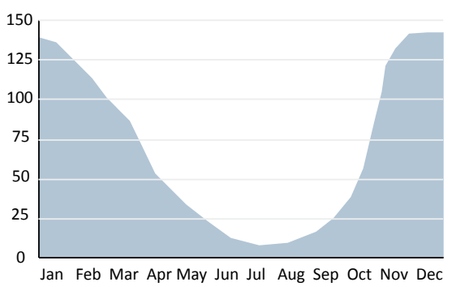
RESPONSE

- More site-specific management of vegetation communities.
- Increase diversity of cultivated crops to increase community independence.
- Increase habitat value throughout watershed, with emphasis on fire-dependent landscapes.
- Decrease fire risk by utilizing clearing and thinning of hazard areas.
- Potential for solar power generation, but not wind.



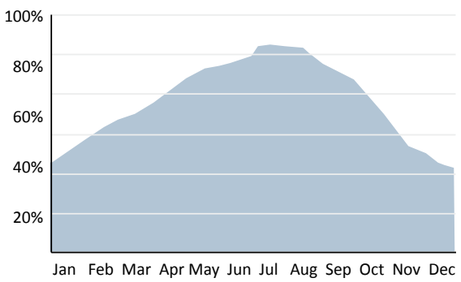
↑ TEMPERATURE (°C)[8]

Mild changes in temperature allow for the growth of many **food crops.**



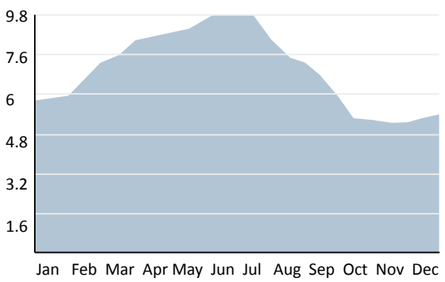
↑ PRECIPITATION (MILLIMETERS)[8]

Rainfall is **abundant** during the winter months, but **scarce** in summer. Water conservation is critical and water storage appropriate to aid in irrigation.



↑ SUN[8]

Solar exposure is adequate for **solar panels.** Solar degree days (2035) adequate to grow most crops except tropical and sub-tropical fruits.



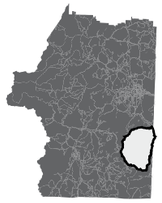
↑ WIND (KPH)[8]

Wind speeds are **not sufficient** for **wind turbines**.

LAND FORM

LANDSCAPE ELEVATION[7]
SCALE 1:100,000

0 1,250 2,500
Meters



CONTEXT

Fig. 16

← SCENERY

The Williams Valley has a **strong visual association** with Grayback Mountain (2,150 m), and the Sugarloaf Foothills, fixtures that are visible from many parts of the community.

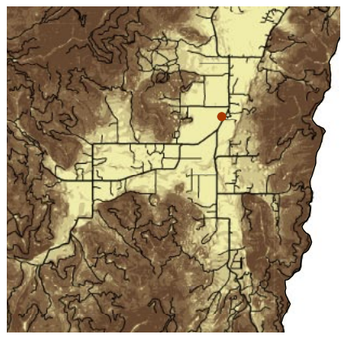
INFLUENCE

Williams is nestled in the foothills of the Siskiyou mountain range, part of the much larger Klamath range which forms a long spine extending through California and into Oregon. These landforms are the result of ancient tectonic activity, and have been shaped by years of weathering. The Mediterranean climate combined with the varied land forms produces an incredibly diverse landscape.

Many settlements in the region occur in such valleys, but development does not tend to take place at higher elevations.

RESPONSE

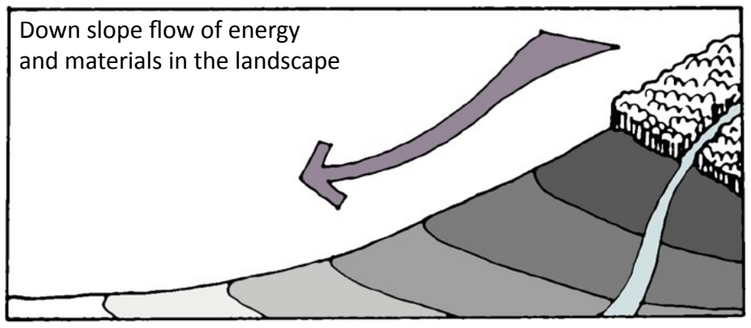
- Emphasize scenic experience.
- Utilise sloped landscape to facilitate the efficient movement of materials and energy.
- Implement roadside paths to increase non-vehicular movement.
- Forest all steep slopes and gullies to prevent erosion.

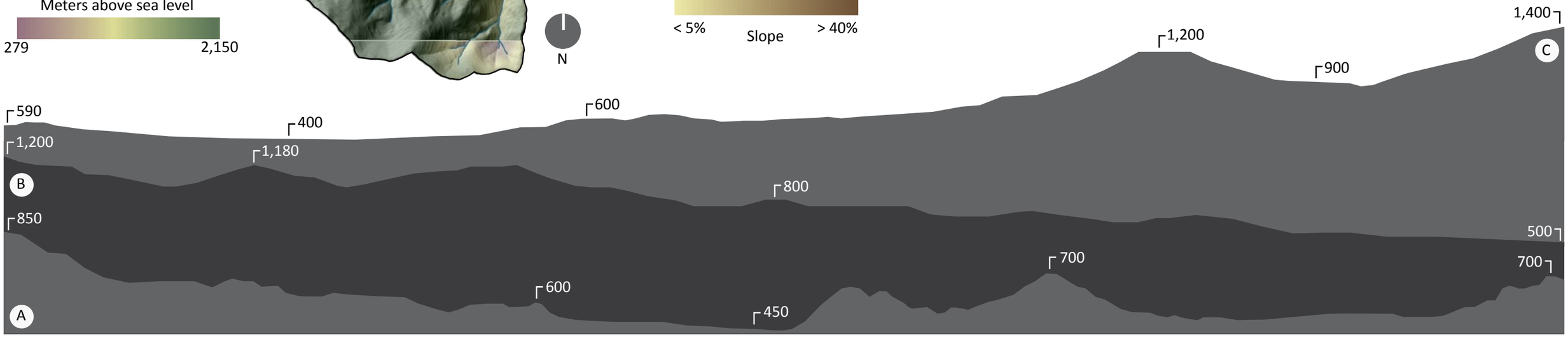


< 5% Slope > 40%

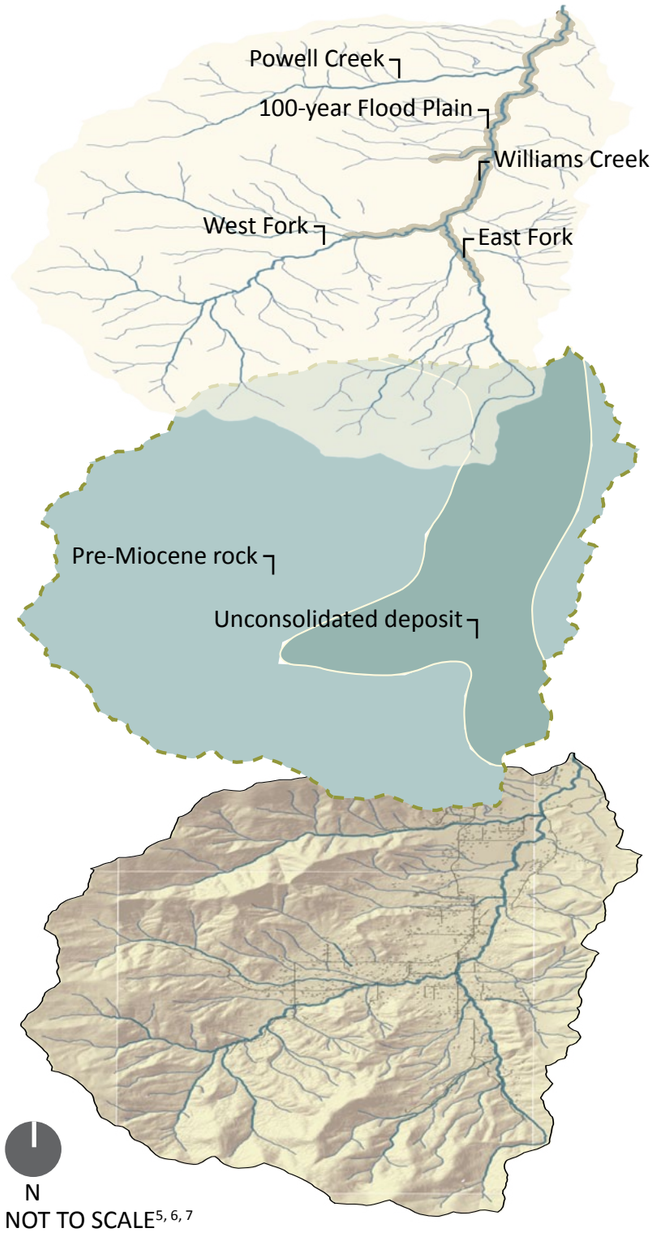
← SLOPE[7]

Major roads and development patterns in the valley are situated on gentle slopes relative to the community centre.





HYDROLOGY



NOT TO SCALE[5, 6, 7]

⟵ WATER AND FLOOD PLAIN

A variety of small waterways feed the Williams Creek, which flows through the valley and is a tributary of the Applegate River. Many of these first-order waterways are **dry seasonally**.

In Williams, water rights are bought and sold, and both well water and surface water are used for irrigation.

⟵ AQUIFERS

Groundwater is readily available in the Williams watershed, with most wells at depths of 18 to 40 meters. Yields range from 190 to 760 liters per minute.

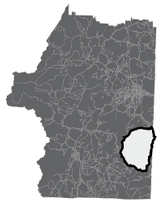
Many waterways are fed by a combination of cold-water springs and melting snow pack.

⟵ IN THE LANDSCAPE

Groundwater rights are limited, and seasonally scarce rainfall makes **water conservation** measures critical.

Storm water retention, grey water infiltration, and water-conscientious design are all excellent responses.

Fish movement is compromized by some 55 structures within the watershed. More efficient utilization of water resources could qualify the removal of such structures and allow free fish movement in the valley.



CONTEXT

CONFLUENCE ⟶

Hydrologically, the Williams Creek is in close proximity to the ocean. Water from the catchment flows first into the Applegate River and then into the Rogue River, which was named in the Wild and Scenic River Act of 1968.

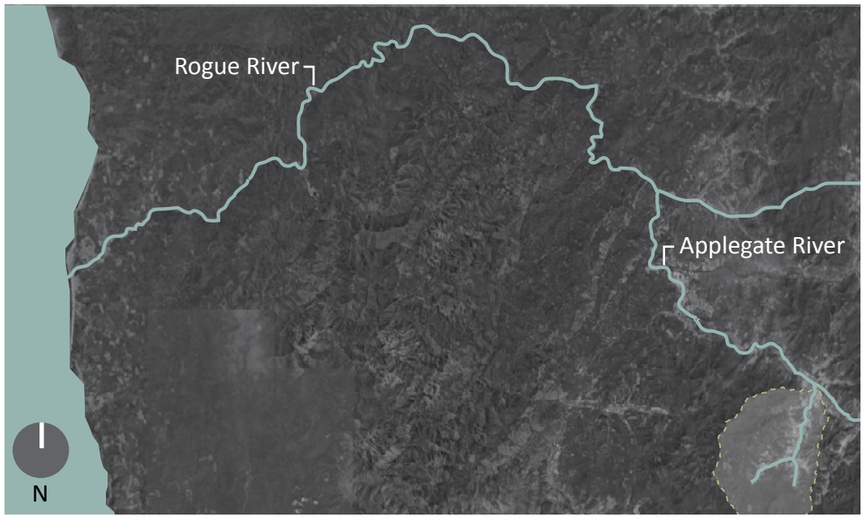


Fig. 17

	Fields (soakages)	Open dams	Swales	Spreader drains	Catchment basins	Checkerboard ridges	Low contour ridges	Pits/burrows	Net and pan	Leach fields	Moisture barriers	Run-off (paved)	Boomerang bunds	Log and rock check	By-pass channels	Tank/cistern storage
Shaded rocky valleys		■												■		
Upper valley	■		■	■									■			
Gentle foothills	■	■	■	■	■		■		■							
Plains	■		■		■	■	■		■							
Flood plains	■			■	■	■										
Large Valleys	■	■						■								
Steep slopes								■					■			
Settlements			■							■	■	■			■	■

↑ WATER RETENTION AND DETENTION

Appropriate strategies for slowing down and storing water to reduce erosion and mitigate drought.

⟵ LOGGING

The process and infrastructure of logging are major contributors of erosion and sedimentation in the region, even when the logging roads are no longer in use.

IMPLICATIONS

As a tributary of the Rogue River, **water quality** in the Williams Creek is of utmost importance. Prevention of chemical and thermal pollution, sedimentation-causing erosion, and disturbance in the riparian corridor are key measures in **protecting downstream waterways**.

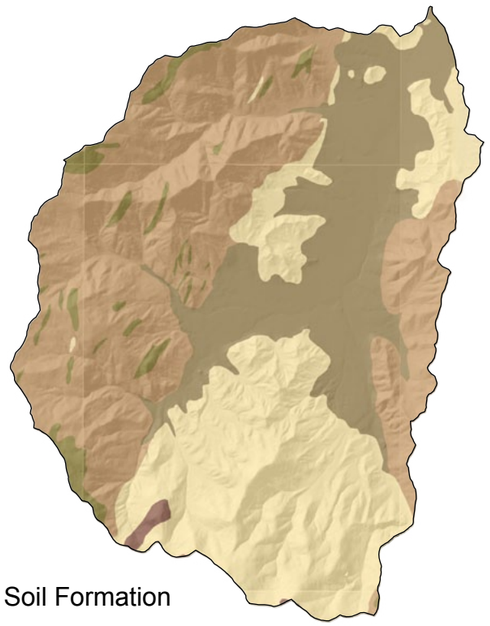
Downstream waterways form crucial habitat for rainbow trout, **Coho and Chinook salmon**, and steelhead, while the Williams Creek and its tributaries form potentially good quality spawning habitat. These species are iconic of Pacific Northwest waterways, and they once were a staple in the diet of local tribes.

Seasonal abundance and scarcity of surface water makes measures such as **rainwater storage** and **reuse** very appropriate.

RESPONSE

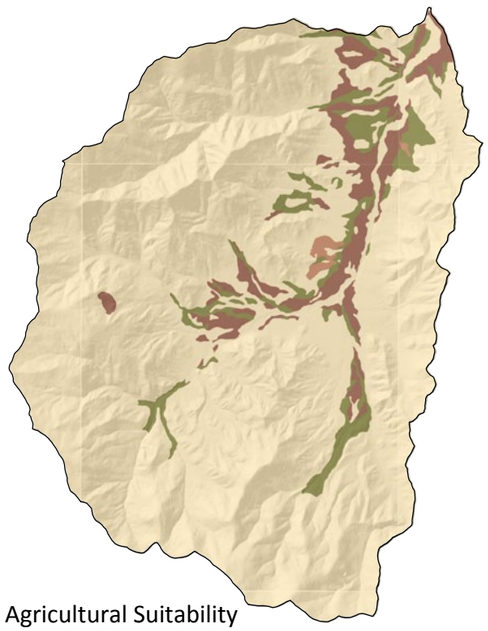
- Retain storm water to mitigate seasonal dry period.
- Grey water reuse and blackwater infiltration.
- Implementation of small-scale hydroelectric power systems where appropriate.
- Protection of downstream water health by ensuring local riparian corridor quality.
- Increase visibility of riparian corridor to improve experiential education.
- Reclamation of logging roads and improved forestry programme to reduce erosion.
- Removal of culverts and dams that impede fish movement.

GEOLOGY AND SOILS



Soil Formation

- Applegate Group
- Gabbro
- Quartz diorite and related rocks
- Quaternary Sediment
- Ultramafic Rock



Agricultural Suitability

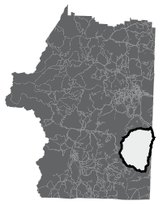
- Not suitable
- Prime
- Prime if drained
- Prime if irrigated

← FRAGILE SOILS[6, 7]

Parent material for the majority of soils in the Williams Watershed is **granite**. As a result, the soils tend to be gravelly, **fragile**, and possess **low fertility**.

An exception is the **alluvial** soils on the valley floor.

Due to the poor regional soils and tendency toward erosion, care must be taken in the construction of roads and building sites. Reforestation of compromised areas is key, along with conscientious logging methods.



0 2,500 5,000 Meters

CONTEXT

← POTENTIAL[6, 7]

Inherent agricultural suitability is very low, however unmarked on the adjacent map are areas suitable for **viticulture** or other horticultural endeavors. There are many methods of soil building to suit various ends, so while it is important that these prime soils be dedicated to most efficient uses, it is not an indication of the true **agricultural potential** of the Williams watershed.

Exploration of alternative systems that emphasize **soil building** and protection, along with **site-specificity** in design should be explored.

PLATE TECTONICS

The Williams watershed sits within the potential impact zone of **earthquake** activity as a result of shifting plates on the Western edge of the American continent. Due to this hazard, care must be taken in the construction of buildings. Disturbance or settlement in **sensitive slip-prone** areas should be **avoided**.

Fig. 18

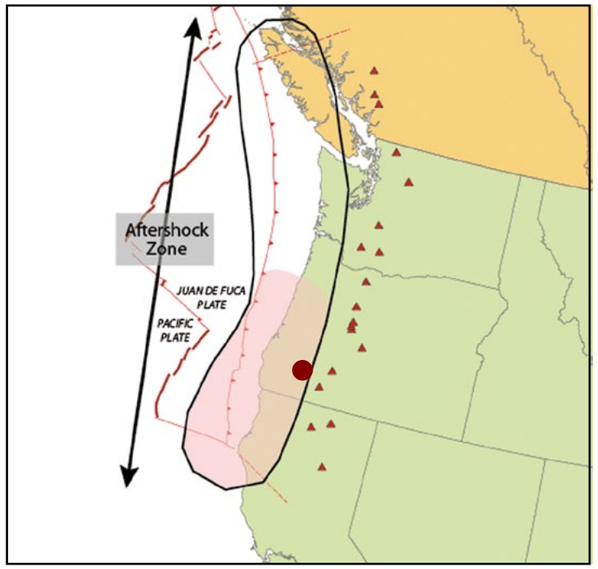
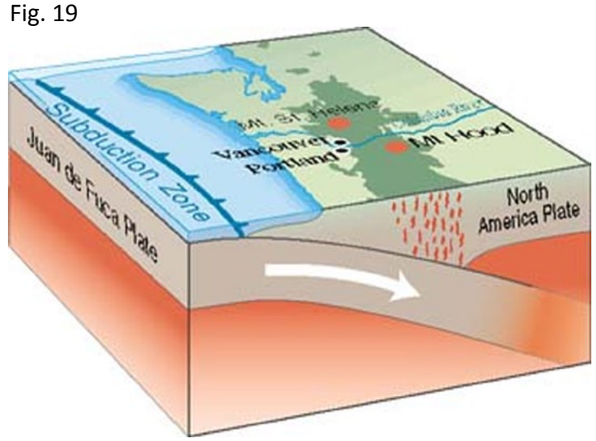
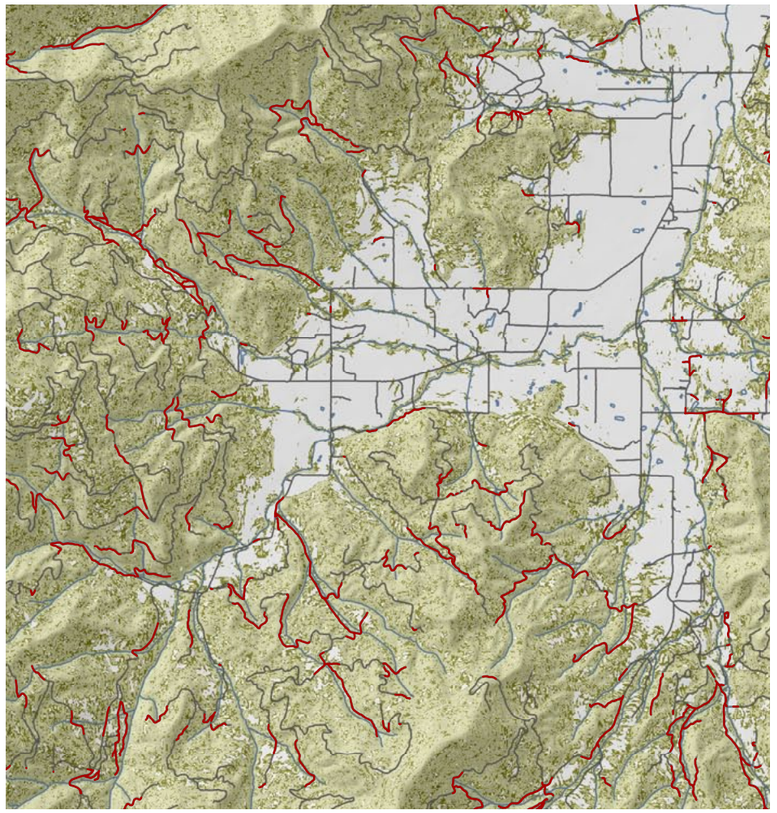


Fig. 19





↑ TARGET EFFORT[5, 6, 7]

SCALE 1:75,000

Due to the high erosion caused by logging activities on fragile granitic soils, a **strategy** for reforestation of logging roads is necessary. Above, a detail plan of part of the Williams watershed illustrating logging roads that occur on **steep slopes** within the **riparian zone**. These roads are of highest reforestation priority, but make up a relatively small portion of total vehicle access to the mountainous areas (30%). In light of recent down scaling of logging activities, **closure** and **reforestation** of noted roads is advisable.

Legend

- Target roads (on > 20% slope within the riparian zone)
- Roads
- Streams
- > 10% Slope
- 10 - 20% Slope
- > 20% Slope

RESPONSE

- Reclamation effort on logging roads, especially on steep slopes.
- Exploration of alternative crops and/or farming methods
- Potential for niche crops based on soil/microclimate?
- Emphasis on protection and fertility building of fragile soils, and protection/enhancement of quality soils.

VEGETATION AND WILDLIFE


Fig. 20


Fig. 21

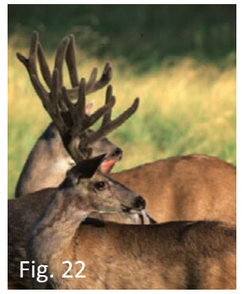


Fig. 22


Fig. 23


Fig. 24


Fig. 25


Fig. 26


Fig. 27


Fig. 28


Fig. 29

⟵ NATIVE BIODIVERSITY

Williams sits amongst the Siskiyou-Klamath forests, one of the most **species-rich** temperate forests in the world.

A diverse landscape lends itself to a variety of ecosystems, from the very specialised to the very generalist.

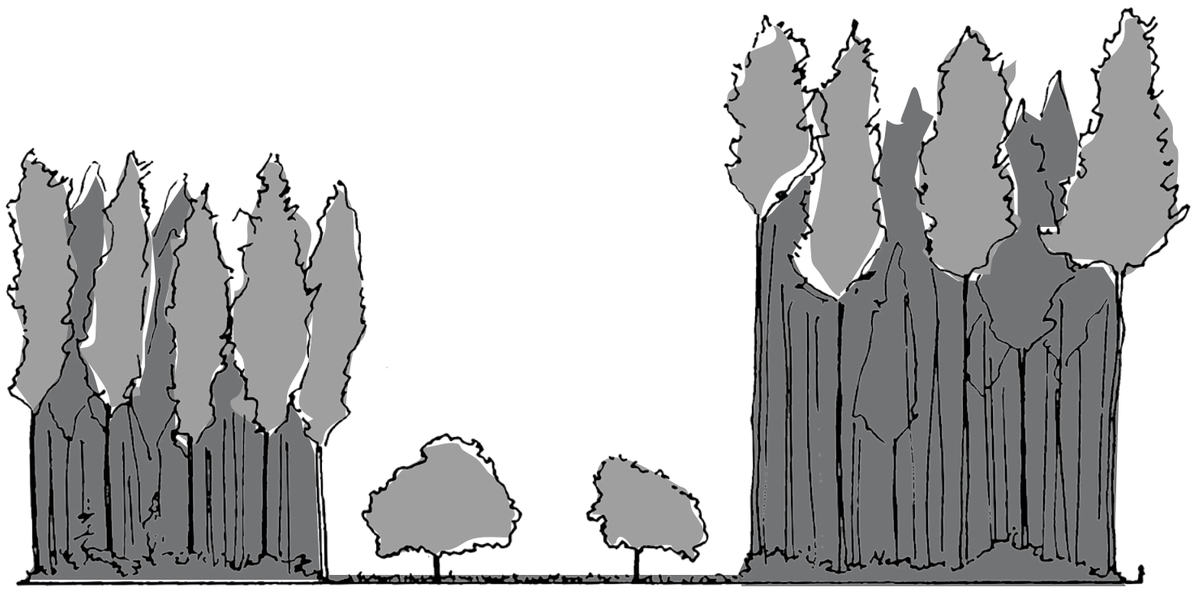
Iconic species like the Northern spotted owl and Siskiyou mountain salamander are indicative of **quality habitat**, and are known to be present in the Williams watershed. High levels of plant biodiversity create **colorful vernal landscapes**.

Many plant and animal species present are also good resources for humans. Native trees provide fire **fuel** and **building material**, while common deer and turkey are excellent **food resources**. Benefits of fostering native biodiversity are twofold: they provide immeasurable ecosystem services, while also producing very tangible resources and materials.

⟵ SPATIAL CHARACTER

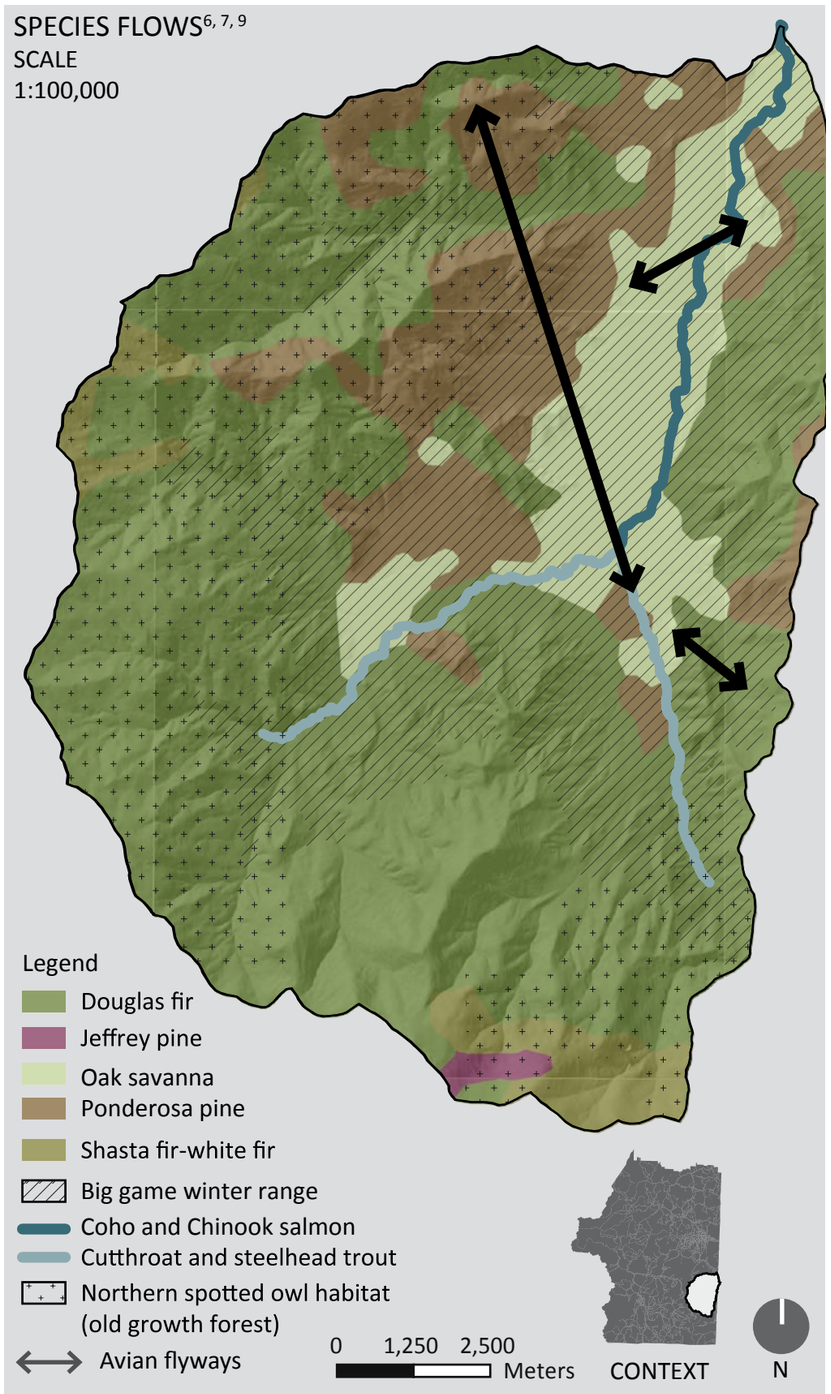
SCALE 1:1,250

Native landscapes in the region vary greatly in spatial proportion.



SPECIES FLOWS[6, 7, 9]

SCALE
1:100,000

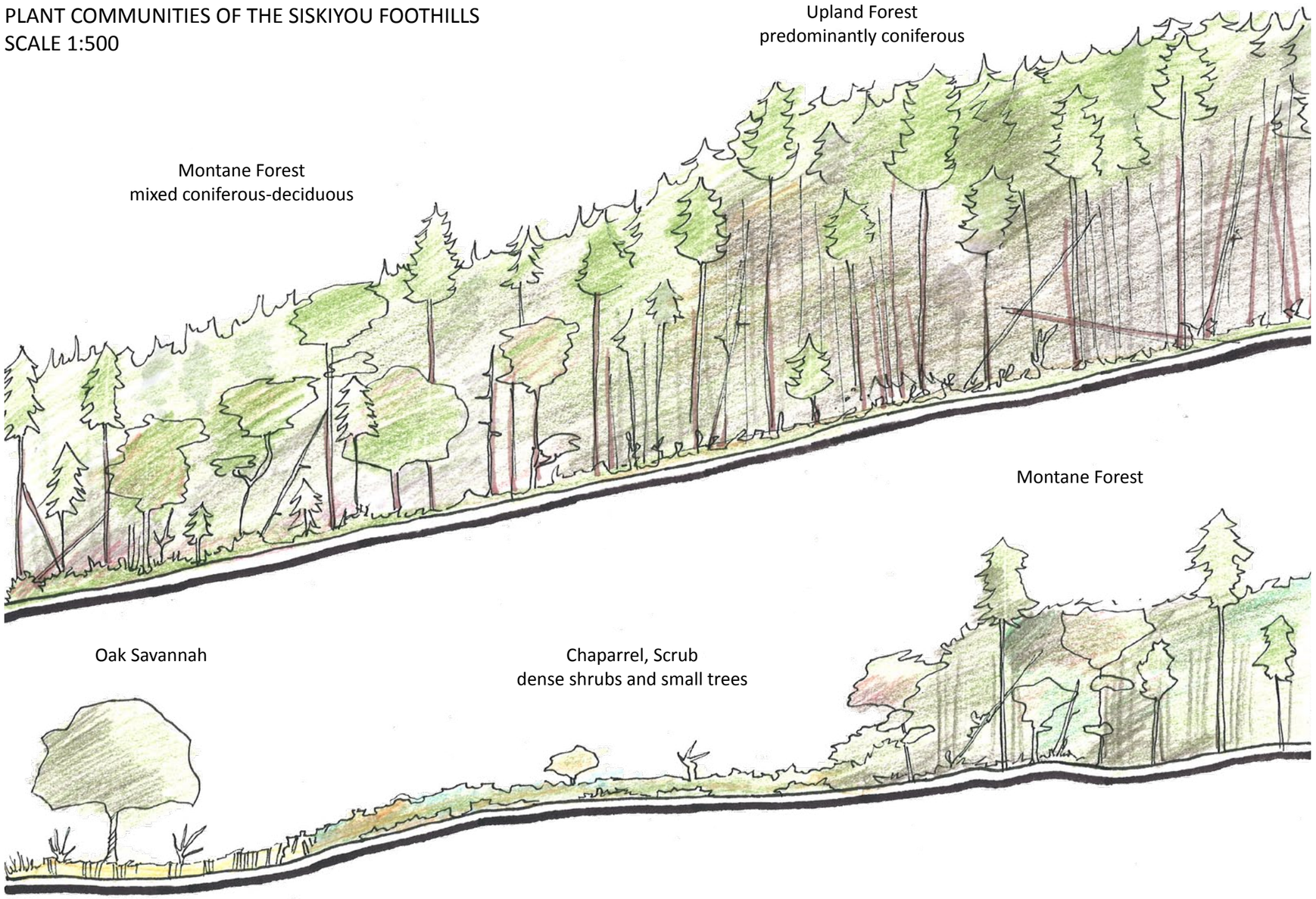


RESPONSE

- Provision of habitat for species with beneficial agricultural impacts.
- Maintenance of native coniferous species for fuel and building resource.
- Maintenance of forest ecosystem for food resources.
- Agroforestry or other extensive agriculture.
- Augmentation of ecosystem types to regulate microclimate.
- Develop aquatic habitat to enable uninhibited fish movement.

VEGETATION AND WILDLIFE

PLANT COMMUNITIES OF THE SISKIYOU FOOTHILLS
SCALE 1:500



⟵ HIGHLANDS
Dense communities on slopes and poor granitic soils dominated by conifers. Douglas fir, Ponderosa Pine, and Incense Cedar tower above a sparse understory. These communities are fire regulated and support a variety of animal life.

Steep slopes and **poor soils** show little promise for other uses, regionally, this plant community is critical for soil protection and can serve as a source of fuel and building materials for settlement. Primarily valued as habitat, as a timber resource, and for scenic experience.

⟵ FOOTHILLS
Landscape mosaic on the foot slopes is a mixture of montane forest and chaparral-type scrub. The scrub is dense and reaches up to two meters in height. Montane forest has relatively open understory and is a mixture of Oak, Madrone, and other deciduous species. At lower elevations, White Oak Savannah is also maintained by fire and can have an understory of grassland or scrub.

Valuable hardwood species present, as well as many opportunities for food harvest.

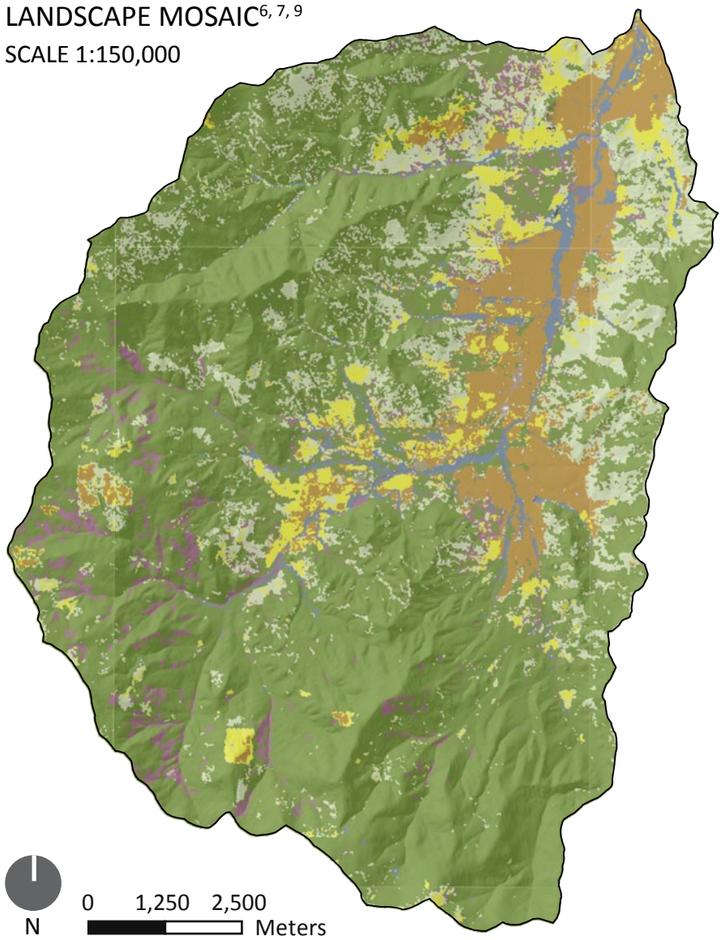
⟵ FLOOD PLAINS
Riparian areas are flanked by dense Willow and water-loving plant species. These areas are **critical** in terms of **conservation** because they are strongly linked to water quality. Riparian buffer of at least 8 meters and ideally between 16 and 32 meters are desirable.

High value landscape is productive and resource-rich.

LANDSCAPE ECOLOGY

LANDSCAPE MOSAIC[6, 7, 9]

SCALE 1:150,000



FIRE ECOLOGY

The Williams watershed is designated as a **high risk** forest fire area. Historically, forest fires were an important part of the landscape, acting literally to shape the forest and facilitate the **regeneration** of many species such as the knobcone pine.

Recently, fire has been absent from the landscape except in the form of **wild fires** exacerbated by buildup of fuels. Such fires are **highly destructive** and have become an annual occurrence in the Western United States. Methods of **controlled burning** and **forest thinning** act to mimic fire ecology and prevent natural disaster.

Fig. 30

← MATRIX

Evergreen **Douglas fir** and **Ponderosa pine** forest dominate the landscape. Associated **fire ecology** is prevalent but **suppressed** around developed areas.

← PATCHES

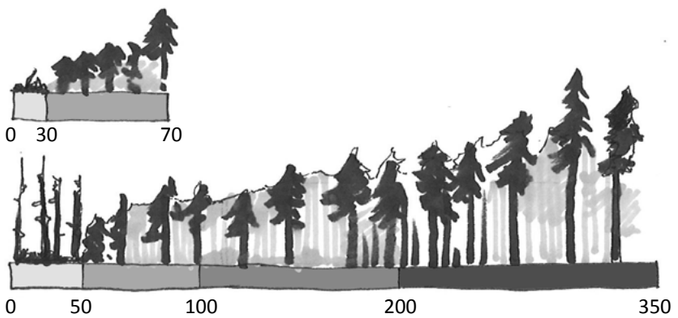
The landscape is punctuated by areas of **mixed montane deciduous forest** and **scrub patches**. In the settlement, grassland, pasture, and cultivated areas form a **mosaic** that is a patch within the larger context.

← CORRIDORS

Ecologically, the **riparian zone** forms a major corridor in the region for the movement of both species and pollutants. Some generalist species also utilize the **road network** for movement.

← EDGES

Edge quality is generally **high**, with **large ecotones** mitigating edge effects. However, **logged** and **developed** areas present **harsh edges** that impede the movement of wildlife.



↑ SUCCESSION

Comparison of succession under natural conditions and under a traditional logging regime. Climax forest is reached in natural contexts at approximately 350 years, and regeneration is spurred by fire. In a logging system, forest is cleared at 70 years, creating a single-aged stand and reducing community complexity.

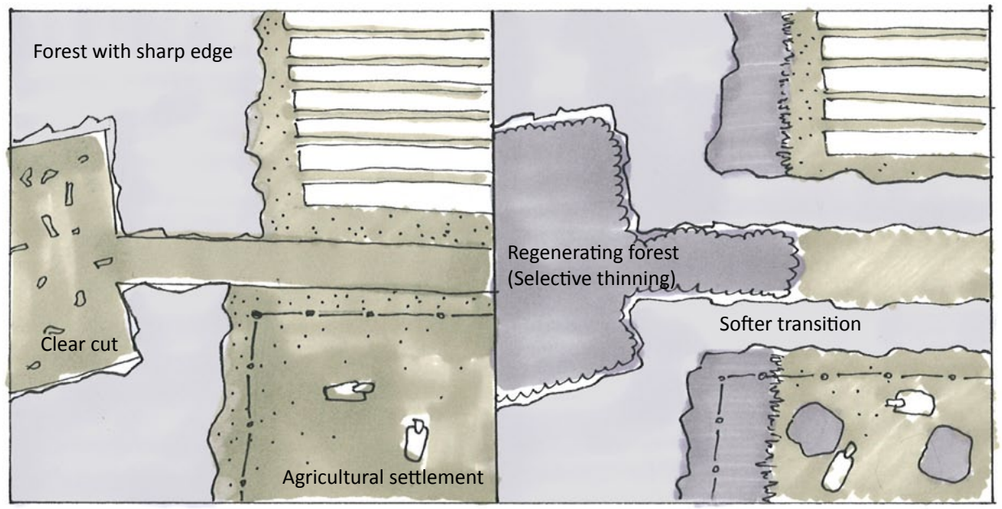
FRAGMENTATION AND DISTURBANCE[6, 7]

Normally disturbance is a healthy part of a functional landscape, but **anthropogenic** disturbances are primarily detrimental to the landscape. The process and impacts of large-scale logging result in heavy **soil disturbance** and earthworks, **reduced diversity** and **community complexity**, and **irreversibly altered regional microclimates**. Additionally, the succession achieved by logging is dramatically shorter than the natural process of forest aging.

The matrix of native coniferous forest in the Williams watershed is heavily fragmented by a network of logging roads and patches, shown at right (figure-ground).

RESPONSE

- Logging road reclamation to reduce fragmentation.
- Controlled burning and forest thinning program to reestablish favorable succession.
- Connect habitat zones with corridors.
- Reinstate strong riparian corridor.
- Implement agroecological systems to promote a more complex landscape.



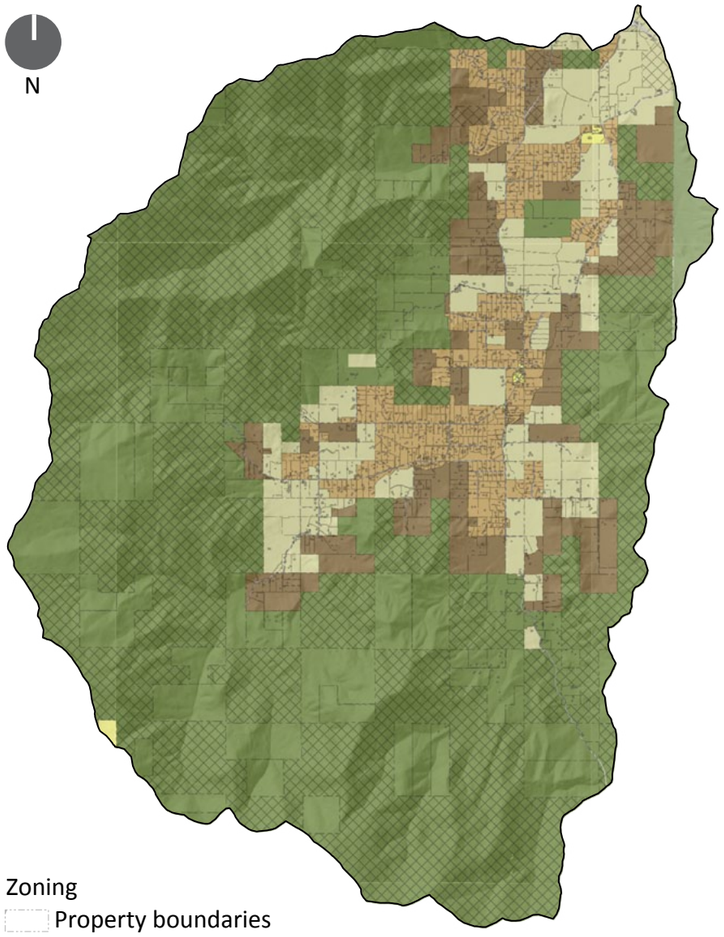
↑ EXISTING LANDSCAPE

Low edge quality, high fragmentation.

↑ POTENTIAL LANDSCAPE

Highly integrated and diversified.

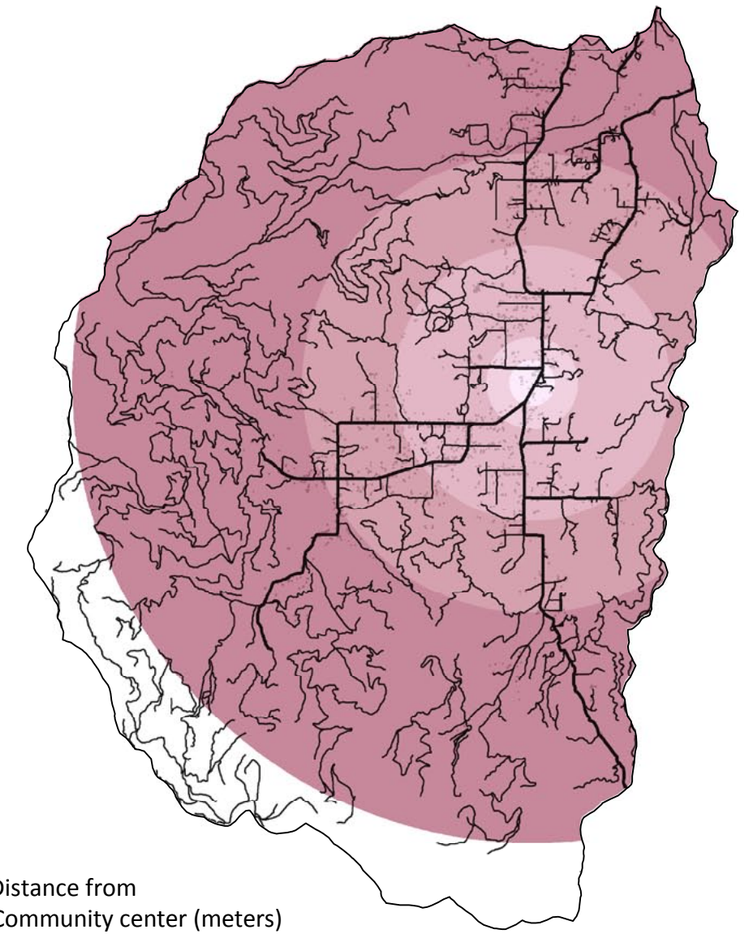
LANDUSE NETWORKS



Zoning
- Property boundaries
- Agriculture
- Commercial forestry
- Commercial
- Residential
- Woodlot
- Government land

LAND VALUES[5, 6, 7]

Strong division of land uses evident in landscape mosaic. Some use of layered functions exists in communal areas, but overall there is a **lack of developmental structure** and direction.

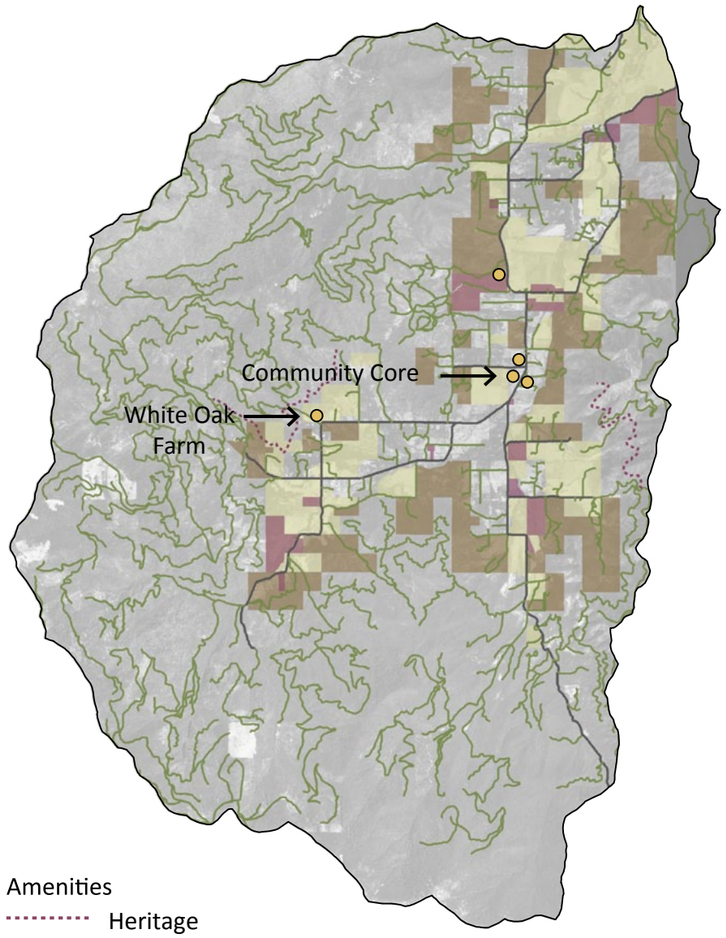


Distance from Community center (meters)
- 500
- 1,000
- 3,000
- 5,000
- 10,000

Roads
- County route
- Logging road

WALKABILITY[5, 6, 7]

The majority of the Williams settlement falls on the valley floor. Due to the rural nature of this development and associated sprawl, walking is not a viable form of transportation. Currently, provisions for non-vehicular transport are not available. Footpaths adjacent to the major roadways would present excellent opportunities for **cyclists** and **equestrians** to reach the village centre efficiently.



Amenities
- Heritage
- Recreation
- County route

Heritage
- Agriculture
- Woodlot
- Community

COHESION[5, 6, 7]

Little cohesion exists between various land uses. Recreation is an afterthought, taking place predominantly via old logging roads. Two Hydraulic Pits hearken back to the gold mining area, but only a portion of the Layton ditch has been utilised as a phenomenological landmark. The Community Core is currently **undeveloped** and very **weak experientially**.

CONTEXT

0 1,250 2,500 Meters

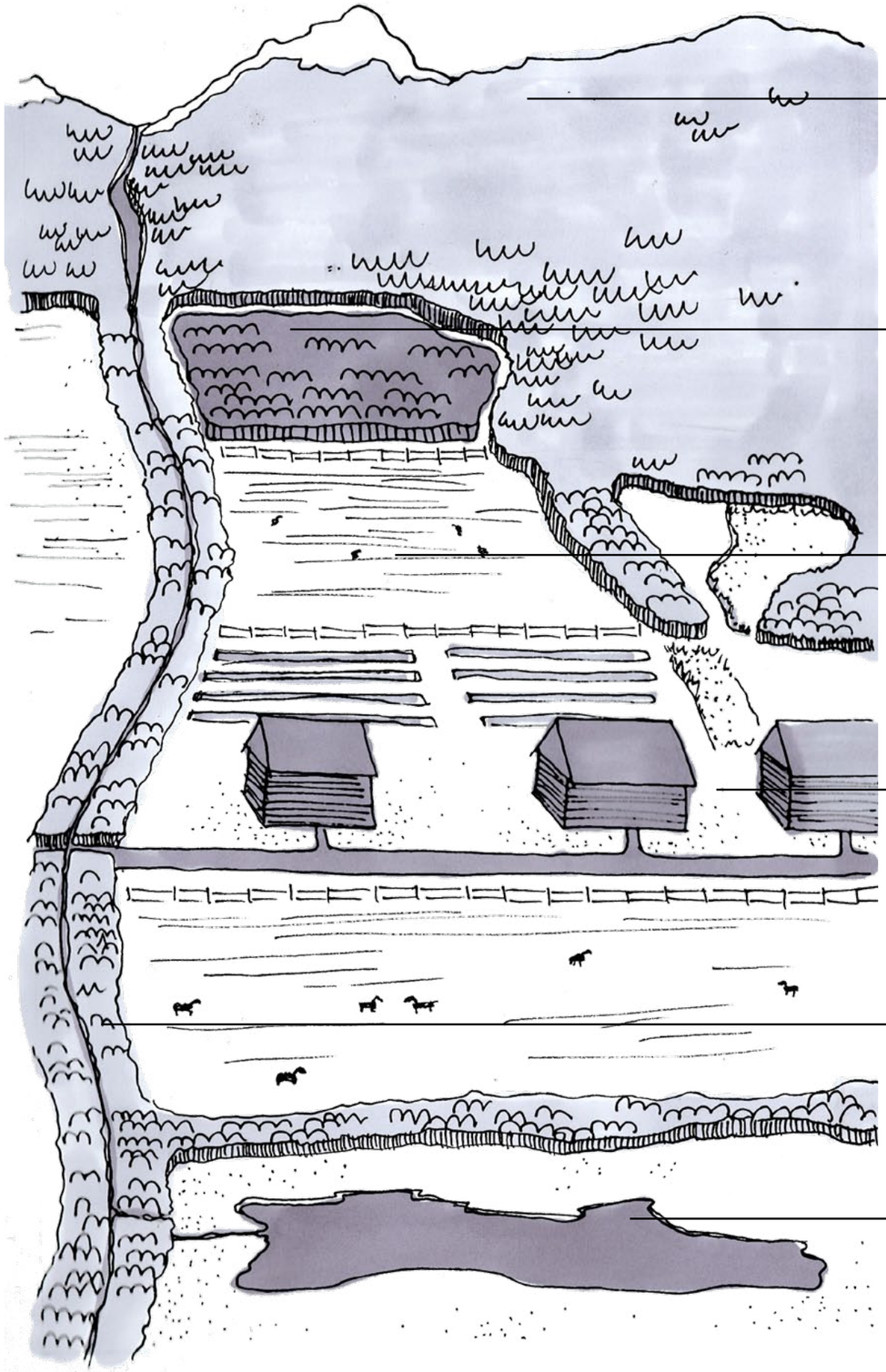
RESPONSE

DIVERSIFIED LANDSCAPE
- Structure new development based on community vision.
- Better integrate natural and agricultural systems.
- Identify commons land for communal use.

ACCESSIBILITY
- Install roadside path for cyclists, equestrians, and pedestrians.
- Revitalize town centre to draw people in spontaneously.

STRENGTHEN COMMUNITY INFRASTRUCTURE
- Emphasize community places.
- Connections to heritage points.
  - Hydraulic Pit recreational trails.
- Strengthen core areas, especially education centers (public and private school, White Oak Farm)
- Develop community center.

THEORETICAL CONTEXT



Sustainable logging
Nature as resource and observatory
Revalue native systems and species
Scenic and cultural value

Agriculture as extension of environment
Utilization of ecosystem services
Efficiency through holistic management
Functional landscape mosaic

Regionally appropriate crops and species
Value-added products
Microclimate exploitation
Closed nutrient and energy loop

Reduce petroleum dependence
Enhance connectivity
Revitalize economy
Forge relationships and connections
Sense of place
Local vernacular (materials etc.)

Ecological elements in settlement
Community as extension of environment

Establish self-renewing systems

AGRICULTURE AS FACILITATOR

Literally, agriculture forms the basis for an exchange of materials and energy between the environment, the community, and the individual. This manifests itself in the historic spatial form of towns and villages, in which the developed centre was surrounded by concentric rings of cultivation and a subsequent transition to wilderness. Modern sprawl and distribution networks corrupt this interaction by removing centres of production from centres of consumption. In order to revitalise a community, this fundamental connection between people and their immediate environment must first be restored.

EJIDO

In many cultures, the concept of a commons is present. In Mexican tradition, the ejido is an expanse of land that is understood to be under communal ownership and for communal use. Concepts of gleaning and foraging are also relevant. Such usufructuary rights ensure that the community has a common interest in their immediate environment, and individuals are bound in their exploitation of the landscape by that interest.

EXTENSIVE AGRICULTURE

Systems-based, low input agriculture such as extensive agriculture (often referred to in pastoral systems) is often understood to have lower yields. In the context of the larger landscape, however, the ecosystem services provided by an extensive system more than make up for the diminished economic returns. In such a system, the health and functionality of the entire system is of high value, ensuring the quality of harvested products.

PERMACULTURE

“The science of maximizing beneficial relationships.” Permaculture is a design philosophy that utilizes ecological processes in order to create a high yielding, low-input agriculture. Permaculture systems are often highly specialized and complex. On a small scale, Permaculture emphasizes diverse productivity, while on a large-scale resilience is a key benefit.

TRANSITION TOWNS

A movement that aims to prepare communities for the twin problems of climate change and peak oil by enabling local resilience through Permaculture design. In 2008 there were 35 Transition Towns in the UK alone.

PRECEDENTS

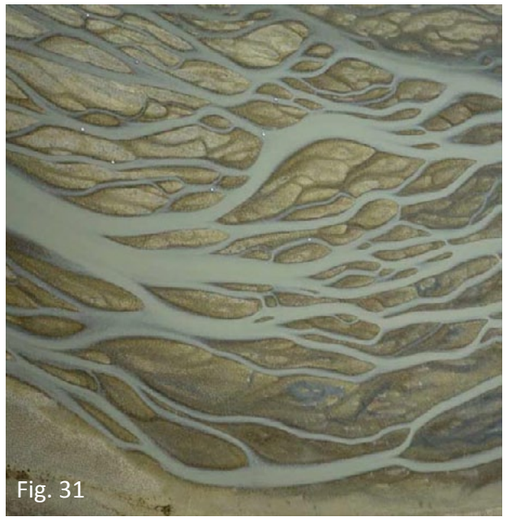


Fig. 31

↑ VETA LA PALMA
PUEBLA DEL RIO, SPAIN
Largest private bird sanctuary in Europe and simultaneously a functional fish farm, yields 1200 tons of fish annually.

Fig. 32

↑ HARDWICK
VERMONT, UNITED STATES
Small town revitalized by a strengthened agricultural infrastructure. Featured in the book *The Town that Food Saved*.


Fig. 33

↑ CEDAR RIVER EDUCATION CENTER
WASHINGTON, UNITED STATES
Watershed education center with excellent educational gathering spaces and storm water conveyance.


Fig. 37

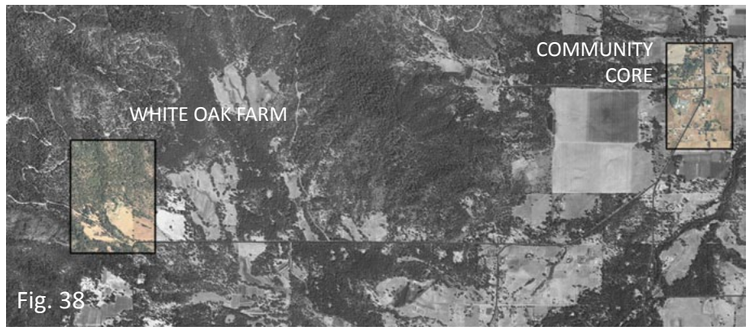


Fig. 38

↑ FOCAL DESIGN AREAS
White Oak Farm and Williams' Community Core.


Fig. 34

↑ KOANGA GARDENS
KAIWAKA, NEW ZEALAND
Center for sustainable living. Founded by Kay Baxter with strong emphasis on heritage plant varieties and seed saving.


Fig. 35

↑ POLYFACE FARM
VIRGINIA, UNITED STATES
Highly integrated and productive Permaculture-based farm. 100 acres produce 40,000 pounds of beef, 30,000 pounds of pork, 25,000 dozen eggs, 20,000 broilers, 1,000 turkeys, and 1,000 rabbits annually.

Fig. 36

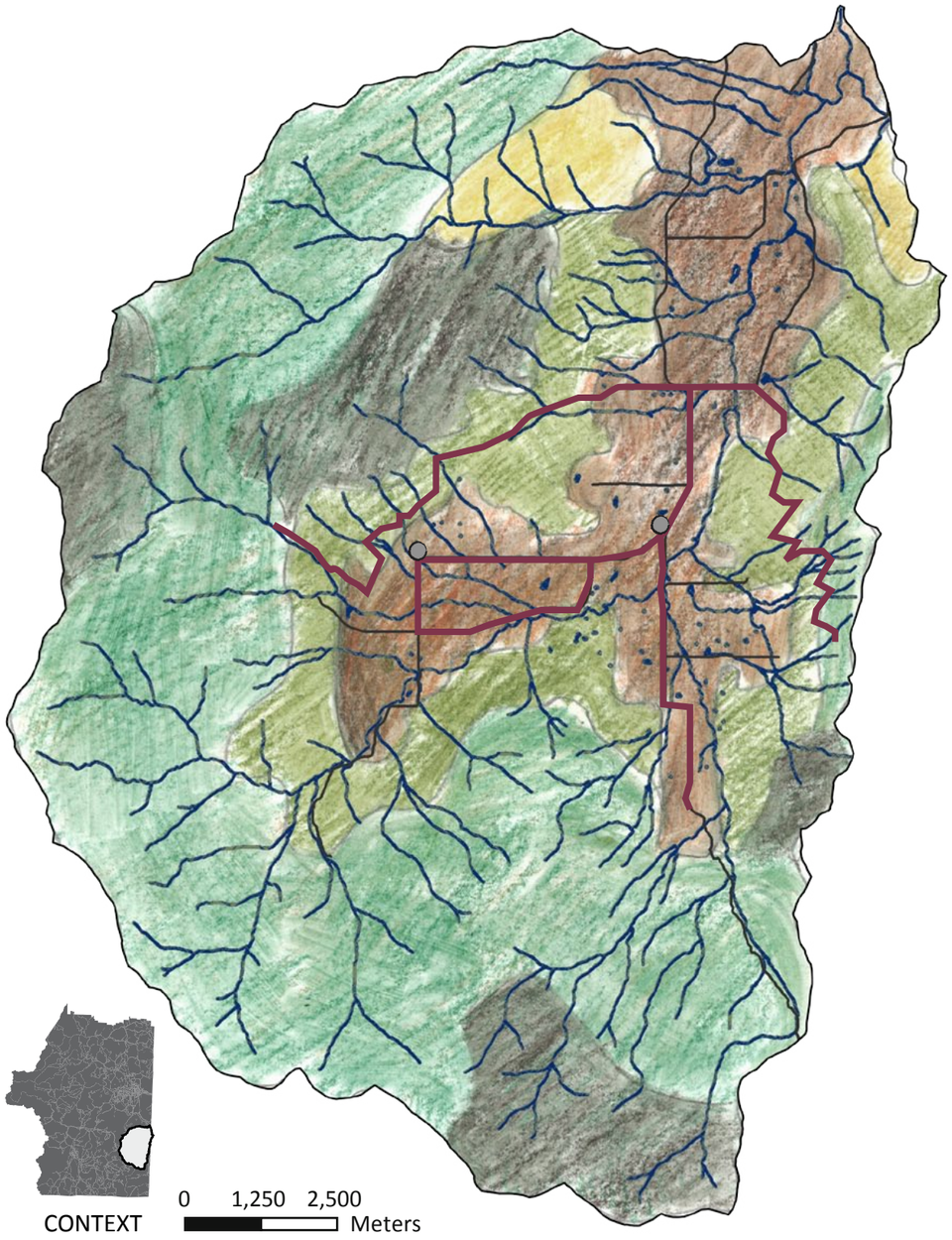
↑ GLENCOE ELEMENTARY SCHOOL
OREGON, UNITED STATES
A Portland school with a functional and educational rain garden. Pragmatic use of open space with high social value.

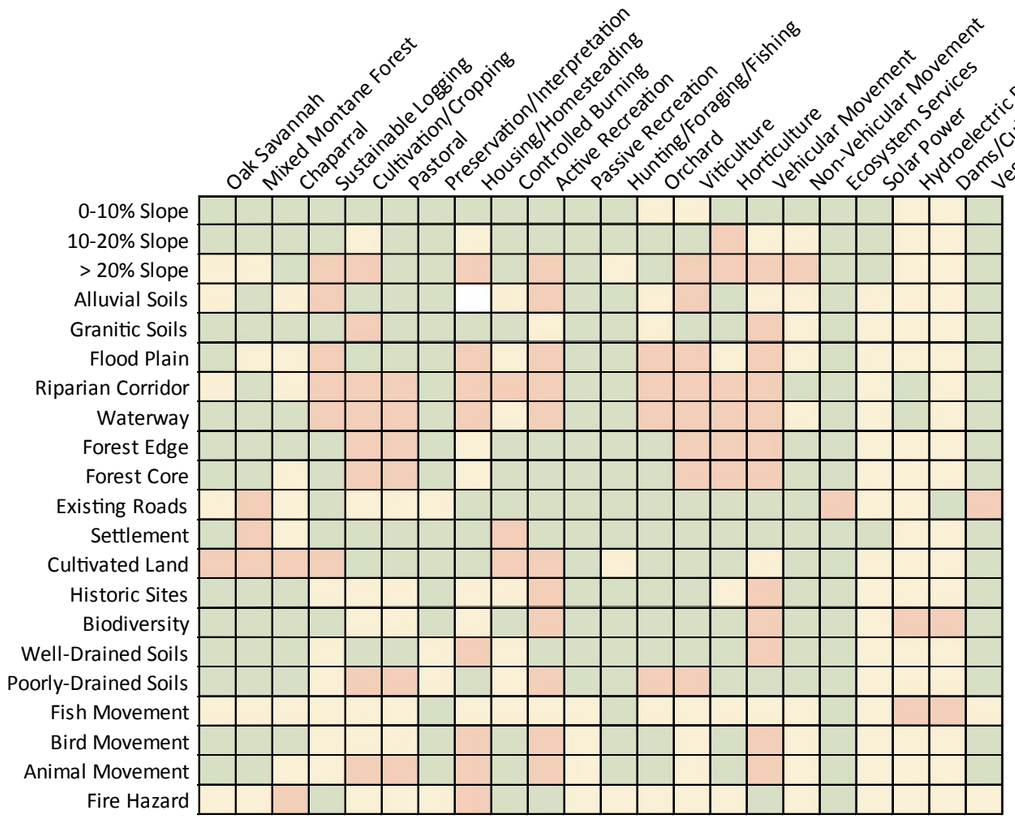
RESPONSE
To best manifest changes in community capacity, two central areas have been selected. The **Community Core** is the economic and educational heart of Williams, and is in need of an enhanced social network.

As a community-backed venture, White Oak Farm could become a major outreach and education center, potentially a leader in Williams' transition. Combined with a regional strategy based on extensive management and a holistic systems approach, a strengthened agricultural infrastructure could be based in the community center and supported by White Oak Farm to create a fully integrated sustaining network.

Williams' town center is also in strong need of development. An integrated public space could be functional, educational, and highly valuable to the community

SITE DESIGN FRAMEWORK





← SUITABILITY

Site conditions and associated opportunities and constraints for future designed uses.

Legend
- Neutral/Low Impact
- Compatible/Positive Impact
- Incompatible/Negative Impact
- More Information Needed

MANAGED MOSAIC
- Subject to more intense management
- Coppiced woodland, fuel and building resources, food resources
- Mix of montane deciduous and coniferous forest, with scrub and savannah patches
- Winter game habitat

AGRICULTURAL VALLEY
- Agricultural matrix, with high level of perforation by habitat patches and corridors
- Residential areas clustered around roads
- Multiuse land, blurred distinction between agricultural land and parkland
- Roughly half of watershed area
- 30% designated for community sustenance

OAK SAVANNAH MATRIX
- Subject to some management to maintain structure (controlled burning)
- High aesthetic value

NATURAL FOREST MATRIX
- 30% reforestation of logging roads (steep slopes, riparian zone)
- Left mostly to natural process, except for some controlled burning and thinning
- Broad-range habitat and biodiversity source
- Aesthetic and recreational value

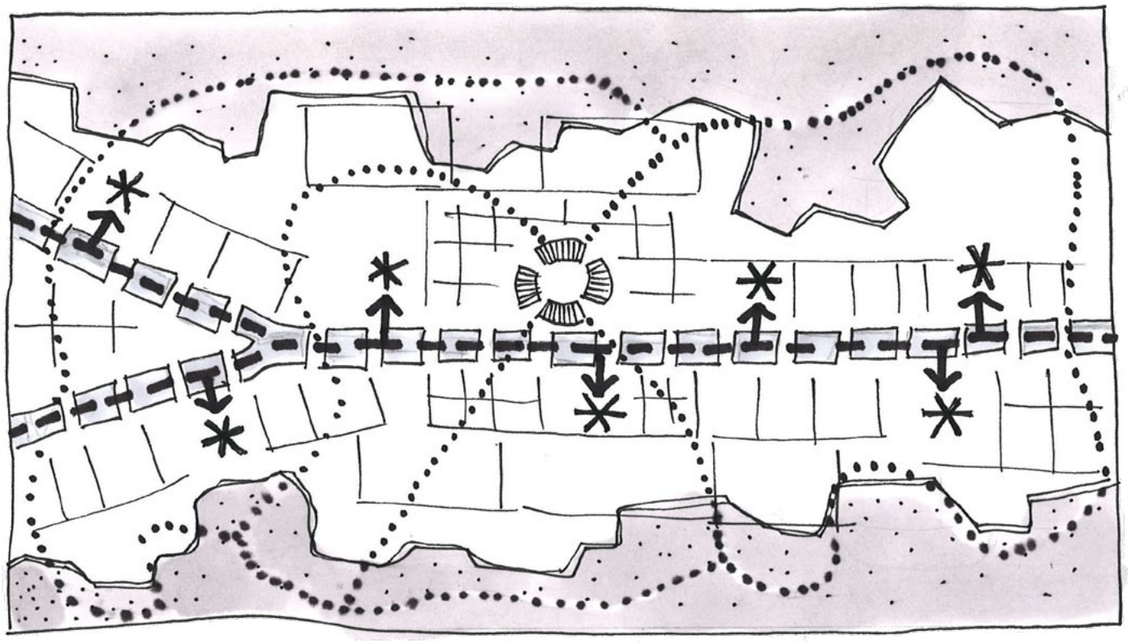
PONDEROSA PINE MOSAIC
- 60% reforestation of logging roads
- Closed canopy
- Maintenance of primitive recreational sites
- Natural processes allowed to occur (except where hazardous)
- High aesthetic value
- High habitat value

RIPARIAN CORRIDOR
- Class 1 streams: at least 20 meter buffer
-Class 2 streams: at least 30 meter buffer
- Flood plain protection
- Removal of structures that impede fish movement
- Reclamation of some roads in riparian zone

PEDESTRIAN CORRIDOR
- Hardscape footpath adjacent to major roads
- Maintain separation from vehicular traffic to increase safety
- Interpretive trails on historic hydraulic pit locations (adjoin with existing Layton Ditch Trail)

COMMUNITY ENHANCEMENT
- Strengthen community center
- Increased economic opportunities
- Increased educational opportunities (schools)
- Strengthen agricultural infrastructure via White Oak Farm

DESIGN CHARACTERISTICS



Legend

- Vehicular
- Non-Vehicular
- Point of interest
- Node
- Recreation path

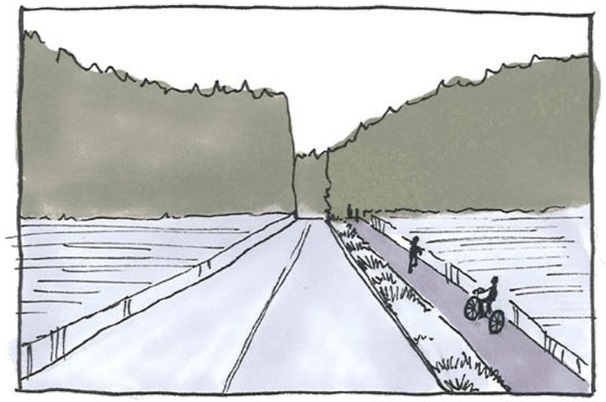
⟵ CIRCULATION

Due to the sprawling nature of rural development, successful pedestrian circulation requires multiple points of interest (cottage industries, shops etc.) on the way to the central node (gathering space, educational and economic center). Recreation paths weave through countryside and forest, and intersect with the central node as well.

Properties increase in density with proximity to the community center.

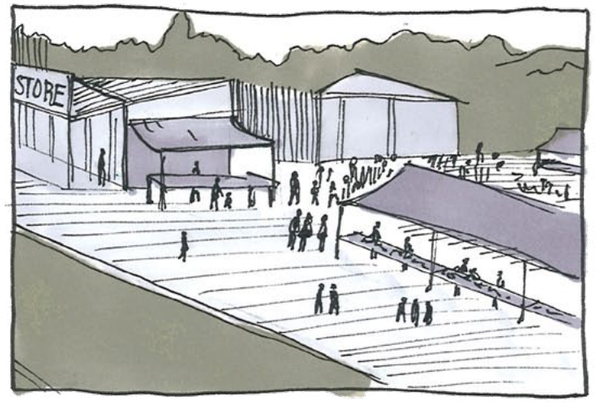
CONNECTIVITY ⟶

Enhance non-vehicular travel opportunities, especially to strengthen linkages between residential areas, agricultural areas, and community center.



GATHERING ⟶

Integrate more outdoor gathering spaces and activity nodes. Ideally, a single, centralized community space could be very versatile.



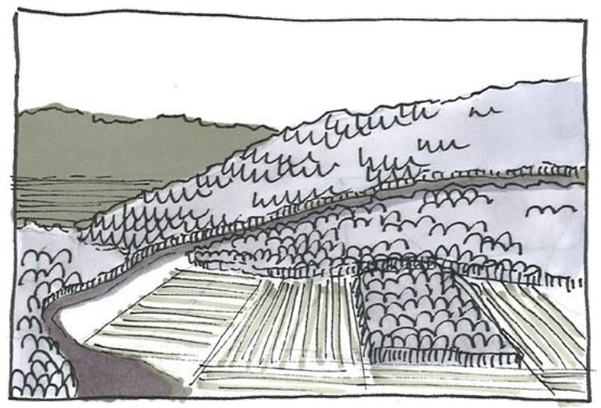
⟵ RAIN GARDEN

A public space centered around a rain garden provides a strong opportunity for watershed education. Sculptural elements could reflect freshwater fish, water movement, land forms, and regional geology.

Flat lowland topography leaves opportunity to play with land form. A raised or sunken plaza may identify the space.

RECREATION ⟶

Extend recreational areas into farmland for an integrated landscape experience. Link semi-public “parks” (countryside recreation areas) to create a series of agroecological reserves.

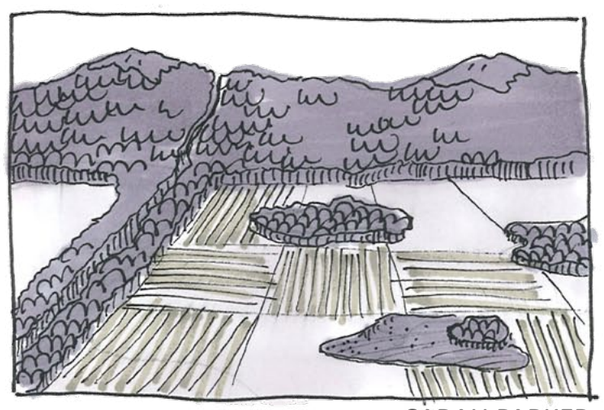


EDIBLE GARDEN ⟶

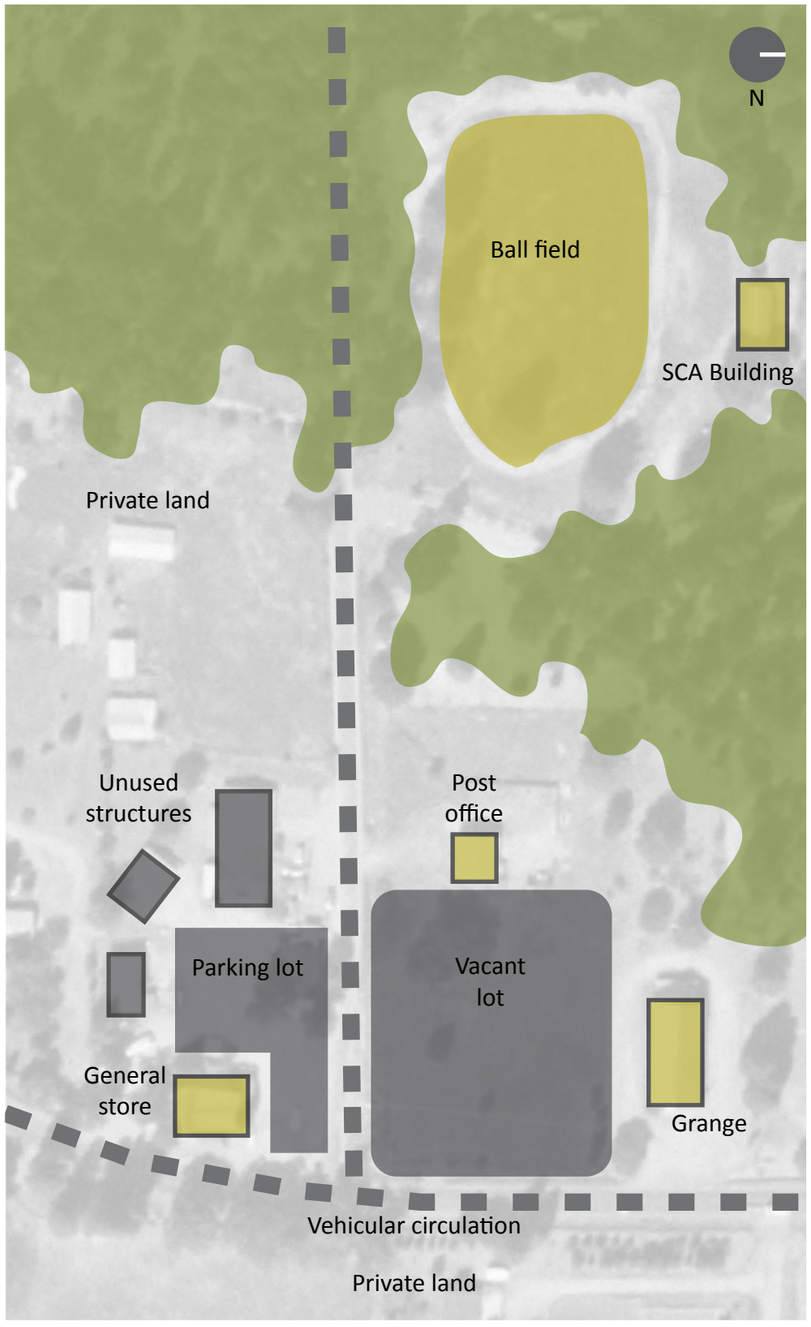
A public space centered around an edible permaculture garden or forest provides many educational and experiential opportunities. Such a space could integrate a rain garden to demonstrate storm water catchment and efficient use and infiltration of water.

HABITAT EXTENSION ⟶

Break up the agricultural matrix with managed habitat buffers, corridors, and patches. These create stepping stones to connect biological hot spots, allow for the recolonization of disturbed patches, and protect genetic diversity.

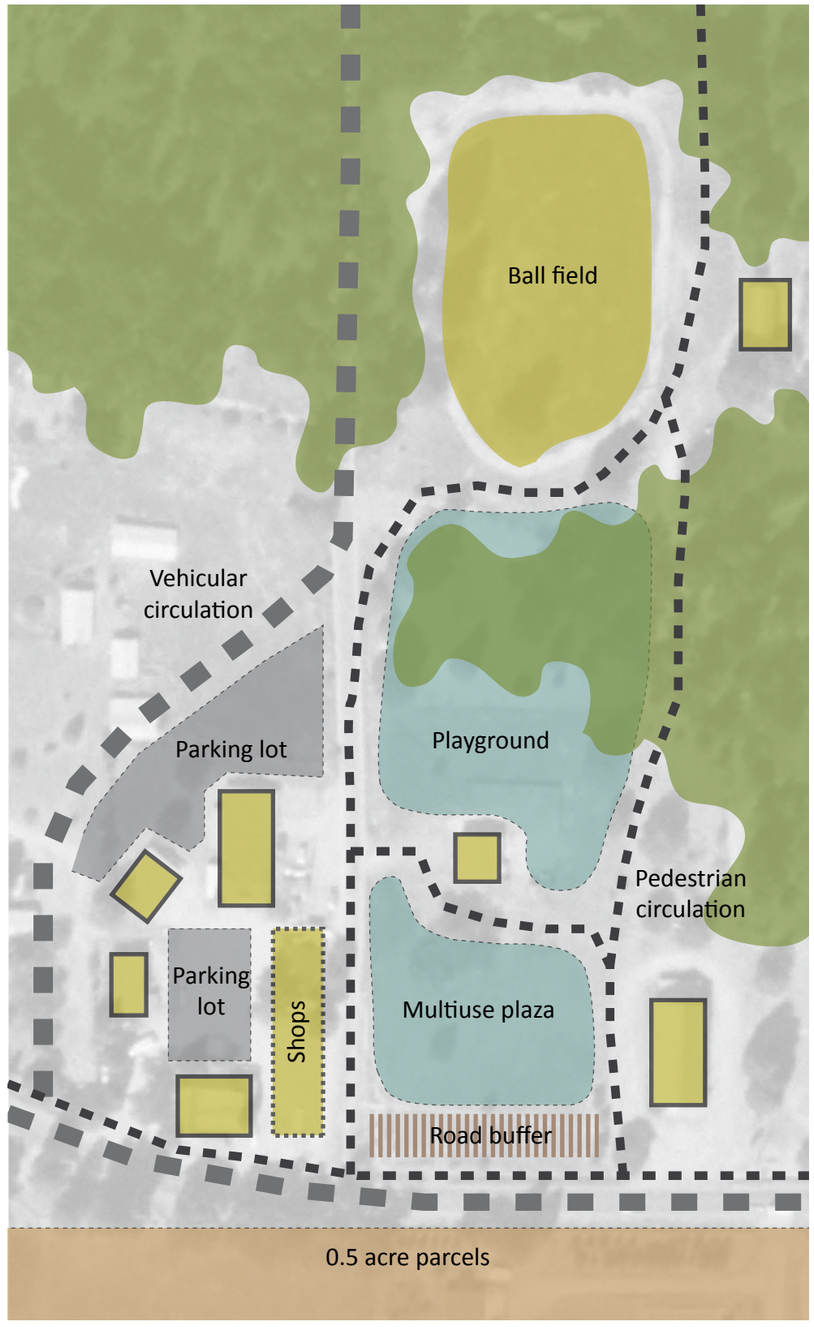


COMMUNITY CORE DESIGN CONCEPTS



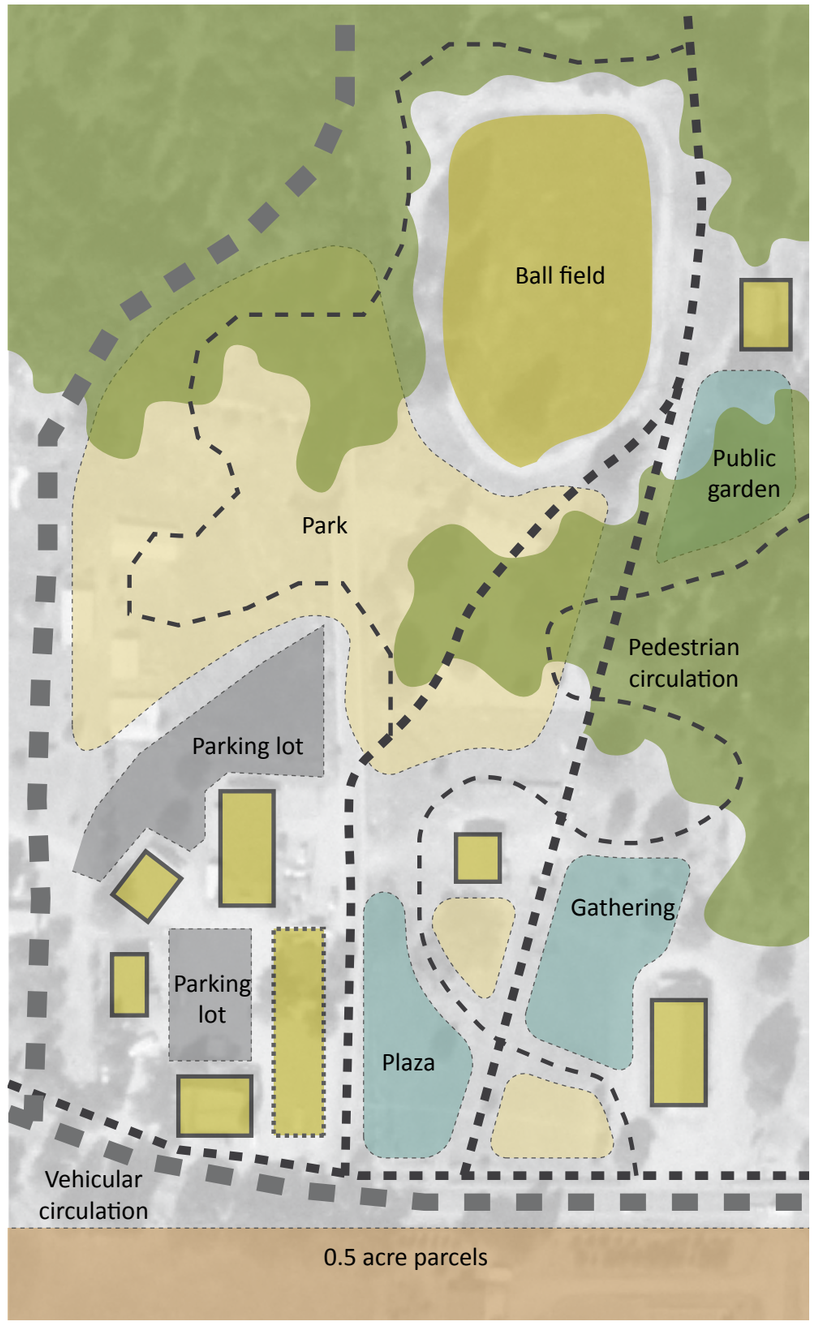
EXISTING DEAD SPACE

Vehicular circulation and dead space dominate the Community Core. These static areas fragment the space, and there is no unifying design or developed community gathering space. Some programmed uses indicate strong community character, but Williams is in great need of a dynamic, multifunctional public space at its heart.



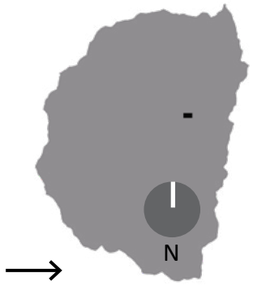
RE-PURPOSING CIRCULATION

Vehicular circulation is moved to the exterior of the space, with a simple pedestrian network connecting a row of shops, a multifunctional plaza, and a playground/park to existing public structures.



RE-PURPOSING EXPERIENCE

An intricate network of pedestrian paths meanders through open public spaces and naturalized park land. Ideally, uses would be defined by the footpaths, but not divided by them. Abundant seating focused on sculptural and educational elements, as well as ample open space to maintain versatility.



CONTEXT →

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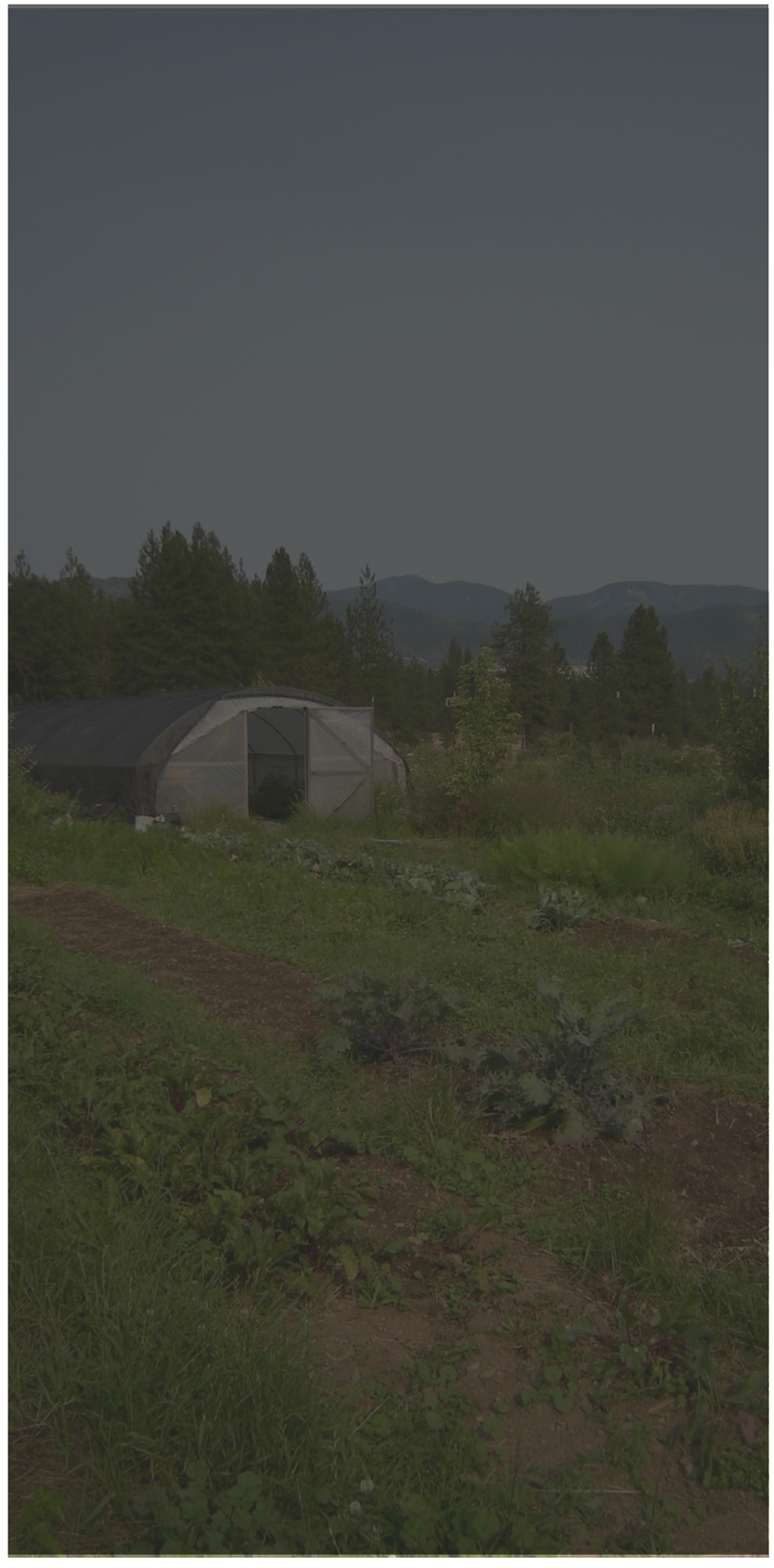


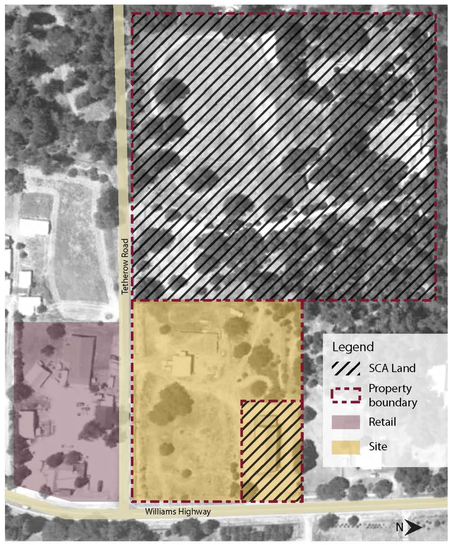
BACKGROUND

Williams, Oregon is a modest rural community situated in an iconic and diverse landscape in the Klamath-Siskiyou ecosystem. It has similar characteristics to other resource-based rural economies. By utilizing a master plan that enhances connectivity and opportunities for interaction and local commerce, communities like Williams become strengthened by design. With an objective to increase resilience and therefore create a more sustainable community at the regional scale, greenways, non-vehicular circulation, community gathering spacesare proposed. To design for resilience on a smaller scale, a site with high potential to enhance community activities was selected within the Williams Community Core. The Williams Community Park utilizes design that reflects the local landscape and ecology, provides for multifunctional spaces, and connects adjacent uses to create a vibrant community space.

OREGON

JOSEPHINE COUNTY

WILLIAMS WATERSHED



CONTEXT

The Williams Community Core is situated at the intersection of the Williams Highway and Tetherow Road. The Sugarloaf Community Center (SCA) property houses the Williams Grange, recreation fields and playgrounds, and multifunctional structures (currently used for educational purposes). Across Tetherow road are a few stores and amenities. A privately owned parcel in between these community spaces has strong potential to be developed into a community park that would provide gathering, recreational, and educational programmed uses. Currently, the Faremers Market is held on the North side of the Grange building. Relocating the farmers market to a more central location immediately strenghtens connectivity between the other community destinations.

CONCEPT: PARK AS KEYSTONE

The site's small scale allows for design that emphasizes simple materials and construction, details that are easily accessible for a rural community. The location serves as a keystone for the community core, situated between lively amenities and the SCA land (which houses educational and recreational facilities). Moving the Williams Farmers' Market into the on-site Pavilion allows the property to serve as a bridge between the various key spaces in the core. Main entrances are emphasized with permeable unit pavers in a design reminiscent of piled up logs, inspired by the area's logging history. Benches constructed of gabions, filled with local rock and topped with wood echo this design. Local materials and aesthetic is showcased, with simple stonedust paths intermittantly lined with granite boulders meandering through the space, the boulders gather heat and provide an interesting connection to nature in the form of lizard habitat. Planted areas are inspired by native ecosystems: dense woodland, white oak savanna, and constructed ephemeral pools provide educational opportunities and habitat for native species. While most of the property has been designated as public, a portion has been reserved as private to serve as storage for the owner. By connecting the amenities and services of Williams, this space becomes a valuable multifunctional gathering space.

IMAGE SOURCES:
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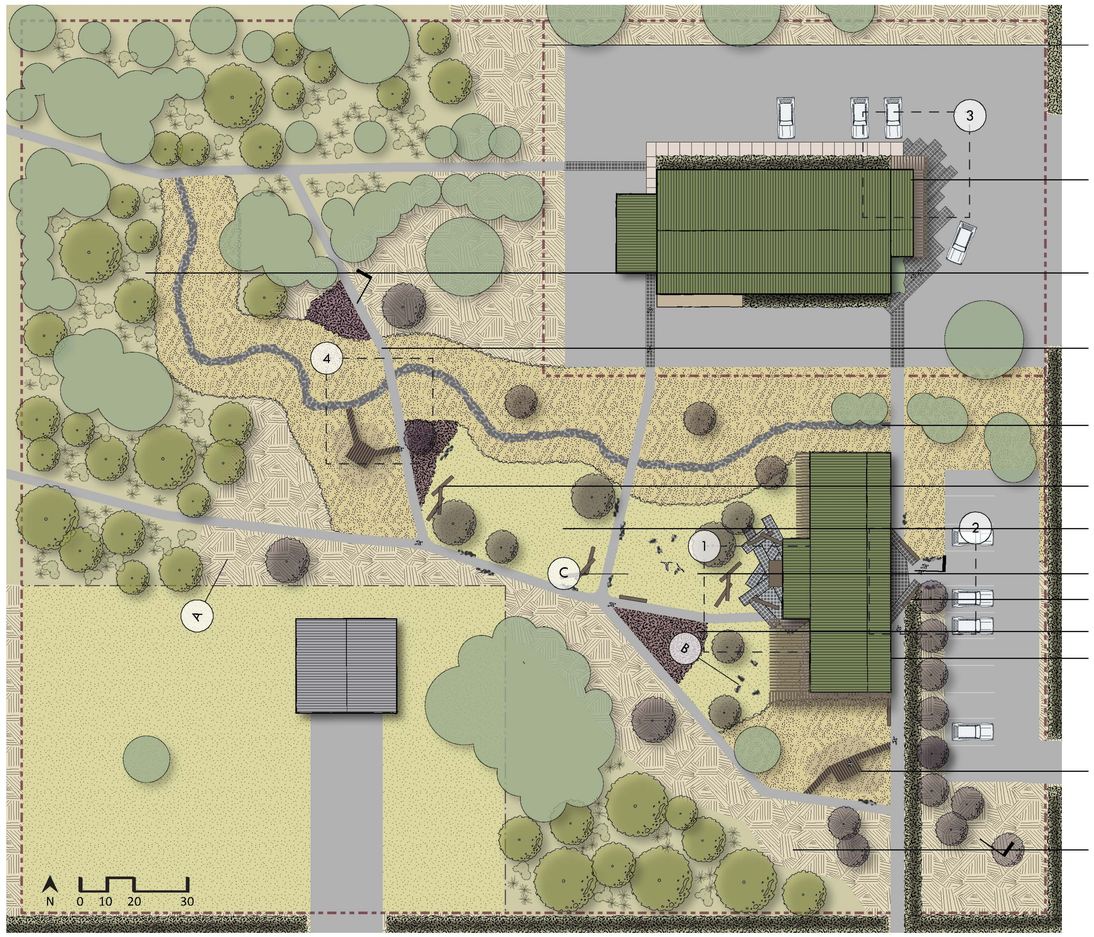
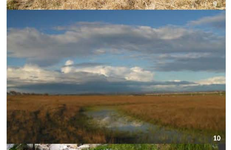


PLAN | SCALE 1" = 20'

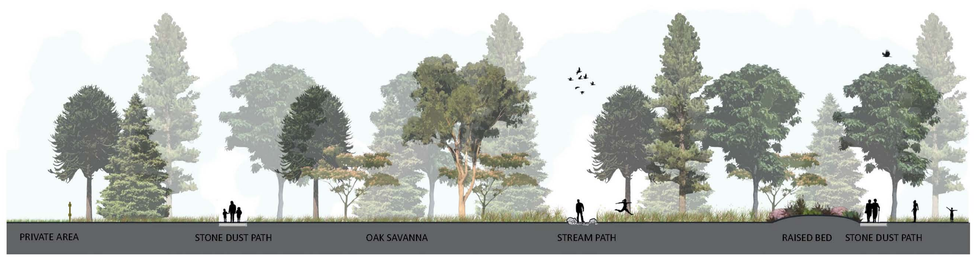
MATERIALS

PLANTING TYPES



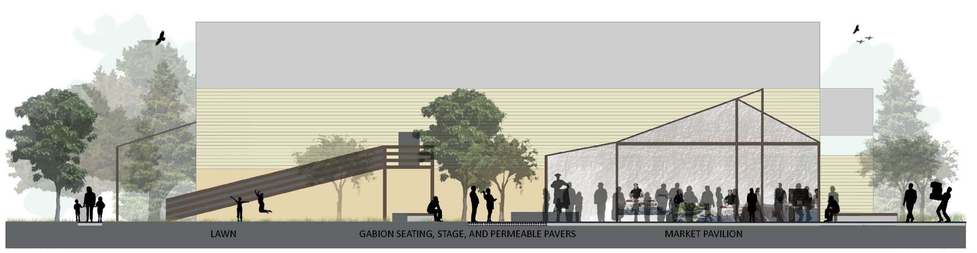
Materials (from top): Gabions, permeable pavers, pavillion, boulder piles, playground, boardwalk.

Planting Types (from top): Bioswale, woodland, oak savannah, grassland, ornamental beds.



SECTION A SCALE 1" = 8'

SECTION B SCALE 1" = 8'

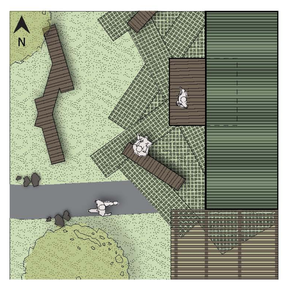


SECTION C SCALE 1" = 8'

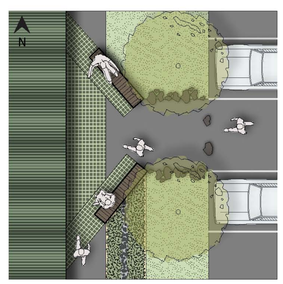
View East looking toward pavilion stage, lawn, and gabion seating.

View North looking toward pergola seating area, ephemeral pool, and main entry to pavilion.

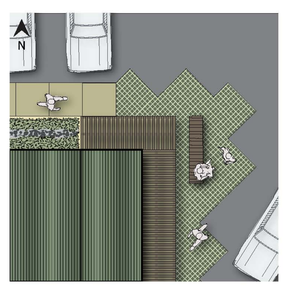
View West through stream path and lawn with gabion seating, toward dense native woodland.



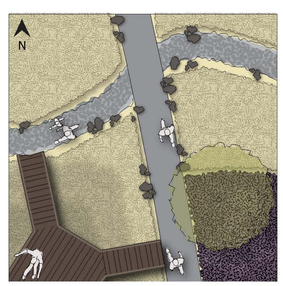
DETAIL 1 SCALE 1" = 8'



DETAIL 2 SCALE 1" = 8'



DETAIL 3 SCALE 1" = 8'



DETAIL 4 SCALE 1" = 8'

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Education

Bachelor of Landscape Architecture, The Pennsylvania State University, Fall 2010
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Thesis Title: Sustaining Resilience in the Rural Landscape: A Case Study in Community Design
Thesis Supervisor: Larry Gorenflo

Study Abroad, Lincoln University, New Zealand, Academic Year 2009-2010

Related Experience

Participant, Willing Workers on Organic Farms (WWOOF), Various Locations, New Zealand, 2009

Member, Pennsylvania Association for Sustainable Agriculture

Member, American Society of Landscape Architects

Awards

Annie's Homegrown Sustainable Agriculture Scholarship, 2010

The Donald Girouard Memorial Scholarship, 2009

Schreyer Ambassador Travel Grant, 2009

Central Section, PA/DEL Chapter ASLA Scholarship, 2008

PSU Department of Landscape Architecture Department Excellence Award, 2007, 2008