

United States Department of Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900a). Type all entries.

New Submission Amended Submission

A. Name of Multiple Property Listing

HISTORIC BARNs OF WASHINGTON STATE

B. Associated Historic Contexts

(name each associated historic context, identifying theme, geographic area, and chronological period for each)

- Late 1830s to 1850: Early Settlement
- 1850s – 1870s: Donation / Homestead Period
- 1880s – 1910s: Railroad Settlement Period
- 1920s – 1940s: Mechanization Period
- 1950s – Present: Post WWII Period

C. Form Prepared by

name/title _____ Spencer Howard & Holly Taylor _____

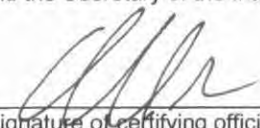
organization __ Artifacts Consulting, Inc. & Past Forward Northwest Cultural Resources _ date _ Sept 2011 _

street & number __ 201 North Yakima _____ telephone __ (253) 572 - 4599 _____

city or town __ Tacoma _____ state __ WA _____ zip code __ 98403 _____

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation. (_ See continuation sheet for additional comments.)


Signature of certifying official

11/4/11

Date

Washington State Historic Preservation Office
State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper of the National Register

Date of Action

Table of Contents for Written Narrative

Provide the following information on continuation sheets. Cite the letter and the title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in *How to Complete the Multiple Property Documentation Form* (National Register Bulletin 16B). Fill in page numbers for each section in the space below.

	Page Numbers
E. Statement of Historic Contexts (If more than one historic context is documented, present them in sequential order.)	1 - 26
F. Associated Property Types (Provide description, significance, and registration requirements.)	27 - 47
G. Geographical Data	48
H. Summary of Identification and Evaluation Methods (Discuss the methods used in developing the public property listing.)	49
I. Major Bibliographical References (List major written works and primary location of additional documentation: State Historic Preservation Office, other State agency, Federal agency, local government, university, or other, specifying repository.)	50 - 55

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

National Register of Historic Places Continuation Sheet

Section No. E Page 1

Historic Barns of Washington State
Washington

E. Statement of Historic Contexts

Agriculture plays an important role in the settlement and history of every county in Washington State, yet few published sources focus on the history of farming, and fewer still look at agricultural buildings and landscapes as historic resources. This study focuses on one aspect of the agricultural landscape, the barn. The purpose of the study is to develop a historic context describing farming and barn construction in Washington State, to provide barn owners with a resource to help document the history and assess the significance of their historic barns.

Visual and narrative documentation of barns is surprisingly rare in community or regional histories in Washington. There are a handful of exceptions which are notable for their novel form or unusual size, but in general, published sources tend to focus on the economic value of farming and ranching, with few details about barns, and historic photographs tend to document activities associated with harvests, cattle drives and other highlights, but rarely document barn construction. Historic barns sometimes appear in the background of photographs, where the foreground subject is a new horse, new wagon, or new tractor. The purpose of this historic context study is to place barns in the foreground, and to examine the state's agricultural history to identify factors that have influenced the design and construction of barns in Washington State.

Barns are found in most regions of the state, and the variation in barn design and construction is remarkable. Period of construction, rather than geographic setting, serves as the primary variable in identifying types of barns. Surprisingly, in spite of some significant differences in topography, farming and ranching history, and agricultural practices in different regions of the state, many different barn types are represented in each region, and this diversity represents one of the state's greatest historic assets.

Geographic Setting – Overview

Washington State's geology, topography and climate interact to create a complex geographic setting. Major variations in geological history and climate determine the types of agriculture which dominate each region, which in turn influences the types of barns constructed in each region. The Cascade Mountains form the most significant division between the state's eastern and western regions. Volcanic activity millions of years ago produced the range's high peaks, while the ridges and folds on the eastern side of the range from the Horse Heaven Hills in the south to the Wenatchee uplands in the north were more gradually uplifted by tectonic forces. This barrier which bisects the state creates a rain shadow on the range's east side, and accounts for dramatic differences between east and west in annual precipitation and mean temperatures. The Blue Mountains in Washington's southeast corner and the Okanogan Highlands in the northeast corner are both lower, older mountain ranges that bring a distinct character to their local areas, but neither have the Cascade range's broad impact on topography, climate and land use.

National Register of Historic Places Continuation Sheet

Section No. E Page 2

Historic Barns of Washington State
Washington

Northern Washington's landscape was shaped by a series of advances and retreats of the Cordilleran Ice Sheet between 2.5 million and 10,000 years ago. Glaciers scoured the Puget Sound region in western Washington, and areas north of the Spokane River, such as the Okanogan and Colville Valleys, in eastern Washington. Outwash plains which formed along the perimeters of these glaciers were characterized by well-sorted and well-drained sand and pebbles.

Southern Washington's landscape was also shaped by Ice Age events, though by flooding rather than glaciation. Even before the Cascades were formed, the region south of the Spokane River and east of the Columbia River was inundated by a series of relatively flat but extensive basalt flows known as the Columbia River basalts. These hardened basalt flows were later carved by deeply cut river valleys. During the last ice age, this region was scoured by a series of powerful floods, as Glacial Lake Missoula in what is now Montana repeatedly burst through dams formed by glacial ice. Floodwaters scoured much of the region that had been covered by the basalt flows, sculpting dramatic canyons and coulees in the area now known as the Channeled Scablands.

This flooding generally spared the Palouse region in the state's southeastern corner, accounting for the unique soils and topography of that region. Windblown sedimentary deposits and volcanic ash are the major sources of the deep soil deposits, or loess, which blanket much of the eastern part of the state. Up to three hundred feet thick in places, these fine silt deposits helped shape the wavelike terrain of the Palouse, and are considered to be some of the most fertile soil in the world (Alwin 1984).

Average annual precipitation varies considerably between the eastern and western parts of the state. On the west side, 30-50 inches of precipitation falls annually along the Puget Sound shoreline, and 50-80 inches or more falls in the foothills and along the Pacific coast. On the east side, under ten inches falls annually in much of the south central region, and this arid but fertile region was considered desert until irrigation demonstrated its high potential for farming. In the Palouse and Okanogan regions, in eastern Washington's southeastern and north central boundaries, 10-20 inches of precipitation is typical.

While the western region is heavily timbered, the central, northeastern and southeastern regions have fewer forested areas. These eastern regions share the characteristic of having had a thick ground cover of native bunch grass, on which cattle ranged freely for much of the 19th century. The native grass was gradually replaced by eastern and European grasses, as the era of the open range ended in the 1890s and cultivation of pasture and field crops became widespread.

Geographic Setting – Agricultural Regions

Each of the state's 39 counties has a unique combination of landscapes, climate and access to markets that define its agricultural heritage. Several counties have distinct agricultural regions within

National Register of Historic Places Continuation Sheet

Section No. E Page 3

Historic Barns of Washington State
Washington

their boundaries that are marked by dramatic changes in topography and soil types from one area to another. Factors such as precipitation and irrigation also play defining roles.

This study divides the state into four agricultural regions: western, central, northeastern and southeastern. Each of these regions contains diverse agricultural sub-regions with different types of farms and ranches that required different types of barns; however, each region exhibits distinct patterns of agricultural activity that is directly related to historical patterns of barn construction. The following regional descriptions are based primarily on a 'snapshot' of farming and ranching in Washington published by the state Department of Agriculture in 1963 as the Atlas of Washington Agriculture. Farming practices have changed over time, and some crops which were once important, such as flax, have become rare while others, such as grapes, have become far more important over time. The 'snapshot' provided by the Atlas of Washington Agriculture provides insight regarding agricultural land use roughly half a century ago.

The western agriculture region includes all 19 of the counties in western Washington: Clallam, Clark, Cowlitz, Grays Harbor, Island, King, Kitsap, Jefferson, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Skamania, Snohomish, Thurston, Wahkiakum and Whatcom. Although this region covers a large area and includes nearly half of the counties in the state, the actual land area historically devoted to agriculture is relatively small compared to the amount of native forestland. Agriculture in this region is concentrated primarily on the broad alluvial plains along saltwater margins, and secondarily in upland river valleys and prairie areas. Major river systems including the Nooksack, Skagit, Stillaguamish, Snohomish, Green-Duwamish, Puyallup, Nisqually, Skokomish, Chehalis, Cowlitz, Lewis, and Dungeness, each with their network of tributaries, formed broad fertile plains along the margins of Puget Sound and the Columbia River Estuary which are well-suited to dairying and cultivation of a variety of row crops. Agriculture was concentrated along the margins of rivers not because of the need for water sources as in many parts of the country, but because of the rich loamy soil that was typically found in these flood-prone areas, and because river valleys offered settlers some of the only relatively cleared lands in an otherwise densely forested region.

Many smaller river systems drain from the Olympic Mountains and Willapa Hills directly to the Pacific Coast, creating pockets of delta land suitable for farming amidst large tracts of forestlands. Upriver from the saltwater margins, agricultural activity historically dominated most river valleys, first in areas where channel migration and flooding cleared and maintained open lands, and later where settlers cleared lands of the typical dense forest cover. Upland prairies formed by glacial activity or volcanic-related activity, and often maintained as open hunting and plant gathering landscapes by Native Americans through controlled burning, were prized by settlers as especially fertile lands from which they were spared the arduous task of clearing timber. Several islands in Puget Sound and the Columbia River also have areas suitable for farming.

The western region of the state can in turn be divided into many sub-regions based on river drainages, differences in soils or altitude. The most salient characteristics of this region as a whole include a high level of annual precipitation, typically 30-50 inches per year in lowland areas and over

National Register of Historic Places Continuation Sheet

Section No. E Page 4

Historic Barns of Washington State
Washington

80 inches per year in coastal and upland areas, and mild temperatures in both summer and winter. Some croplands and pasture lands are irrigated in this region, particularly in Clallam and Whatcom County, although the overall percentage of land in irrigation is relatively low (Washington State Department of Agriculture 1960:44-45).

Most of the state's earliest Donation Land Claims were located along the Columbia River and Puget Sound shorelines, and the lower portions of major rivers, especially the valleys between the Columbia and the southern reach of Puget Sound, in today's Clark, Cowlitz, Lewis and Thurston counties, as well as in Pierce, King and Island counties (Scott and DeLorme 1988). As settlement spread to all arable lands, including reclaimed tidelands, and improvements in transportation and technology made specialized agricultural possible, hops were an early cash crop and dairying emerged as the region's primary form of commercial farming.

Livestock raising, including beef cattle, sheep and goats, and poultry raising for both egg and fryer chicken production are key industries. The region produces a wide variety of vegetables, including lettuce, cabbage, broccoli, peas, beans, beats, carrots, sweet corn, cucumbers, celery, rhubarb and many others. Important berry crops consist of strawberries, raspberries, blueberries, blackberries and other varieties, including a notable specialty crop of cranberries in Pacific County. Feed crops include clover and timothy for hay, grass silage, and oats, and extensive pasture lands are set aside for livestock. Other farming focuses on the production of seed crops, prunes and other tree fruits, and more recently, flowers, bulbs and nursery stock.

The central agricultural region includes the four counties of Okanogan, Chelan, Kittitas and Yakima, where mostly irrigated farming areas are concentrated in the alluvial bench lands, terraces, and upland glaciated plains of the Okanogan, Columbia and Yakima River valleys. The western portion of Klickitat County in the vicinity of the White Salmon River could also be classified as part of this region.

Agricultural activity in this region is focused primarily on tree fruit and livestock production. Orchard crops include apples, pears, peaches, apricots, cherries and other fruits. Livestock production includes cattle, sheep, hog and poultry raising, and represents the primary farming activity in Kittitas County. A wide range of feed crops are produced, including alfalfa and timothy for hay, field corn and several grains. Row crops include sweet corn, melons, mint, hops, grapes, asparagus and many other vegetables. The region is characterized by very low annual precipitation, generally in the range of 20 inches per year or less. Hot summers and long growing seasons ensure high productions levels from orchards and crop lands.

The northeastern agricultural region includes the three counties of Pend Oreille, Stevens and Ferry counties, and based upon shared attributes could also include that portion of Spokane county which is north of the Spokane River. Long valleys running north-south between forested mountain ranges of the Okanogan Highlands share more characteristics with the western agricultural region than with

National Register of Historic Places Continuation Sheet

Section No. E Page 5

Historic Barns of Washington State
Washington

the adjacent central or southeastern regions. Moderate annual precipitation and temperatures, and a glaciated landscape of alluvial valleys, support all types of farming, including dairying, livestock production, feed crops, orcharding, a variety of vegetable crops and seed crops, and nursery stock.

The southeastern agricultural region includes the 13 counties that produce substantial quantities of wheat and other grains – Adams, Asotin, Benton, Columbia, Douglas, Franklin, Garfield, Grant, Klickitat, Lincoln, Spokane, Walla Walla and Whitman. Included within the southeastern regions are several distinct sub-regions, but what unifies the region is the predominance of agricultural activity compared to other land uses. While agricultural activity is concentrated in river valleys in all other regions of the state, farming and ranching are the predominant land uses throughout the southeastern region, and farms and ranches tend to be generally larger than in other regions of the state.

The region includes several distinct areas. South of the Yakima Valley, the Horse Heaven Hills in Klickitat and south Benton counties produce dryland wheat, barley, rye and alfalfa, along with livestock, while north Benton County shares more characteristics with the central agricultural region. Sheep played an important role in the 19th century economy of the Horse Heaven Hills, while cattle have dominated 20th century ranching. In the southeast corner of the state bordering the Blue Mountains, the Walla Walla and Touchet River valleys in Walla Walla County rely on a high level of irrigation to produce wheat, along with a variety of vegetables such as peas, asparagus, onions, carrots, and spinach, as well as seed crops and alfalfa. The Palouse is a dry land farming area of low rolling hills surrounding the Snake River and other deeply cut river canyons in Whitman, Asotin, Garfield and Columbia counties. This area produces wheat, barley and dry peas, along with cattle, sheep and hogs. The semi-arid Columbia Basin in Adams, Grant and Franklin counties, irrigated through a massive federal reclamation project, produces wheat, barley, oats, rye, alfalfa, field corn, potatoes, onions, sugar beets and other crops. The Big Bend area is a predominantly wheat growing area in Lincoln and Douglas counties. The area includes the Waterville Plateau, the highest altitude farming area in the state, and the Channeled Scablands, an area of deep coulees and irregular topography suited to grazing cattle.

These areas taken together, along with neighboring portions of Idaho and Oregon, are known historically as the Inland Empire. This region represents a unique aspect of Washington State's agricultural heritage, having rich soil, and ideal climatic conditions for producing soft white wheat low in protein and high in starch which earned the region the moniker of "the bread basket of the Northwest."

Late 1830s to 1850: Early Settlement

Explorers visited what is now Washington State from the 1790s until the 1810s, and the Hudson's Bay Company established trading posts in the 1820s. The late 1830s brought permanent non-native settlers to the region, when a group of missionaries including Marcus and Narcissa Whitman joined a

National Register of Historic Places Continuation Sheet

Section No. E Page 6

Historic Barns of Washington State
Washington

caravan of fur traders heading to the Pacific Northwest in 1836, and settled near present-day Walla Walla. The Hudson's Bay Company also established a small trading post in the area called Fort Walla Walla, and some company employees of French Canadian and Métis descent established farms and raised livestock in the fertile river valley. Subsequent settlers who arrived via the overland Oregon Trail in the 1840s claimed lands in what became Washington State under the Preemption Act of 1841, which allowed for the purchase of up to 160 acres for \$1.25 per acre.

The majority of these early overland pioneers hailed from the eastern and central United States, especially New York, Pennsylvania, Virginia, Iowa and Missouri, and many were descendents of Europeans who had arrived in America during the colonial period. In addition to the American-born migrants, there were also German, English, Dutch and French immigrants in the wagon trains of the 1840s (White and Solberg 1989:34). During this first period of individual land claims, settlers established subsistence farms in both eastern and western Washington, generally in areas of prime agricultural land such as the coastal plains, river valleys and prairies around Puget Sound and the Columbia River, and their major tributaries.

Euro-American farming and stock raising in what is now Washington State began in the early 1800s, as soon as the Hudson's Bay Company has established forts and fur trading posts. The region's aboriginal peoples engaged in horticulture through a variety of land management activities to encourage the production of important food crops, such as berries, wapato and camas. However, given this study's focus on barn construction, the earliest evidence of agricultural history in the built environment can be expected to date to the period of early Euro-American settlement in the early to mid-19th century.

The Hudson's Bay Company established British fortifications and fur trading posts at Fort Vancouver in western Washington in 1824 and at Fort Colville in eastern Washington in 1825. The primary purpose of these settlements was to engage in trade, but the expectation that they be self-sufficient meant that a majority of the soldier employees were engaged in agriculture (White and Solberg 1989:30). The Hudson's Bay Company transported livestock to both settlements and established herds of beef and dairy cattle. As agricultural operations expanded, the Company was able to supply the needs of its posts throughout the region, and produce food for trade with Russian settlements in Alaska. It also supplied new settlers coming to the Willamette Valley, and later to areas north of the Columbia River, with food, seeds and livestock. (Lindeman and Williams 1986:3-5).

The Hudson's Bay Company found trade in agricultural products to be increasingly profitable as the fur trade dwindled. In 1833, the company established Fort Nisqually or the Nisqually Farm as a livestock ranch covering several thousand acres in present-day Thurston and Pierce counties. In 1839, it also organized the Puget Sound Agricultural Company as a subsidiary holding four thousand acres on the Cowlitz Prairie in present-day Lewis County, which produced grain, potatoes and other crops.

National Register of Historic Places Continuation Sheet

Section No. E Page 7

Historic Barns of Washington State
Washington

The company played a significant role in the economic and political history of the state, and is also noted for introducing many of the plants and animals that established the region's farming heritage. The Atlas of Washington Agriculture explains that the Hudson's Bay Company introduced "many species and varieties of livestock, poultry, grains, grasses, berries and fruits from Europe and elsewhere. [The company's leaders] demonstrated that many European practices of animal husbandry and horticulture were highly adaptable to the Pacific Northwest, which they found similar in climate to that of northwestern Europe." (Washington State Department of Agriculture 1963:3) In eastern Washington, herds of cattle expanded in size and grazed on native bunchgrass in the fertile Colville Valley, and crop production also expanded.

Other than the rugged overland trails that provided initial access to the Pacific Northwest, transportation within the territory was limited primarily to areas accessible by boat or by a network of Indian trails. Crops being sent to market were often carried down river on scows or by hired Indian canoes, to steamers which transported them to population centers. The reverse trip was made by most goods that farmers might want to purchase. This severely curtailed the options available to settlers for building materials, and as a result, most agricultural buildings constructed during this period were rudimentary structures made from logs. Particularly in western Washington, the ubiquitous timber felled by settlers clearing their own land was the most expedient building material available.

Farming technology was limited to what settlers could either transport with them or what they could afford to order for shipment via steamboat from distant ports, and then transport from steamer landings to their farms. Single blade plows pulled by horse or oxen teams, hand held implements such as cradles (modified scythes) for harvesting, flails for threshing, bellows for winnowing, and similarly rudimentary tools constituted typical farming equipment in this era. (Keith 1982:20)

Small, simple general purpose gable-roofed barns made from rounded or squared logs or hand hewn boards and hand-split cedar shakes or shingles would have been typical of this period, with space to stable a small number of livestock such as a milk cow and a pair of oxen or work horses. Areas for storing equipment, and processing and storing grain would also have been established as dedicated interior space or as informal use areas. Few if any extant barns remain from this period, although buildings or archaeological remnants of buildings may be identified through future survey and research efforts.

1850s - 1870s: Donation / Homestead Period

Settlers during this period came predominantly from the United States, as the eastern states became more crowded and lands in the former frontier areas of the Mississippi and Missouri River valleys were claimed. After the Civil War ended in 1865, former Grand Army of the Republic (Union) soldiers received land claims as part of their veterans benefits, and many headed west. Also, many southerners left their war-torn region for greater economic opportunities elsewhere. The impact of

National Register of Historic Places Continuation Sheet

Section No. E Page 8

Historic Barns of Washington State
Washington

this migration is particularly notable in regions such as the Palouse, where local place names established in the 1870s included Rebel Flat, Union Flat, Tennessee Flat and Missouri Flat. Settlers may have brought folk architecture and building traditions with them from their places of origin, but limitations imposed by transportation options and available materials in Washington Territory at this time likely curtailed the widespread expression of those traditions.

In addition to the retired soldiers and other migrants coming from the eastern States, immigrants also arrived in Washington Territory in steadily increasing numbers. Motivated by factors such as a lack of available farmland, poverty, and social unrest, immigrants came from Great Britain, Ireland, Germany, the Netherlands, and the Nordic countries of Sweden, Norway, Finland, Denmark and Iceland. They traveled overland from eastern ports, by extended sea voyages, or after 1869, via railroad to California and then north by land or sea. Washington's landscape and topography often reminded immigrants of their countries of origin, as noted in pioneer reminiscences. German immigrants noted the Bavarian splendor of the Wenatchee Valley, while Scandinavian immigrants appreciated the fjord-like coves of Puget Sound.

Before the transcontinental railroads were established, a typical migration pattern for Europeans was to settle initially in the Midwest, such as in Minnesota or Nebraska, and then move to the Pacific Northwest, in search of greater opportunities for land acquisition, having learned to speak English and having acquired some familiarity with frontier life. Emigration from Scandinavia was motivated in part by guidebooks distributed throughout Norway in the 1860s, which explained the conditions of settlement in America. These guidebooks reinforced a popular image created through letters Norwegians already in America sent back to Norway describing prosperous communities, bountiful land, and social freedoms (White and Solberg 1989:46).

For example, many Norwegians settled in the lower Stilligumish Valley in Snohomish County beginning in the 1860s, where community leaders recruited other Scandinavians from the Midwest to expand the farming district. Norwegian communities also grew in Kitsap County and other areas around Puget Sound, as well as Kittitas, Spokane and Walla Walla counties (White and Solberg 1989:49). Finnish settlements were established in the 1870s in the area around Centerville in Klickitat County, as well as in southwest Washington. While Irish and southern European immigrants gravitated to urban areas and farming on the urban fringes, German immigrants more often settled in rural areas, and German settlement areas were established prior to 1880 in Spokane County and Whitman County.

The 1846 Oregon Treaty, officially known as the Treaty with Great Britain, set the boundary between American and British territory at the 49th parallel, settling a dispute over claims to the region that had restricted settlement. Washington Territory was established in 1853, out of the northern portion of Oregon Territory. After years of conflict between aboriginal peoples and Euro-American settlers, a series of treaties was negotiated between Indian Tribes and the United States government between 1854 and 1856, in which the Tribes ceded millions of acres of their traditional territories. The General

National Register of Historic Places Continuation Sheet

Section No. E Page 9

Historic Barns of Washington State
Washington

Land Office of the United States government rapidly conducted a cadastral survey of Washington Territory, creating maps that divided the territory into rectangular grids based on Township, Range and Section, which was typical in the rest of the United States. This series of political milestones fostered a steady increase in the rate of settlement and land claims in Washington Territory beginning in the 1850s.

Two federal public land laws established policies that encouraged land claims and settlement. The Donation Land Act of 1850, extended to Washington Territory in 1853, granted men over the age of 18 who were American citizens, or intended to become citizens, the right to claim 320 acres (a half section) if he had been cultivating it for at least four years, or the right to claim 160 acres if he had just arrived. Married settlers could claim an additional 160 acres in their wives' names. The Homestead Act of 1862 offered similar opportunities. Under the terms of this act, by paying a small fee, American citizens (or those who intended to become citizens) who were either a head of a family, or single and over 21 years old, could claim 160 acres of public land available for entry. If married, a couple could double the claim to 320 acres. After living on the land for five years and carrying out certain "improvements," a homesteader gained a land patent or title from the General Land Office (Scott and DeLorme 1988:32).

During the first two decades when Homestead claims were available in Washington Territory, the Euro-American population increased from 11,994 in 1860 to 75,116 in 1880. During the same twenty year period, the number of farms in Washington increased from 1,330 to 6,530 according to the 1880 census. The Territory was still sparsely settled, with land claims clustering around rich bottomlands in river valleys throughout the state, on coastal plains and prairies, and at the margins of forest lands. Agriculture during this time period was predominantly a subsistence activity. Puget Sound area farmers who had surplus produce, dairy products and meat or livestock to sell found ready markets in the region's growing mining towns, particularly on the western slopes of the Cascade Mountains.

Although often romanticized in pioneer histories, homesteading was a hardscrabble existence for many families:

Because of isolation and limited market outlets, the donation claims were generally livestock farms with small clearings devoted to hay and grain and with small orchards and gardens for subsistence. Pasture dominated the land use. Cattle, horses, hogs and sheep which could be driven over trails and wagon roads were major cash items. Each farm was almost self-supporting. (Washington State Department of Agriculture 1963:3)

One early settler in northeast Washington explained, "The reason we came west was the government bet us homesteaders 160 acres that we would starve to death before we could prove up on it" (Bohm and Holstine 1983:34).

National Register of Historic Places Continuation Sheet

Section No. E Page 10

Historic Barns of Washington State
Washington

Transportation remained a major challenge during this time period. However, the military established roads which connected strategic points and provided overland routes. The Mullan Road, constructed between 1859 and 1862, created an important transportation corridor between Walla Walla and Fort Benton, Montana, which was the head of navigation on Missouri River. Stage coaches provided vital overland transportation in the 1860s and 1870s for passengers and produce, but waterborne transportation remained the primary means of moving agricultural products to markets.

The first Northwest railroad, the Cascade Railroad Company, began operating in the Columbia River Gorge in 1858. The Walla Walla and Columbia River Railroad became the second Northwest railroad in 1873, and a large number of local railroads were established in subsequent years. The first transcontinental railroad was completed in 1869, with the connection of the Central Pacific and the Union Pacific. The railroad had its western terminus in Sacramento, California, and cross country trips that had previously taken four to six months were reduced to six days. This had a transformative effect on all of the Pacific States, but people and goods still faced a substantial journey by land or by sea from Northern California to Washington Territory, so the pace of change was slower in Washington than elsewhere.

An important transition from human-powered harvesting to horse-powered harvesting took place during the Homestead era. In the late 1850s, the first reapers and mowing machines were brought to Puget Sound, and the horse-drawn McCormick reaper and grain thresher made its first appearance in eastern Washington in 1861. In his book *The Horse Interlude*, Thomas Keith explains:

The machine was manufactured at Canton, Ohio, by Aultmann and Taylor and was probably shipped around Cape Horn to San Francisco. Ten horses on a sweep supplied the power to operate the separator. Seeking to improve the reaper, inventors developed a superior harvesting machine – the self-tying binder. This was the machine that made large-scale wheat farming possible. (Keith 1982:23)

Agricultural statistics demonstrate the impact of this machinery. In 1861, 4,000 - 5,000 acres of wheat and oats were harvested within a 15 mile radius of Walla Walla, and this was essentially all the grain grown in the Inland Empire, generally identified as that portion of the Pacific Northwest east of the Cascade Mountains (Keith 1982:11). By 1880, acreage harvested for grain had grown exponentially. By 1890, both Walla Walla and Whitman counties were producing two million bushels of wheat per year and shipping it to California, the eastern U.S. and foreign nations (Washington State Department of Agriculture 1989:23).

Barns constructed during this period were primarily general purpose barns, and some had an expanded capacity to shelter the horse teams required by new harvesting equipment as well as the equipment itself. Range cattle were unlikely to be housed in barns during this period, but were often left to forage on their own in areas dominated by native bunchgrass (Bohm and Holstine 1983). Dairy cows were generally accommodated in small barns and sheds, made from whole logs or plank

National Register of Historic Places Continuation Sheet

Section No. E Page 11

Historic Barns of Washington State
Washington

lumber, with Douglas fir used predominantly in western Washington and several species of pine used in eastern Washington.

Saw mills were established in many parts of the territory in the 1850s, including Bellingham (Whatcom County), Seattle (King County), and Tumwater (Thurston County), and where sawn lumber could be transported to distant markets via schooner. Smaller mills around Colville (Stevens County) and Dayton (Columbia County), and along the Columbia River at Pasco (Franklin County) and Vancouver (Clark County) processed timber for local use. Some prosperous farmers likely constructed simple, single-bay or more elaborate three-bay gable roof barns built on timber frames with siding that had been rough cut at local mills, or hand hewn, while others continued to build log barns and other buildings from available timber. Roofs were made from cut timber rafters, wood purlins and cedar shakes or shingles. Hay was generally stored on open platforms at ground level, and grains were stored in rudimentary bins or granaries, separate from animal stable areas.¹

1880s – 1910s: Railroad Settlement Period

The period of time between 1880 and 1920 is characterized by exponential growth in Washington's population, and expansion and prosperity in agriculture supported by connection to national markets. The first decade of this period was marked by a five-fold increase in the population, from 75,116 in 1880, to 357,232 in 1890, just after Washington become the 42nd state admitted to the Union. By 1920, the state's population exceeded 1.3 million, an increase of approximately one million inhabitants in 30 years.

The completion of transcontinental railroads linking the Pacific Northwest with the rest of the United States was the single most important factor contributing to this growth. Although economic opportunities had drawn a steady stream of migrants from the eastern U.S. and immigrants from around the world in previous decades, the mining booms, urban development and the attraction of inexpensive rural land marketed around the world by the railroad companies prompted a significant increase in migration to the Washington, starting in the 1880s. The railroad land offices also emerged as a dominant player in shaping the state's agriculture trends and practices during the Railroad Settlement period.

The Northern Pacific and other transcontinental railroads were given millions of acres of public domain agricultural and timber land by the federal government starting in the 1860s, to finance construction of railroads in the sparsely settled northwest. Being required by law to dispose of these lands to settlers, the land grant railways became primary institutions promoting agricultural settlement in Washington from 1880 until as late as 1940. The land offices [of the railroads] used several systems of land sales. Many sales were made in 20, 40 and 80 acre plots in western Washington. In eastern Washington sections of 640 acres in the Palouse Hills, Waterville Plateau and Basins and Central Plains were commonly sold or long-term leased. Sale and farm settlement of

National Register of Historic Places Continuation Sheet

Section No. E Page 12

Historic Barns of Washington State
Washington

the grant lands, therefore, contributed to a pattern of small farms in western Washington and to relatively larger farms in the eastern half of the state (Washington State Department of Agriculture 1963:9).

Grant lands extended for up to 50 miles on each side of the planned rail corridors, and the railroad companies put substantial effort into marketing that land for sale to migrants from the eastern United States and potential emigrants in many European countries. Prominent advertisements regularly appeared in English, German and Scandinavian newspapers throughout the United States and Europe while circulars and broadsides extolled the virtues of life in the Pacific Northwest.

The Northern Pacific Railroad was chartered and received its land grants in the 1860s, but it was not until 1882 that its transcontinental route was completed which linked Portland, Oregon with St. Paul, Minnesota and points east. A line was completed from Portland to Tacoma in 1883. In 1888, the Northern Pacific completed a major spur line from the Snake River region, through Yakima Valley, over the Cascades via the Stampede Pass Tunnel, to Tacoma. While the Northern Pacific struggled for over 20 years to complete its transcontinental route, it constructed a series of spur lines in western and later eastern Washington. Often the primary reason for constructing these lines was to connect mining areas with urban centers and major transportation corridors, but the spur lines also facilitated regional transportation for farmers and their goods.

During the 1870s, promotion of railroad land sales began in Europe and the eastern United States, while the transcontinental route was still being surveyed. As routes were determined, new towns sprang up along the planned rail lines, and existing towns sometimes relocated to be closer to these critical transportation corridors. Several examples of railroad advertisements are preserved in the archival collections of the Washington State Historical Society, University of Washington, Central Washington University, and Washington State University. Promotional literature or 'guides for settlers' consistently describe the natural resources of the Pacific Northwest, and the potential for agriculture, in glowing terms.

An 1880 land purchase contract between farmer James Perry and the Northern Pacific Railroad for the purchase of 80 acres of farmland in Spokane County for \$320 includes typical terms of sale. Mr. Perry made an initial payment of \$80, and the contract calls for quarterly payments at six percent interest to market the land (Washington State Historical Society 2001.100.115). To market the land the Northern Pacific employed over 900 recruiters and agents in Europe by 1882 who distributed thousands of pamphlets in various languages describing the Pacific Northwest as the best wheat, farming and grazing lands in the world (White and Solberg 1898:50).

National Register of Historic Places Continuation Sheet

Section No. E Page 13

Historic Barns of Washington State
Washington

As transcontinental train service began, marketing efforts increased and expanded. The Northern Pacific Railroad's Land Department produced a steady stream of promotional materials featuring idyllic images of farmsteads, often showing modern gambrel roofed barns. These advertisements invited homeseekers to learn how and where to secure a home. A broadside written in Swedish from 1895 describes Washington as the Western Hemisphere's Scandinavia, and asserts that the state has better agricultural land than the best in Sweden, and better orchard land than any in Scandinavia (Washington State Historical Society 1903.1.546).

Taking a different approach, a brochure from 1896 emphasizes the overcrowded conditions and economic challenges of the older, more densely settled parts of the country:

Are You Tired of looking for WORK?

Are You Tired of working rented land?

Are You Tired of farming a few acres of high priced land?

Are you determined to be independent?

Are you determined to get a home of your own?

Are you determined to have something to leave to your family?

Then

Stop working in trades already overcrowded.

Stop running a business that hardly pays expenses.

Stop paying rent for land that will never be yours.

Go where you can work for yourself.

Go where you can work all the time.

Go where your children can get a good start in life.

Buy a farm

1896 brochure from the land department of the northern pacific railroad company. (Washington State Historical Society collection 2003.172.3).

In 1890, the United States Census Bureau announced that the country no longer had an open 'frontier.' Areas of unclaimed and unsettled lands could still be found, but there was no longer a contiguous line beyond which American settlement had not reached. Sales of railroad lands to settlers played a key role in the passing of that milestone. The Great Northern completed its transcontinental route in 1893, across the northern part of Washington State. Like the Northern Pacific, it engaged in widespread marketing campaigns, publishing the Great Northern bulletin for

National Register of Historic Places Continuation Sheet

Section No. E Page 14

Historic Barns of Washington State
Washington

national and international distribution, trumpeting the potential for agriculture and other business opportunities along its route. It also published promotional materials for branch lines, such as 1915 brochure called Wenatchee North Country, promoting the opening of the Great Northern Wenatchee – Oroville line, and describing the region's farming and fruit growing opportunities (Washington State Historical Society 1997.4.1).

The Northern Pacific also published illustrated booklets and brochures promoting settlement and community development along its branch lines, sometimes in partnership with local commercial groups or subsidiaries such as the Oregon-Washington Railroad & Navigation Company. Booklets in the Washington State Historical Society collection on Walla Walla (1910), the Kittitas Valley (1911), Granger (1911), Sunnyside (1911, in partnership with the Chamber of Commerce), Kennewick (1912), and other areas describe agricultural opportunities in glowing terms.

By the time the rail lines were actually constructed and train service became available, much of the state's most productive agricultural lands had already been claimed or purchased. The areas being promoted for resettlement were often dry lands, newly irrigated lands or cut over former timber lands, and the marketing information seemed to become more florid and idealistic as the quality of the lands remaining for sale diminished. In addition to land sales, railroads derived their revenues from passenger ticket sales, timber sales, freight fees for hauling farming equipment, mail-order items, and wheat, dairy products and other commercial farm products.

Not all lands were opened up for agricultural settlement. In 1897, more than eight million acres of upland forest were set aside as forest reserves. These reserve lands later became national forest and national parks in the Cascades, on the Olympic Peninsula and in the Okanogan Highlands. Although some isolated in holdings predated the creation of reserves, these lands were closed to agriculture, except livestock grazing leases.

As described above, the strategy of marketing railroad lands directly to Europeans had a broad impact on patterns of settlement in Washington, both in terms of ethnic communities and land use. Depicting the railroad magnates as 'robber barons,' one historian wrote that German émigré Henry Villard (who acquired the Northern Pacific from Jay Cooke after the financial panic of 1873) "filled the entire world with his pictures, stereopticon slides and 'literature' illustrating the Eden-like northwestern territories. Hundreds of his immigration agents spread their dragnet throughout Europe and England, hauling the peasants from Germany and Sweden in by the thousands to Oregon and the Columbia Basin; depopulating sometimes whole villages in Russia" (Josephson 1962:243).

Although families purchased or claimed land independently in all areas of the state, several examples of large-scale migration and resettlement of communities with a common ethnic

National Register of Historic Places Continuation Sheet

Section No. E Page 15

Historic Barns of Washington State
Washington

background are notable. The Russian villages referred to above were actually settlements of German Mennonites who had migrated to Russia via Poland in the late 18th and early 19th centuries, in search of religious and political tolerance. At the behest of community leaders, sometimes whole villages did gradually migrate, particularly to the Big Bend region around Ritzville, in Adams and Lincoln counties, where they became adept at dryland wheat growing.

German speaking immigrants also settled in the Palouse in large numbers, establishing communities around Endicott, Colton and Unionville in Whitman County. German speaking immigrants from Germany, Austria and Switzerland formed communities affiliated around Lutheran, Brethren and Catholic churches elsewhere in the state, such as Walla Walla, the Bickleton Plateau in Klickitat County, Grant and Douglas counties, the Wenatchee Valley in Chelan County and the Yakima Valley. Swiss immigrants established reputations as excellent dairy farmers, particularly around Puget Sound and in Pacific, Clark and Spokane counties (Wirsing 1977).

Many Dutch immigrants settled around Puget Sound in the 1890s, particularly in Whatcom County and on Whidbey Island, and excelled at dairying, poultry farming and bulb growing. Dutch banks purchased large tracts of land to resell to Dutch immigrants coming directly from the Netherlands, or migrating from Montana and the Dakotas where many had settled a few years before. Immigrants settling in other parts of the state who are described as Dutch may actually have been German, identifying themselves as "Deutsche" which was easily misunderstood.

Finnish settlers established communities in the 1880s in Grays Harbor and Pacific counties, south of Almira in Lincoln County, in Spokane County's Peaceful Valley, and in the Woodspur district and Deep Creek Valley near Northport, in Stevens County (White and Solberg 1989: 53). By 1910, Washington had a larger population of Finns than in any other Western state, and significant communities had been established in Wahkiakum, Cowlitz and Clark counties.

The 1890s and 1910s also saw an increase in immigrants from southern and eastern Europe, especially Italy, Greece and the Balkan states. While some settled in rural areas, such as an Italian community that was established in Walla Walla County, a majority of these groups settled in urban or coastal areas. Italians also established small farms along the urban fringe of Seattle and other growing western Washington cities, which supplied fresh markets such as the Pike Place Market. At the turn of the 20th century, Japanese American and Filipino farmers played important roles in agriculture, especially berry farming, dairying, and mixed produce farming in western Washington.

After 1900, newly irrigated lands in the Yakima Valley drew immigrants as well as migrants from Iowa and North Dakota. Southern migrants from the Appalachian and Ozark Mountains first settled in the mid 1880s in upland valleys on the western Cascade slopes. A steady migration of people

National Register of Historic Places Continuation Sheet

Section No. E Page 16

Historic Barns of Washington State
Washington

leaving overcrowded and economically stagnant areas of West Virginia, Virginia, Missouri and Arkansas in the early decades of the 20th century established communities in Lewis County. Migrants from Tennessee and North Carolina settled farther north, in Skagit and northeast Snohomish counties, making a living through a combination of subsistence farming and logging (White and Solberg 1898:64).

In addition to these broad generalizations about community settlements, people of all ethnic backgrounds settled in all parts of the state. Census data and community histories reveal interesting settlement patterns, even of small enclaves such as the Finnish community of Suise [also spelled Soos] Creek, in east King County, where old-country cultural traditions were preserved as immigrants learned English and learned new farming techniques appropriate for the climate and topography (Merritt 1995). The onset of World War I in 1914 curtailed European immigration. After the war ended in 1918, United States federal policy established new restrictions on the number of people who could enter the country, which brought the era of large scale immigration to a close.

Farming during the Railroad Settlement period made a major shift from subsistence to commercial production. Some farm families, particularly those who settled on marginal logged off lands or those with limited access to water, continued with subsistence activities. However, most farms increasingly specialized in production of cash crops or animal products. In western Washington, commercial dairying, poultry raising and egg production, berry growing, or production of one or more specialty crops such as lettuce or tree fruits, became focal points of farm activity. Hops were an important commercial crop in the late 19th century until blight ended production in the region. Farms continued to produce hay and other silage crops to feed livestock, and mixed vegetables for farm use. In eastern Washington, production shifted predominantly to beef cattle, wheat and other grain farming, orcharding, and legume growing.

This expansion of commercial activity was due primarily to the improved access to regional and national markets provided by the railroads. Refrigerated rail cars and other improved storage techniques made it possible for large crop surpluses and animal products to be transported long distances. Seattle and other urban centers grew rapidly during this period, increasing the demand for farm products, and becoming increasingly important as shipping points for farm products traveling north to supply the Klondike Gold Rush, and to other national and international markets by boat, while rail cars also carried farm products to growing cities on the east coast. Mail order catalogs offered farmers a wide range of choices of specialized breeds of dairy and beef cattle, poultry varieties, seeds, equipment, and other items, all of which could be shipped by rail to their destination. Commodity prices rose during World War I (1914-1918) providing additional profits for already prosperous farmers.

National Register of Historic Places Continuation Sheet

Section No. E Page 17

Historic Barns of Washington State
Washington

Statistics demonstrate the expansion of agriculture during this time period. According to census data, from 1890 to 1900, the number of farms in Washington State almost doubled, from 18,384 to 32,956. The years from 1900 to 1910 showed an increase of about 73 percent to just over 57,000; while from 1910 to 1920 the increase slowed to just 16 percent, brings the total number of farms to approximately 66,000 (Washington State Department of Agriculture 1963). In much of eastern Washington, this proliferation of farms forced an end to the open range for cattle, leading to conflicts in some areas between farmers and ranchers.

In Skagit County, a typical boosterish reminiscence from 1921 describes dairy farming in that area between 1880 and 1920:

It is approximately forty years since there was started in Skagit county the work of changing arid tidelands and dense forest into beautiful and bountiful farmsteads where today reside the most prosperous and happy people that may be found within the confines of the nation. Nature has showered her lavish wealth upon them and blessed their every effort. More beautiful homes, more modern barns and buildings may be found in Skagit county than elsewhere, while paved highways bring within easy access of the country residents trading and marketing advantages of the city. And all practically within forty years. True, there were those hardy pioneers who had arrived previous to that time – men who had blazed the trail to the hidden harvest of wealth – but most development has been accomplished within that period of time. (Mount Vernon Herald 1921:2)

These trends toward large scale commercial agriculture, however, did not describe the experiences of farmers everywhere. Particularly in western Washington's upland areas, many rural residents were part time farmers who also worked in mines or logging, clearing their own land as well as working for others to clear land.

In addition to the two transcontinental railroads discussed in earlier sections, Washington State gained a third major rail line in the early 20th century. The Chicago, Minneapolis and St. Paul, known as the "Milwaukee Road", completed a line across Washington State in 1909. Although this line did not have as profound an effect on rural settlement patterns as the two land grant railroads, it did affect the growth of towns, and the locations of storage facilities along rail lines. The Milwaukee Road also competed with the other railroads for farmers' freight business, helping to keep shipping costs low and maintain profits for farmers.

The expansion of the railroad network reached its national peak before 1920 in terms of miles of track, and the increasing use of the automobile was already changing rural life. The auto was developed in the late 19th century, but few could afford to own them, and they were not particularly

National Register of Historic Places Continuation Sheet

Section No. E Page 18

Historic Barns of Washington State
Washington

reliable. It was not until 1908 when Henry Ford developed the mass produced Model T that ownership of autos became widespread in both urban and rural areas. Construction of paved roads, a cause long championed by bicyclists who created the "Good Roads Movement" in the 1880s, became a high priority for many rural residents. Nationally, advocacy groups championed the construction of cross-country highways such as the Lincoln Highway and the Yellowstone Trail. In Washington, road building advocate Sam Hill drew attention to the importance of good roads to serve as both farm-to-market roads, and as scenic and well-engineered elements of infrastructure that supported economic development.

The Railroad Settlement Period was the heyday of animal powered farming, when horse-powered machinery greatly expanded the capacity of farmers in the Palouse and Big Bend areas to plant, harvest and process wheat. Immense teams of over 30 horses or mules pulled combines and other implements over terrain that was sometimes steeply hilled. Teams also pulled cultivators, gang plows, harrows, weeders, drills, hay racks, binders, headers and a variety of other mowers and sleighs, making it possible for farmers to farm expanded holdings.

Steam tractors and other self-propelled farm equipment was invented and patented during this area, but generally this machinery was considered costly and unreliable, and was not widely available. Technological advances had significant impacts on dairying in the 1890s, when the centrifugal cream separator and mechanical milking machines encouraged farmers to expand their herds and increase their profits.

A wide variety of new agricultural tools and fixtures were introduced and promoted during this period, for use in barns. These tools and fixtures were referred to in catalogs and farming literature as 'patent equipment,' and included a wide variety of patented steel devices which could be built in to new barns during construction, or added to older barns to modernize them. Manufacturers such as Loudon, James and Porter offered an assortment of feed and manure carriers, stanchions, ventilators and related items.

Irrigation was an important factor in the expansion of agriculture in semi-arid regions, particularly in the central part of the state. For many years, farmers had independently dammed creeks and constructed flumes to deliver water to their orchards or fields. These small-scale irrigation projects served individual farms and ranches, and were sometimes extended to serve several properties in a farming district. The 1902 Newlands Reclamation Act brought federal oversight and funding to the construction of irrigation systems and management of irrigation districts. These irrigation projects facilitated a rapid expansion and diversification of agriculture in areas that had previously been regarded as inhospitable, particularly in Yakima, Benton and Grant counties.

National Register of Historic Places Continuation Sheet

Section No. E Page 19

Historic Barns of Washington State
Washington

Educational resources became widely available to farmers looking for advice on crop and livestock management and regulations, equipment, use of pesticides, and other issues as farming became increasingly commercialized in the late 19th and early 20th centuries. The 1887 Hatch Act enabled the establishment of agricultural experimental stations in each state. In 1891, just two years after statehood, the Washington State Agricultural College and Experiment Station was established at Pullman, in Whitman County. By 1913, the college established a network of agriculture experts who provided support and advice to farmers. This network transitioned into the system of county extension agents who still serve every county in Washington State.

The Country Life movement in America was a social movement in the first two decades of the 20th century that was a response to the general population's shift from rural areas to urban centers, and the perceived loss of rural values. It was linked to social reform efforts such as the Temperance movement, and was viewed by some as a rural complement to the City Beautiful movement. The Country Life movement idealized agriculture and rural living, and was promoted by agricultural colleges, university extension departments, and a growing agricultural press.

Around 1900, barns plans became widely available by mail throughout the United States, and construction of new barns began to become more standardized and homogenized in Washington State as it did throughout the country. Some of the key factors in this shift included the development of balloon framing for barn construction, which allowed for the use of lighter weight dimensional lumber which could be more easily shipped, competitive shipping rates among railroads eager to serve rural residents, and the United States Postal Service's establishment of rural free delivery in 1896 which facilitated inexpensive and timely distribution of catalogs.

Barn plan books were published in the 19th century, and barn plans were available through periodicals such as The Agriculturalist and The American Farmer. Barn plans were also created and sold by builders who developed their own variations on traditional designs, and farmers might buy a set of plans in an effort to duplicate a particular barn that had been constructed on a neighbor's property or that was shown in a published sketch. Barns and Outbuildings and How To Build Them, by Byron Halsted, was originally published in 1881. This book describes the general considerations in constructing cattle and dairy barns, and presents plans for duplicating particular buildings such as 'a Westchester County, New York, dairy barn' or 'the barn of Mr. David Lyman of Middlefield, Connecticut.' Plans were marketed in the 19th century as a modern alternative to the typical piecemeal construction of agricultural buildings. Halsted's introduction explains:

The old custom was to build small barns, to add others on three sides of a yard, perhaps of several yards, and to construct sheds, pigpens, corn houses, and such minor structures as might seem desirable. In the course of a few years the group of roofs, big and little, span and lean-to, in the rear of a large farmer's dwelling, would present the appearance of a

National Register of Historic Places Continuation Sheet

Section No. E Page 20

Historic Barns of Washington State
Washington

small crowded village. Compared with a well arranged barn, a group of small buildings is inconvenient and extremely expensive to keep in good repair. (Halsted 2000 [1881]:13)

Numerous examples can be found in the eastern regions of the United States of elaborate and stylish barns constructed in the late 19th century from architect-designed plans. Such barns were typically constructed by established farmers and their descendants who had accumulated some wealth to invest in their farmsteads. However, the availability of such plans had a lesser influence in the west, where homesteaders were likely to be limited by both capital and available materials. A convergence of factors at the turn of the 20th century revolutionized barn construction based on the use of mass market barn plans.

This phenomenon was first seen in the availability of mail order home building kits. The Radford Book of Home Plans was introduced in 1903, and Radford's Practical Barn Plans was introduced in 1909. Sears, Roebuck and Company's Modern Home Catalog debuted in 1908, and barn plans first appeared in the 1911 catalog (Sears Roebuck, 1919). Plans could be ordered easily by mail from the Chicago-based company, and lumber cut to plan specifications was available from companies such as Gordon Van Tine. Based in Davenport, Iowa, the Gordon Van Tine Company shipped pre-cut lumber via railroads to any location in the United States, from shipping points in St. Louis, Missouri, Hattiesburg, Mississippi, and Chehalis, Washington. In 1918, Sears began offering kit barns complete with all precut lumber needed for construction, from its own suppliers. The catalog's introduction says:

During our study of barn building we have carefully analyzed the methods of the builders and the requirements of the owners. We learned that four different types of construction are very popular – the Braced Rafter Construction, or, as it is sometimes called the Balloon Construction; the Trussed Roof Construction, the Gothic Roof Construction and the Timber Frame Construction. The popularity of these types of construction is so great that we did not feel warranted in omitting any of them. (Sears Roebuck, 1919:3)

Competition increased when the Gordon Van Tine Company expanded its shipping operations and began offering its own barn plans at no cost with lumber orders. Other national companies published catalogs of precut barns, including the Aladdin Company in Bay City, Michigan and the Loudon Machinery Company of Fairfield, Iowa. Loudon's catalog offers general purpose barns, and several variations such as barns designed specifically to accommodate six cows and two horses, 12 cows and box pens, 30 cows and 18 horses, or 32, 50 or 80 cows.

All of the mail order companies offered a wide variety of floor plans and roof profiles for general farm barns, cattle barns, and dairy barns, and listed hay storage capacity in tons, as well as length and width, as the defining measurements of their buildings. Specifications include not only lumber but

National Register of Historic Places Continuation Sheet

Section No. E Page 21

Historic Barns of Washington State
Washington

also hardware, paint, tinwork for flashing, hay unloading tools and other special equipment (Gordon Van Tine Company 1917:15). Catalog orders typically did not include foundation materials due to the cost of shipping heavy materials such as cement, brick or stone, and also due to the variations in local regulations governing the required depth of foundations (Hunter 2002:1).

In the Pacific Northwest, companies such as the Hewitt-Funk-Lea Lumber Company, Potlatch Lumber Company, Boise Payette Lumber Company, Tumwater Lumber Mills Company and the Fenner Manufacturing Company offered barn plans to customers through advertisements in the *Washington Farmer* and other agricultural publications. Barn catalogs were also carried by building supply stores and hardware stores, where customers could browse through a variety of designs offered by many different suppliers. A typical ad of the period said, "Build a BP [Boise Payette] round roof barn – When you put up a new barn you want to do away with all unnecessary supports and cross braces so that you will have a big storage capacity without increasing the size of your floor space. That is just what the round roof barn accomplishes" (Idaho Statesman archives).

Sears ceased publication of its barn catalog in 1929, but continued to include some barn plans in its catalog of house plans for many years. Most other barn catalogs ceased publication during the Great Depression, but many companies continued to offer barn plans for sale through advertisements in newspapers and periodicals, such as *Better Farming*, *Country Gentlemen* and the *Farm Journal*.

1920s – 1940s: Mechanization Period

Few new areas were settled, and relatively few new farms were established, during the period of agricultural mechanization between World Wars I and II. One exception was a proliferation of small farms in the western Cascade foothills, where former timber lands were subdivided and sold, often to urban residents with idealistic notions of farm life. These lands were marketed primarily as poultry ranches and berry farms. The United States Department of Agriculture produced a bulletin in 1924 in cooperation with the Agriculture Experiment Station at the State College of Washington (now Washington State University) titled *Farming the Logged-Off Uplands in Western Washington*. This bulletin was aimed at new farmers, and provides rather cautionary advice:

"The standard of living to which the prospective settler has been accustomed has much to do with the amount of money he will need to establish himself on the logged-off lands in this region. During the first few years, when the farm income on newly opened land is almost nothing, the cost of maintaining the previous standard of living must be met largely out of capital or outside earnings. Those accustomed to frugal living do not suffer so keenly from the privations of developing farms from raw land." (Johnson and Strait 1924:35)

In eastern Washington, some newly irrigated lands became available for cultivation during this time period, particularly in Okanogan, Kittitas, Yakima and Benton counties. The large-scale Columbia

National Register of Historic Places Continuation Sheet

Section No. E Page 22

Historic Barns of Washington State
Washington

Basin Reclamation Project was in the planning stage, but had not yet reached completion to provide irrigation water for farming in formerly arid areas of central Washington.

After four decades of relative prosperity in Washington's agricultural economy, 1920 marked a notable turning point for many farm families. An agricultural depression began in 1920, triggered by a combination of a decline in food prices at the end of World War I, and changes in federal farm policy related to credit financing. Many homesteads and farms on railroad lands, particularly in marginally productive areas, failed during this time, several years before the onset of the Great Depression. Federal restrictions on immigrations implemented after World War I, combined with a waning role for railroads in both transportation and land sales, meant that rural communities experienced little growth from immigration, in stark contrast to previous decades.

There were approximately 66,000 farms in Washington State in 1920. Although many farms were abandoned during that decade, there was still an overall increase of seven percent in the number of farms, to almost 71,000 in 1930. By 1940, the number of farms in Washington had increased overall to 81,686. This marks the high point in the number of farms in the state (Washington State Department of Agriculture 1963:11).

During the Great Depression that began in 1929, some farmers were able to maintain their commercial production, while others scaled back into more of a subsistence mode. The Agricultural Adjustment Act of 1933 and other New Deal policies gave the federal government an expanded role in agricultural regulation and financing. As a history of Stevens County explains, "For many people in the [19]20s and 30s, a cow, a few chickens, several fruit trees, and a vegetable garden spelled the difference between keeping their land and moving to the city" (Bohm and Holstine 1983:99). The Washington Farm Bureau was formed in 1920, just a year after the American Farm Bureau Federation was established, and county Farm Bureaus were quickly established in Columbia, Kittitas, Skagit, Spokane, Walla Walla and Yakima counties. The organization advocated for benefits for rural citizens such as electrification and telephone access, and operated a service company that sold farm supplies.

The transition from horse powered to gasoline and diesel powered farm machinery took over 40 years, and it was during this time period that the use of tractors and other self-propelled machines became widespread. As one historian of the Palouse explained, "Perfection of the farm tractor took time... During the [1870s], farm tractor steam engines were produced for sale by J.I. Case Company and at least eight other U.S. firms. It was not until the 1930s that the engineers had developed and refined the tractor to the point where it could consistently outperform horses" (Keith 1976:167). Commentator Will Rogers noted, "The horse raises what the farmer eats and eats what the farmer raises. But you can't plow in the ground and get gasoline." Even with significant improvements in the durability and maneuverability of tractors, the cost of purchasing machinery and gas made the tractor prohibitively expensive during the Great Depression for many farmers, and horses continued to be widely used. Ironically, it was during a period of gasoline rationing that use of the tractor finally

National Register of Historic Places Continuation Sheet

Section No. E Page 23

Historic Barns of Washington State
Washington

became common. Farm labor was in short supply during World War II (1942-1945 for American troops), and the adoption of the tractor and self-propelled combine were regarded as necessary for farmers to continue working through the labor shortage (Keith 1976:169). Just after the war ended, metal of all kinds suddenly became widely available, and the use of gas-powered farm machinery became widespread.

The Rural Electrification Act of 1936, another legacy of the New Deal, provided electricity for farms and ranches in many areas of the state that had not previously had electrical service. While some farms and ranches near urban areas may have had access to electrical service by the early 1900s, and others in rural areas may have had their own small gas-powered electric generating units or 'light plants,' most farms and ranches were still without reliable electrical service in the 1930s. As the Rural Electrification Act facilitated electricity service on farms and ranches throughout Washington State, farmers may have modified existing structures or built new ones to accommodate this important technological advancement.

As the railroads sold off most of their land assets, their promotional efforts shifted away from west-bound migration and toward west-bound tourism, and the promotion of east-bound agricultural produce and commodities, through materials such as the pamphlet "Good Eggs" produced by the Northern Pacific Railroad to promote the Pacific Northwest's growing poultry industry. Service was discontinued along some branch lines, as short haul freight services shifted from the railroads to delivery trucks. Long haul commodity shipments still frequently traveled via railroad.

Paved roads became increasingly common, as a network of numbered state highways linked rural communities. As more people traveled through rural areas by automobile, prominently sited barns became attractive canvases for painted advertisements for various brands of feed, patent medicine, and tobacco, along with tourist attractions, political candidates, and more. Though less common in Washington State than elsewhere in the country, advertising appeared on the occasional barn side or barn roof, and farmers were typically paid an annual fee along with having their barn periodically repainted.

Due to economic circumstances, fewer new barns were constructed during the Mechanization period than during the previous era. Older barns were often remodeled, particularly barns which housed dairy cows. New state laws enacted in 1919 regulated dairy sanitation practices for the production of Grade A milk, codifying what had long been touted as best practices in agricultural literature (Lentz 1993:10-11). Concrete floors, new sanitation equipment, expanded entry doors or new shed additions were typical elements of barn renovation projects. Wood remained the typical construction material for most barns built before World War II.

National Register of Historic Places Continuation Sheet

Section No. E Page 24

Historic Barns of Washington State
Washington

1950s – Present: Post WWII Period

Overall demographic trends show population decreases in Washington's rural areas after World War II; however, areas that are part of the Columbia Basin Reclamation Project in Grant, Adams and Franklin counties had a period of expanded settlement after irrigation water began flowing in 1948. The reclamation project was initially conceived as a way to irrigate over one million acres of desert. Proponents of the project in the early 1940s envisioned "opening up land for 10,000 farms. They expected these farms to support 80,000 people, nearly all of them relocated from the 'Dust Bowl' in the Midwest" (HistoryLink, Essay #7264). Significantly fewer farms were established in the project area, but the dollar value of their crops has been higher in recent decades than initially predicted. Reclamation project activity also displaced some earlier settlers, including about 400 isolated farms and ranches, and ten small communities, which were forced to relocate from areas that were inundated behind Grand Coulee and other project dams.

Statewide, the total number of farms fell from a high of 81,686 in 1940, to 51,577 in 1959 (Washington State Department of Agriculture). The remaining farms became more specialized, generally focusing on one cash crop or product. Farms also became more productive, due to scientific advances guided by state and federal agricultural research and extension services.

The end of World War II in 1945 had immediate impacts on agriculture in Washington State and around the country. Military technologies and materials were quickly adapted to civilian agricultural applications, such as chemicals for fertilizers and pesticides, and aluminum for building materials. Wartime price guarantees were extended to farmers during the immediate post-war years to avoid the type of agricultural recession that followed World War I, and as a result, farmers generally prospered. Following national trends, the number of individual farms in Washington declined during this period, and the size of remaining farms increased due to consolidation.

Federal agricultural policies favoring industrial or large-scale commodity farming dominated the 1950s, when President Eisenhower's Secretary of Agriculture Ezra Taft Benson famously said to farmers, "Get big or get out" (Brewer 2005:228). Transition of former crop lands and orchards to wine grapes in the Yakima and Walla Walla valleys and other areas has helped to keep land in agricultural production. A revival of organic, sustainable and small scale diversified farming since the 1970s, especially in the vicinity of urban areas, has stimulated an expansion of farmers markets, and other opportunities for direct sales of local seasonal farm products to consumers. However, large farms and ranches producing apples, cherries, potatoes, wheat, hay, legumes, hops, dairy products, beef cattle, and other commodities continue to dominate agriculture in the state, in terms of acreage and dollar value (USDA National Agricultural Statistics Service).

As an element of Washington State's Centennial Celebration in 1989, the Washington State Department of Agriculture published Washington's Centennial Farms, recognizing almost 400 farms throughout the state which had been owned by the same family for 100 years or more, and whose

National Register of Historic Places Continuation Sheet

Section No. E Page 25

Historic Barns of Washington State
Washington

owners had chosen to share some of their family history with the public. Recent efforts to conserve working farmland have helped to sustain agriculture, but farmers continue to struggle with the challenges of escalating costs and restrictive land use regulations.

Following World War II, the importance of rail transportation for agricultural products diminished, as truck and auto transit became increasingly important for access to regional and national markets. The Interstate Highway system, authorized by federal legislation in 1956, created incremental improvements in long haul transportation routes which reduced travel time for trucks, and facilitated farmers' access to processing and distribution facilities. Some commodity crops such as wheat continue to rely on rail transit. Barge transportation on the Columbia River and Snake Rivers was made possible by completion of a series of dams and locks, including some related to the Columbia Basin Reclamation Project. These infrastructure projects allow barges to haul wheat and other commodities from Lewiston, Idaho, and several ports in Washington, to global markets. The Columbia Snake River System is recognized as the country's largest wheat gateway and the third largest grain corridor in the world (Port of Lewiston).

Grand Coulee Dam, one of the world's largest concrete dams, was hailed as an engineering marvel when it was completed in 1941. The dam is part of the Columbia Basin Reclamation project, which includes four other dams, three reservoirs, and 2,300 miles of canals which irrigate over half a million acres of former desert land (Columbia Basin Project, US Bureau of Reclamation, 2008). Initially conceived as an irrigation project in 1918, the massive reclamation project took over 30 years to develop, and retains the potential to extend irrigation water to additional arid acreage in the region.

From the relatively small, labor-saving tractors that came into widespread use during World War II, farm equipment during the post-war period became larger and more varied, including self-propelled combine harvesters, large tractors, and a variety of implements such as cultivators, seed drills and hay balers. Center pivot irrigation systems have changed the appearance of agricultural landscapes in many areas from traditional square or rectangular plots, to circular plots.

New agricultural buildings constructed for equipment and feed storage and livestock shelter after World War II were predominantly prefabricated from steel and aluminum. Concrete blocks or CMUs (concrete masonry units) were also used for construction of small buildings. Active farmsteads continually evolved as new equipment became available, and farming practices and regulations changed. Modifications to existing wood barns typically took four forms: capacity and function were expanded through the construction of shed additions, door openings were enlarged to allow storage of large implements, exteriors were renovated through the addition of aluminum or other metal roofs and siding, and interiors were reconfigured to facilitate ongoing use or adaptive reuse.

In 1949, further changes in state laws that governed dairying required milking areas to have concrete floors (Lentz 1993:12). In order to comply with this regulation, some farmers constructed

National Register of Historic Places Continuation Sheet

Section No. E Page 26

Historic Barns of Washington State
Washington

shed additions to their existing barns, and poured concrete floors in the additions. For those farmers who preferred to hire others to undertake such as project, an addition could be "ordered" from Sears and other catalogs, and local contractors retained by the catalog companies would construct the addition complete with poured concrete floors (Davis and Parmenter 2008).

Today, on many active farmsteads, barns remained intact, used or unused, and new structures such as loafing sheds and implement sheds were constructed nearby served some purposes that were formerly served by barns. Adaptive reuse of barns for non-agricultural purposes such as residential or commercial functions is also common, particularly in former farming areas on urban fringes. New construction of wood barns of any framing type is relatively rare after 1950.

¹ Marsh (1980) and other scholars speculate that the large gable roof timber frame which began to be constructed during the Donation / Homestead period, and continued to be constructed during the Railroad Settlement period, were influenced by traditional Coast Salish construction techniques used in building the region's large post and beam, shed roof, cedar-clad long houses. Given that local Native Americans sometimes worked as laborers on farms and ranches, and likely assisted in many construction efforts, this influence seems plausible, although further research is needed to document specific examples or patterns in extant barns.

National Register of Historic Places Continuation Sheet

Section No. F Page 27

Historic Barns of Washington State
Washington

F. Associated Property Types

Barn construction in Washington State was influenced by settlement patterns, farming trends, transportation systems, and technological innovations. However, the predominant factor influencing the types of barns constructed in this state was the national movement away from traditional barn designs and construction methods, toward modern, scientifically based farming practices and standardized barn plans using newly developed balloon or platform framing.¹ Property types addressed in this section:

- *Log barns*
- *Gable roof barns*
- *Gambrel roof barns*
- *Round barns*
- *Arch roof barns*
- *Contemporary barns*

Patterns in the construction of various barn types in all four of the state's agricultural regions follow general chronological trends, and each of the barn types described can be found in most of these regions. Predominant uses of barns vary from region to region. The majority of barns constructed from the early 1800s through the 1870s are general purpose barns providing stabling for a small number of horses, cows and other animals, along with storage of feed and equipment. In the western region, dairy barns were the predominant type constructed from the 1880s onward, as advances in technology and transportation made dairying a profitable enterprise. In the central region, general purpose barns and cattle barns are predominant types. In the northeastern region, all types of barns are represented, including rare examples of open-sided hay storage barns.

In the southeastern region, large sturdy horse barns were constructed from the 1850s through the 1920s to house teams of up to 36 horses and mules that pulled wheat combines and other implements. This pattern of barn construction is linked to one of the most unusual aspects of farming history in Washington State. While horses pulled plows and wagons, and transported riders, on most farms around the state through the post World War I era, the role of work horses and mules in the southeastern region was unique and widespread. The combination of often steep topography and heavy implements used in wheat ranching demanded large teams of draft animals, and the barns constructed to house them represent the most visible link to that aspect of Washington's agricultural heritage. General purpose barns and cattle barns are also found in the southeastern region, while dairy barns are rare.

- Barns were developed in medieval Europe as buildings for storing grain and housing livestock, depending on the localized farming and social practices, available materials, and variations in climate. In Britain, barns were used almost exclusively for threshing and storing grain, as mild winters allowed livestock to live outdoors throughout the year. The word barn comes from a

National Register of Historic Places Continuation Sheet

Section No. F Page 28

Historic Barns of Washington State
Washington

combination of old Saxon words, "bere" (barley) and "aern" (place), describing the role of such a building as a grain warehouse (Vlach 2003:16).

English barns constructed between the 14th and 18th centuries were typically rectangular in plan, with doorways in the center of both of the long sides. Massive hewn timbers formed the bents, or internal trusses which supported the rafters and roof. Mortise and tenon joints, consisting of a tenon (or tongue) cut to fit tightly into a mortise (hole) in mating pieces of lumber, held together by hardwood pegs or "tree nails" secured these stout structures, which required tremendous skill and cooperation to construct and assemble. A unique early method of barn construction was known as the cruck tradition, in which curved timbers and connecting braces formed A-shaped frames for medieval barns. Later barns were often constructed in a form described as an aisled hall, with a soaring central aisle flanked by lower side aisles (Endersby et. al. 1992:16). French barns were similarly constructed, incorporating brick and stone, with roofs of thatch, wood or tiles.

Barns constructed in Northern Europe, including Switzerland, Germany, Holland and Scandinavia, accommodated grain storage, livestock shelter and often living space for farmers within large timber-framed structures. Plentiful timber in northern countries was utilized in a variety of log barns. Unique traditions of barn construction in Germany and Switzerland included construction of bank barns, built into the slopes of hillsides, with cantilevered forebays extending from an upper floor, which protected lower entries from snow and rain (Endersby et. al. 1992:58).

Settlers arriving to the United States brought a variety of folk architecture traditions with them from Europe, which were quickly adapted to North American materials, climates and farming practices. The English barn, with its characteristic rectangular plan, wagon alley and center doors positioned on both of the long (eaves) sides, morphed into a distinctly American type. Often described as a Yankee, Connecticut, or three-bay barn (a bay being the interior space between sets of vertical posts), this variant of an English barn is a compact and sturdy design which is adapted to protect animals and store grain through harsh New England winters. Doors shifted from under the eaves to the gable ends, to avoid snow sliding off of steep roofs. A similar but less stout adaptation was commonly constructed in the American South, for storing and drying tobacco, and for use in general farming. Crib barns made of peeled logs were also commonly constructed in the South. Dutch barns, featuring a square plan, heavy timber framing, and a steeply pitched roof with low sides, were constructed by settlers in the Hudson Valley and nearby regions. Bank barns with forebays, often referred to as Swiss or Sweitzer barns, became known as Pennsylvania barns, as they were adapted to the mid-Atlantic region by German-speaking settlers (Ensminger 1992, Vlach 2003, Witzel 2003).

The most notable change in barn construction in North America, compared to European building traditions, was the nearly ubiquitous use of wood for all parts of barns, including framing, cladding and roofing. Timber was abundant, high quality and generally free to settlers working to clear their own lands and establish farms in most regions of the country. A comparison of barn framing in the Old and New World "affirms the remarkable size and regularity of the fine timbers yielded by the

National Register of Historic Places Continuation Sheet

Section No. F Page 29

Historic Barns of Washington State
Washington

abundant forests of America... The long straight timbers of North America allowed greater span and thus a somewhat simpler barn frame design than was common in Europe" (Endersay et. al. 1992:61). In addition to the adaptations of traditional European barn types described above, a variety of basic log barns were constructed, particularly along the frontier as settlement moved westward. These included simple single crib (an enclosure, such as an animal stall or grain bin) structures, and a variety of larger double-crib, three bay, and more complex structures that provided both crop storage and animal shelter (Noble and Seymour 1982).

From these typical forms adapted to 17th and 18th century American agriculture, barn construction grew increasingly varied as farmers settled throughout the Ohio, Mississippi and Missouri valleys, Appalachia, and the Great Plains. Some well-established farmers in eastern regions constructed large and elaborate architect-designed barns to showcase their success, while migrants to newly settled areas along the western frontier constructed rudimentary log structures or drew on traditional forms. A major innovation in American barn design is identified by scholars as the transverse crib barn, a structure containing multiple cribs arranged symmetrically on either side of a central passage running from one gable end to the other (Vlach 2003:19). This efficient longitudinal plan established overhead storage in a loft or mow. Rare but occasional examples of non-rectangular, and non-traditional, plans include round, octagonal or other polygonal barns, such as a 16-sided barn famously constructed by George Washington in 1792, and the centric stone barns associated with Shaker sects in New England.

Variants of the transverse crib design became one of the most common barn plans used in the Midwest and throughout the country, and expansion of loft storage space became the key factor driving further innovations in barn design. Beginning in the 1850s, publications such as Lewis Allen's *Rural Architecture, Being a Complete Description of Farm Houses, Cottages and Outbuildings*, and Andrew Jackson Downing's *The Architecture of Country Houses*, included barn plans and recommendations for arrangements of farmsteads to encourage efficiency. During the last decades of the 19th century, agricultural colleges developed and promoted a variety of new barn designs touted as "modern" and "scientific", intended to incorporate newly invented labor-saving equipment, promote sanitation and increase productivity (Vlach 25). In the first few years of the 20th century, barn construction shifted significantly away from traditional timber frame forms, to plank or balloon frame forms based on standardized barn plans.

Barn design and construction in Washington generally follows national patterns, in terms of folk architecture influences in the 19th century and increasingly standardized, scientifically-inspired "modern" barn designs in the early 20th centuries. Each of the major eras in the state's agricultural history is examined in terms of the typical barn types which were constructed, and major innovations in barn design. Patterns which reflect folk traditions, technological innovations, changes in the agricultural economy and other factors are linked to the introduction of new barn styles. Throughout Washington's diverse farming areas, many barn types continued to be constructed for decades after they were first introduced, making it difficult to categorize barn types in a chronological sequence. Given the diversity of Washington State's agricultural regions, it is surprising to note that time period

National Register of Historic Places Continuation Sheet

Section No. E Page 30

Historic Barns of Washington State
Washington

is a more important variable in construction of different types of barns than geography or any other factor examined in this study.

Typologies for barns, especially in the Western United States, usually focus on roof forms, such as gable, gambrel, Gothic, and round. These typologies may be further refined into subcategories; for example, broken gable, gable-on-hip, Dutch, and salt box variations of gable roofs. Alternately, barn plan books generally categorize barns by usage type, such as general purpose, dairy, horse, beef cattle, sheep, and hog barns. This typology focuses on the interior configuration of stalls, alleys, equipment, and storage areas, and reflects the purpose of the barn's construction, its roles in farming activity, and the farmer's evolving storage and stabling needs. Primary source documents from the late 19th and 20th centuries, which describe barn types as innovations in design, tend to categorize barns by their type of framing, including timber frame or post and beam, combination frames, braced rafter, trussed, and balloon frame. Each of these typologies provides important information about a barn's origins, method of construction, and use. Typologies based on framing may be the most meaningful, in terms of what this information indicates about a barn's relative age and use. Each of the three typologies mentioned above (roof form, use and framing system) are addressed below in the context of the time periods in which they are most strongly associated.

Property Type: Log Barns

Physical characteristics: The earliest agricultural structures in Washington, built in the early to mid-19th century by the Hudson's Bay Company, by missionaries, and by farmers associated with these groups, were primarily rudimentary log barns. Typically single story buildings of round, half-round, or hewn square logs, these early barns were intended to house a small number of horses, oxen or cows. Depending on the skill and background of the builder and the severity of the climate, logs may have interlocked at the corners with dovetail, saddle, or v-notches (Radojkovic 2007:24).

Field survey may identify examples of post on sill (Red River Frame or Poteau sur sole) barns, in which horizontal notched logs are held in place by vertical posts, which may have been constructed during this era by French-Canadians associated with the Hudson's Bay Company. Additional types of log barns which may be extant include double-crib log barns, and barns that combine a lower structure of logs with an upper structure of split planks or rough cut lumber. Log barns with gable roofs were likely widespread during early to mid-19th century, though few have been documented as extant in the 21st century. Following typical construction patterns elsewhere in western states, early log barns were generally chinked in the lower portion, perhaps up to six feet off the ground, to protect animals from winter weather, but left unchinked in upper portions to allow ventilation.

Log barns, using both hewn and round logs, continued to be constructed in some areas of Washington State through the early decades of the 20th century, particularly in isolated farming communities where standing timber was more accessible and less expensive than milled lumber. Additional survey work may identify extant log buildings with identifiable cultural affiliations to Finnish

National Register of Historic Places Continuation Sheet

Section No. F Page 31

Historic Barns of Washington State
Washington

and other immigrant groups who settled in upland communities in areas such as northeast and southwest Washington.

Associative qualities: Few resources from the earliest period of Washington's agricultural history (1800s – 1840s) are extant, but historical documentation indicates that log construction was most common during this period. Archaeological investigations at historic sites where barns were documented to have once stood may yield information about the size, construction methods, and uses of some of Washington's early agricultural buildings. Log barns dating to the Donation / Homestead period (1850s – 1870s) are rare, and are likely to be located in the regions of the state which had the highest concentration of donation and homestead claims, such as the Puget Sound lowlands and prairies, the Lower Columbia River plains, the Colville Valley and the Walla Walla Valley. Although few barns from this era have been documented, there are likely to be a variety of examples representing some of the oldest extant barns in Washington. Future research may identify more examples of log barns, including those linked to adapted early American barn traditions described above. Log buildings constructed after the 1880s, when other building techniques became widespread, may provide insight into settlement patterns and ethnic associations in communities around the state.

Property Type: Gable Roof Barns

Physical characteristics: Gable roof barns constructed during the Donation / Homestead period (1850s – 1870s) were most likely built from timber cut on the property and milled nearby. In the Pacific Northwest, large trees produced long timbers that could be used to frame a single crib barn that was as large as a typical double crib barn built elsewhere in the country. Timbers were either used as whole round logs or hewn square, with steeply pitched gable roofs. Most were relatively small in size, typically 20' x 30' or 30' x 40'. Post and pier foundations supported the majority of these barns.

Gable roofs in frame constructed barns were supported by at least three bents, or sections of framing consisting of vertical posts joined by horizontal beams, braces and rafters, which form the basic unit of assembly in a timber frame barn (Endersby et. al. 1992:250). Posts either rested directly on grade, typically a dirt floor, or on individual stone footings or underpinnings. Simple cladding shows evidence of the hand tools used to split cedar planks, or the patterns of rough cuts from saw blades used to mill boards. Other diagnostic clues to identify a barn's age may include the presence of cut nails to fasten siding to horizontal supports.

At least three unusually large extant examples of gable roof barns date from the Donation / Homestead period (1850s – 1870s), including the Starr Barn (1859) in Columbia County, the Aldrich Barn (1864) in Walla Walla County, and the Canter-Berry Farm Barn (1879) in King County [see Figures 2, 3 and 4]. All are three bay, timber frame barns with a central gable and symmetrical, integral shed extensions on both sides. All exhibit extraordinary craftsmanship.

National Register of Historic Places Continuation Sheet

Section No. F Page 32

Historic Barns of Washington State
Washington

The 1880s and 1890s represent the peak in Washington State of timber frame construction, also referred to as mortise framing or post and beam construction. Although this type of barn construction dates back to medieval Europe, it served as the primary method of construction in the state for decades after other construction methods had been introduced elsewhere in the United States. Expert carpenters or barn builders were engaged to fabricate these barns, with their massive posts made from 8" x 8" or even 12" x 12" hewn timbers or whole logs, evenly spaced, and pegged to heavy beams with complex mortise and tenon joinery.

It was not until Washington's rural population began its dramatic expansion during the Railroad Settlement period (1880s – 1910s) that many skilled laborers or "country carpenters" could be lured to rural farming regions. These builders typically constructed each bent or component of the frame separately, and then relied on a team of community volunteers to help assemble the components during a brief but intense barn raising event. These bents early on were constructed of hand hewn logs, but quickly gave way to mill-sawn timbers. The 1900s marked the growth in platform or balloon frame barn construction that continued on through the 1950s. Columns and beams formerly comprised of full size timbers were created from built-up dimensional lumber. Milled lumber could be more readily and affordably acquired and transported to the building site. Coupled with mass produced nails and fasteners, these building materials allowed the sizes of barns to increase as well. These barns often featured full perimeter concrete foundations.

There were numerous variations in the configurations of gable roofs and attached sheds which were typically associated with this framing type. The height of sheds or lean-tos, and the pitches of their roofs, along with other factors such as door location, create a wide range of variations in the appearance of gable roof barns. While terminology varies greatly, general types include:

- *Gable or gable-end, a basic rectangular plan with a central doorway in one or both gable ends, and a steeply pitched roof;*
- *English, a rectangular three-bay plan with central doorways in the long or eave sides;*
- *Broken Gable or Gable with High Lean-Tos, a square or rectangular plan with a basic gable-end central structure flanked on the eave sides by a pair of shed wings with moderately pitched roofs. Sheds may be integral to the barn's original construction, or may be added subsequently as lean-tos to expand the barn's capacity. The Broken Gable roof profile exhibits a continuous roof line having two distinct roof pitches, with a steeper upper portion toward the gable peak, and a more moderate pitch over the shed wings. The Western barn is similar, but has a distinct break in the roof line which separates the gable roof and the shed roofs. Also called an Intermountain barn in Rocky Mountain states, this barn style is one of the most distinctive in Washington and in the western United States. The break in the roof pitch or roof line indicates the location of the barn's primary structural posts;*
- *Salt-box, a variant of the above type in which a shed wing is found on only one of the barn's eave sides, typically the side which is buffeted by prevailing winds. A true salt-*

National Register of Historic Places Continuation Sheet

Section No. F Page 33

Historic Barns of Washington State
Washington

box style barn is asymmetrical in its original construction, but barns having such a subsequent addition are sometimes described as having a salt-box profile;

- *Hip, a rectangular plan with a profile typical of residential architecture, but rare in barn construction due to the restricted amount of loft storage, in which all four sides of the roof are sloped; and,*
- *Gable-on-Hip, a variant of the hip roof, in which a central gable is flanked by a hipped roof on some or all sides. This type may be more accurately described as a gable-shed, depending on the configuration of original framing and subsequent additions.*
- *Monitor/ Western Barn which resembles the Broken Gable form, but has a diagnostic feature of a raised central gable sometimes having rows of clerestory windows for ventilation and light on both sides of the raised portion. Monitor roof barns were commonly used as horse barns.*

Examples of various gable barns include the Walker Barn in Spokane County, the Mary Olson Farm barn in King County, and the Albert Nelson Farmstead Barn in Kittitas County [see Figures 5, 6 and 7].

Gable roof or other barns were occasionally constructed into hillsides, taking advantage of sloped topography to create wagon access to both the lower floor of animal stalls, and the upper floor loft storage areas. These are sometimes described as bank barns or basement barns, but they rarely exhibit the full range of structural characteristics that connect them to vernacular styles from earlier eras. Technological innovations such as hay forks and trolleys rendered such "banked" construction unnecessary.

Interior configuration of gable roof barns reflected their era of construction and the types of labor saving equipment available to farmers. Barns constructed in the 19th century for hay storage typically feature large open platforms or mows for ground-floor storage of loose hay. In an English barn, these may flank a central aisle, allowing a wagon to drive into or through the barn's alleyway to unloaded hay onto platforms. In a Broken Gable barn, loose hay storage may fill all or part of the main gable space, leaving the shed wings for horse and cow stabling. A variety of configurations have been documented for main floor hay storage in early barns, and an important transition in barn architecture is reflected in an increase in height of gable peaks often indicating the utilization of overhead or loft storage of hay and grain.

Interior configurations for horse barns, particularly those intended to stable large horse and mule teams in wheat producing areas, were stoutly constructed, and featured several types of stalls with mangers lining the exterior walls, including brood mare stalls, isolated stallion stalls, and standing stalls for harness horses, leaving a portion of the interior open for exercising the animals. Also included might be a carriage room, tack or harness room, and granaries, in addition to hay storage.

Interior configuration for dairy cows would likely have stanchions, stalls or "cow chains" for hand milking, mangers, calf pens, grain bins, a bull pen, feed room and a walkway or alley in the center, in

National Register of Historic Places Continuation Sheet

Section No. F Page 34

Historic Barns of Washington State
Washington

addition to hay storage. A barn intended primarily for beef cattle would likely have a more open interior, without rows of stalls or pens. Configuration of a barn intended primarily to house sheep would likely be of relatively light construction, and have a low roof profile, with large pens, long feeding boxes and lambing pens, as well as specialized equipment such as a gate chute for shearing sheep. Most commonly, gable roof barns were configured to serve as general purpose barns, with grain storage bins, a variety of equipment, wagons, stanchions or stalls for a few dairy cows, as well as work horses or mules, saddle horses, pens for calves, sheep, hogs or other animals, a harness room and a mow for hay storage.

Few gable roof barns constructed in the 19th century had formal ventilation systems, with integrated roof vents, although sometimes these were added later as the importance of ventilating was stressed in agricultural literature. Similarly, few barns of this era had full foundations, relying instead on sills sitting directly on grade, and foundation 'pads' of field stone, brick or cedar blocks below the posts. Original roofing was typically wood shake or shingle, and has often been replaced by metal roofing panels.

In perhaps the first major innovation in patent equipment for barns, several types of hay forks, hooks, grapple tines, hoists, slings, elevators, tracks and trolleys were developed and manufactured in the late 19th century to facilitate the transfer of hay from wagon to storage area and later to feed mangers. The most well known of these was called the Jackson Fork, but a wide variety of hay loading tools allowed barn lofts to become larger and larger, and overall barn profiles to become gradually higher during the late 19th and early 20th centuries. The type of hay track or related technology in a barn can often be determined by the appearance of a hay hood extending from the gable peak, as well as the presence of a hay door through which hay can be moved directly to the loft. A simple pole might hold a rudimentary pulley or block and tackle system, while a triangular peak or boxed projection may indicate the presence of a large hay fork or other equipment. Additional equipment was sometimes purchased or built, such as feed carriers and manure carriers, although often the work of feeding and cleaning the barn was simply done by hand and with basic tools.

In keeping with agricultural practices established elsewhere in the country, gable barns were generally either left unpainted, or if they were painted the traditional barn red. This dark red color was made from linseed oil derived from the seed of the flax plant, mixed with other ingredients such as milk, lime, blood or ferrous oxide (rust), which prevented the growth of mold and moss. A variety of siding types clad these barns, including but not limited to vertical boards, horizontal siding, and board-and-batten.

Associative qualities: The 40 year period between 1880 and 1920 is characterized by a dramatic surge in Washington's rural population and farm economy. The era is also characterized by the greatest diversity in types of barns built in the state, and the most significant transition in barn construction, from timber frame to plank frame.

National Register of Historic Places Continuation Sheet

Section No. F Page 35

Historic Barns of Washington State
Washington

An early book of barn designs, published in 1881, describes the planning process that should be undertaken prior to barn construction, appealing to scientific principles in a manner typical of much of the agricultural literature of the 20th century:

The farmer who intends to erect any building should first consider the amount he wishes to store in it. This calculation must be based upon the present and prospective size of his farm, the number of acres of each crop, the kind and number of head of live stock, etc. It may not be within one's power to go into every minute detail; but it is far better to canvass the ground thoroughly, and base the size of the buildings required upon calculations carefully made, than upon none at all. In constructing farm buildings, the error is usually on the side of too small structures, as the thousands of lean-to sheds, "annex" stables, and hay stacks, etc., through the country testify to. (Halstead 2000 [1881]:xii)

Gable roof barns of all types continued to be constructed in Washington State through the early decades of the 20th century, and beyond, even after several innovations in barn construction had been widely adopted in other regions of the country where agriculture was more established. General histories of barn construction tend to draw contrasts between gable roof, timber frame barns and gambrel roof plank barns. While these characteristics are often accurate, there are also examples in Washington of gable barns with trussed roofs, where trusses replaced intermediate post and girder supports, allowing for more open and flexible use of interior space, and there are gambrel roof barns with traditional post and beam framing systems. Changes in these diagnostic categories occurred for different reasons, and were adopted at difference paces. Such 'transitional' barns may yield interesting information about incremental changes in barn construction technology.

A Cyclopedia of Agriculture for the Practical Farmer and His Family, 12 comprehensive volumes on topics such as soils, irrigation and farm buildings, was originally published in 1915, based on "information furnished by the government and the leading agricultural colleges" (Better Farming 1915). By the middle of the 1910s, such advisory publications enthusiastically endorsed a host of innovations including platform framing of barns, construction of silos, and new equipment, materials and procedures that emphasized sanitation and efficiency. Generally speaking, large scale settlement of Washington State's rural areas coincided with an era when barn construction became modernized and standardized around the country.

Property Type: Gambrel Roof Barns

Physical characteristics: In the 1900s and 1910s, one of the most visible and dramatic changes in the profile of barn roofs was the widespread adoption of the gambrel roof design, typically a symmetrical roof with two slopes on each side. The word originates from the Latin term for the hoof or leg of an animal, and refers to the resemblance between the hock of a horse and the typical angle formed where the gambrel roof's pitch breaks. An alternate explanation refers to the French term gambrel, a frame with that same distinctive angle used by butchers to suspend a slaughtered animal. The diagnostic characteristic of a gambrel roof is a gentle slope at the peak of the roof and a steeper

National Register of Historic Places Continuation Sheet

Section No. F Page 36

Historic Barns of Washington State
Washington

slope at lower or eave end, and the great advantage of the style is that it expanded storage capacity of loft space. Introduced in the 19th century as a new roof form for a timber frame barn [see Figure 8], the style was popularized by the development of plan books and the adoption of balloon framing in the 20th century [see Figure 9].

A variety of descriptive terms are used to identify distinct types of gambrel roof barns, although there is a lack of agreement among architectural historians regarding the use of such terms. Trussed roof framing [see Figure 10] can be distinguished from self-supporting or braced rafter framing [see Figure 11] by looking at barn hayloft interiors, although the two methods of constructing a gambrel frame roof are virtually indistinguishable on the exterior. The term Dutch Gambrel is sometimes used as a general term for all gambrel roofs, and is sometimes used to specify roofs that terminate with flared eaves designed to deflect rain and snow away from barn sides and foundations. This term may come from the vestigial association of the gambrel roof with Dutch colonial residential architecture, but does not necessarily reflect a cultural affiliation of this barn type with Dutch settlers. Flared eaves are common features on gambrel roof barns in Washington State, and likely reflects a preference for a roof design that helps to protect buildings through wet or snowy winters. The term English Gambrel is rarely used, but generally refers to a roofline terminating in straight rather than flared eaves. Like the many variations of gable roof barns, gambrel roof barns may be flanked by one or more shed additions, either integral to the barn's original construction or built as subsequent lean-to additions to expand stabling capacity, add a milking parlor, or address other issues that reflect changes in farming.

While gable roof barns typically lacked full foundations, gambrel roof barns derived from plan books were generally built with poured concrete foundations that were touted as being more sanitary than wood plank floorboards. Gambrel barns were typically clad in milled horizontal siding, such as weather boarding, drop siding, clapboard, tongue and groove, or shiplap. Although the general interior configurations of horse, dairy, beef cattle and general purpose barns did not change dramatically from interior arrangements of gable roof barns as described above, innovations in patent equipment had a significant impact on how barns were constructed. This was especially true in dairy barns, where concrete floors were poured to include litter alleys, foundation walls included integral fresh air intakes for ventilation, mangers and stanchions were built in, and devices such as milking machines, feed carriers and manure carriers were commonplace. Where loose hay was once loaded into hay lofts using a large fork on a trolley rack, technological advances made it possible to lift and stack baled hay, or chop hay and blow it into storage lofts.

Different systems of air circulation and ventilation were developed particularly for dairy barns, such as the King System and the Rutherford System. Both relied on air shafts connected to cupolas on barn roofs to provide ventilation. Various shapes and materials, including rectangular wood and circular metal were used to craft cupolas along the spectrum from strictly utilitarian to quite ornate. Weather vanes or lightning rods sometimes decorated these structures.

National Register of Historic Places Continuation Sheet

Section No. F Page 37

Historic Barns of Washington State
Washington

Where gable roof barns having traditional timber frames, and generally had few if any windows, gambrel roof barns and other designs promulgated by plan books placed a high value on sunlight's antiseptic properties as well as the importance of natural light, and they generally included many windows. These barns were typically long and narrow, and had rows of small windows on both sides to maximize sunlight exposure. A single square, round or diamond shaped window often graced the upper peak of the roof. Even window structures were considered patent equipment, and examples such as Louden's Window Ventilators were nine-light window panels which opened at the top, with side screens, to project fresh air upward rather than creating a draught that would directly affect animals. On warm days, windows could be pulled upward on complex hinges to circulate air around both the top and the bottom (Louden 1915:16). Original roofing was typically wood shingle, wood shake or asphalt shingle, and has often been replaced by metal roofing panels. Even as industrial paints became available in a variety of colors, the traditional barn red remained the most popular barn paint color, but it was followed closely by white for dairy barns, thought to emphasize a barn's cleanliness and sanitation.

Examples of typical gambrel roof barns include the Wilkinson Barn in Pierce County, the Heinen (Shiloh) Barn in Columbia County, and the Dubois Barn in Stevens County [see Figures 12, 13 and 14].

Associative qualities: Although the most visible distinction between gable and gambrel roof barns is the expanded loft storage capacity offered by the latter roof form, a more dramatic distinction can be made generally between the traditional pre-industrial interior configuration of many gable roof barns and the decidedly modern, scientifically influenced configuration of gambrel roof barns. This distinction is primarily due to the shift from vernacular building traditions to published barn plans as a design source. Plan books not only provided farmers with a wide variety of building form variations to choose from, but they also provided recommendations regarding modern building construction methods, and they supplied most of the patent equipment recommended for installation in their barns.

Changes in the state and federal government's requirements for Grade A milk production, proposed in the early years of the 20th century and adopted between 1910 and 1924, inspired a period of rapid innovation in barn design, lead by Extension services in Midwestern states such as Iowa, Illinois, Wisconsin, and North Dakota. Names for this type of barn vary by region, and include the Ground Stable Barn and Wisconsin Barn. Here in Washington state, the Washington State College Agricultural Extension Service in Pullman offered a variety of booklets and publications on barn construction from the early 1920s to the 1950s. Barn plans inspired by these design innovations were published and marketed not only by extension services, but also by architects, equipment manufactures and lumber companies. In addition to addressing regulations, designs in pattern books reflected "modern" farming methods – the most important concept in the agricultural literature of the era – and focused on improvements to buildings intended to increase yields, profits and convenience.

National Register of Historic Places Continuation Sheet

Section No. F Page 38

Historic Barns of Washington State
Washington

William Radford's Practical Barn Plans, first published in 1909, best showcases the remarkable diversity of barn styles available to farmers at the beginning of the 20th century. The catalog's 100 designs for barns, sheds and outbuildings can mostly be categorized as having gable or gambrel roofs, but this does not begin to capture the variety of framing systems and floorplans presented for Dairy Barns, General Farm Barns and Horse Barns. The section on Dairy Barns disparages traditional bank barns as damp, dusty, bacteria-ridden dungeons, in contrast to the modern barn types offered by the catalog, which feature qualities such as good air circulation, good drainage, plenty of sunlight, and an abundant water supply (Radford 1909:116). Types include a Stable for 24 Cows (36' x 84'), a Round Dairy Barn (76' in diameter) and a Combined Barn and Covered Barnyard (80' square). A typical entry describes the Practical Cow Barn.

This barn is 40 by 100 feet, and contains stalls for 46 milch cows, besides loose stalls for calves, dry stock, bull, etc. At the west end is a feed room with bins connected by spouts to larger bins on the floor above; also stairway to the upper floor, and on the east end is a manure pit covered by an extension of the shelter shed roof. The cross section clearly shows the general arrangement of stalls, mangers, gutters, etc., all constructed out of cement laid on solid ground. The stall partitions are built up out of wrought iron bars and pipes, leaving nothing to get out of order or decay. The wood superstructure is constructed out of plank, and the roof is self-supporting, without posts or purlins, by each set of rafters braced, forming a continuous arch from one sill to the other (Radford 1909: 143).

Radford's catalog offers some of the latest innovations in barn design, including balloon framing a term for a method of wood construction introduced in the mid-19th century in which studs are continuous from the sill to the eave line. Attempting to address the misgivings that his readers may have, Radford writes,

The balloon roof construction makes it possible to store a great deal of feed over head. Roofs like this are comparatively new. The first ones built were not strong enough to stand heavy winds and some of them blew down, but there has been no such trouble recently. If properly braced each side forms a truss and the two trusses meet together at the peak (Radford 1909:132).

Recognizing that this technological innovation would not appeal to more conservative customers, Radford's 1909 catalog still offers a variety of older-style frame barns. These have traditional post and beam structures, or with a blended structural system called a spiked frame, comprised of three 2" x 8" planks being spiked together, making finished timbers measuring 6" x 8" (Radford 1909:177).

In a 1915 article titled "The Building of a Good Dairy Barn", the biweekly publication Washington Farmer noted that dairy farmers in the state were not known for their rapid adoption of new technologies and barn designs, but suggested that this pattern was beginning to change.

National Register of Historic Places Continuation Sheet

Section No. F Page 39

Historic Barns of Washington State
Washington

Perhaps in no way has advancement been more rapid in the dairy business than in the construction and equipment of modern dairy barns. It has been the reproach of many that the northwest has not been up-to-date in this respect, and this reproach has not been altogether undeserved. But during the past year, hundreds of the latest models have been constructed all over this great dairy country (Washington Farmer 3/1/1915:5).

Since most dairy barns were long and narrow to maximize sunlight exposure, floor plans were generally either characterized as 'face in' having a central feed alley, two rows of stalls and manure alleys on the outside of the barn, or 'face out' having two rows of stalls, with a central manure alley, and feed alleys on either side. The herd capacity of dairy barns was determined by the number of stalls. Regardless of the floor plan's orientation, "With the silo opening upon one of the feed alleys, and a hay chute opening down into each of them, the feeding of the entire herd is a simple operation. For greater convenience in handling grain and silage, feed carriers with a track extending into the mixing room and to the silo may be provided. In such a barn, two men can make a single continuous operation out of cleaning and feeding" (Better Farming 1921:481).

A milestone in American barn construction occurred in 1916, when the American Society of Agricultural Engineers identified 18 basic barn designs, primarily distinguished by framing types, as being "most suitable to meet the typical farmer's needs" (Granger and Kelly 2005:5.79). These designs were characterized as being adaptable to various farming practices, and flexible in terms of building materials. From this date onward, barn plans were essentially standardized nationwide, and a flood of information was available to farmers through county extension agents, vendor catalogs, periodicals, and published plan books. National companies offered plans and barn building kits, as well as local companies like the Hewitt-Lea-Funck Lumber Company of Seattle, and the Weyerhaeuser Company in Tacoma, which offered "scientifically designed fir silos, shipped complete" by agents throughout the state (Washington Farmer 2/1/1916:7).

Even with a wide range of "modern" barn designs available, many variations on traditional gable and older gambrel roof barns described above continued to be constructed in Washington State, well into the 20th century. Modern plank frame barns based on plan books predominated, but traditional timber frame, gable roof barns were constructed into the 1920s and 1930s. Particularly during the Great Depression, traditional hand-built forms using on-site lumber sometimes offered an affordable alternative to new buildings with their specialized equipment.

Property Type: Round Barns

Physical characteristics: Round barns, whether truly centric, octagonal, or polygonal, were most often constructed as dairy barns, with a silo in the center, and the dairy cows facing inward toward a central feeding point. The central silo and rounded framework made the round barn's domed roof self supporting, eliminating the need for posts and creating an open interior. Typical dimensions are 60' in diameter, and 48' high at the center silo peak. When used as a dairy barn, a round barn's interior configuration may include a central silo, surrounded by a feed alley and manger, and curved

National Register of Historic Places Continuation Sheet

Section No. F Page 40

Historic Barns of Washington State
Washington

cow stalls at least half way around the circle, with box stalls or space for loose cattle completing the circle. A litter alley with litter track could be found around the perimeter, next to the outside wall. Alternately, configured as a general purpose barn, a round barn may have horse stalls on one side of the circle and cow stalls on the other, including a calf pen and bull pen. Large driveway doors on sliding hangers would provide access to the interior, and an open driveway was maintained to access the center silo and mow. Round barns could be clad in either vertical siding, or horizontal siding, comprised of straight boards on a polygonal barn, or boards that were steamed to curve on a truly centric barn. Windows were evenly spaced along the exterior wall. Original roofing was typically wood shingle, wood shake or asphalt shingle, and has often been replaced by metal roofing panels.

Associative qualities: Round barns enjoyed a brief period of popularity between 1915 and 1920, and were widely praised in the agricultural press as being more convenient, stronger and less expensive to construct than rectangular barns. The argument in favor of affordability is based on the idea that the same floor area in a round barn requires less length of outside wall than in a rectangular barn, and therefore lowers the cost of building materials. Proponents frequently acknowledged that a more complicated construction method generally required more skilled labor, so lower materials costs tended to be offset by higher labor costs. For some farmers and agricultural writers, round barns embodied the principles of efficiency that guided modern farming. As explained in a typical advisory article of the time:

This construction means a big saving in time and labor, for the feeding, beginning at the hay chute and the silage chute, not three feet away from the stalls, goes around the circle of stalls and ends with the silage cart at the chute again ready for the next feeding. Similarly, there is a saving both at milking time and in the cleaning. Then, with the self-supporting roof, there is a haymow unobstructed by braces and supports, with the hay carrier running in a circle between the wall and the silo. In no case will the hay have to be moved more than a few feet. All these minutes saved at each task mount up in the course of a year (Better Farming 1915:502).

The popularity of the round barn was short lived. A typical article in the agricultural press noted that "it is the general impression among farmers that [Round Barns] are not as practical as they seem on paper" (Washington Farmer 12/1/1915:5). It was also noted that sheds or other additions cannot easily be added after the building is constructed. Mechanization also contributed to demise of the style, as floor plans were difficult to adapt to accommodate equipment storage. Of the few round barns that were built in Washington they remain curiosities and have become beloved community landmarks, including the Crocker Barn (1915) in Klickitat County and the Leonard Barn (1917) in Whitman County.

Property Type: Arch Roof Barns

Physical characteristics: The most recent barn type to be constructed in significant numbers in Washington State is the arch roof barn. Introduced nationally around 1910, arch roof barns appeared

National Register of Historic Places Continuation Sheet

Section No. F Page 41

Historic Barns of Washington State
Washington

more commonly after 1915 [see Figure 15]. This barn roof profile features an elliptical arch which requires a heavy "bow string" truss but has no interior braces, allowing for maximum expansion of hay loft storage. Sometimes called Bow Truss barns, there are two visually distinct types of arch roof barns. The Gothic Arch, also called Pointed Arch, has a rounded roof which comes to a slight point at the ridge line. The Rainbow Arch, also called Barrel Vaulted, is fully rounded, with no ridge line. Builders distinguish among several forms of construction for the arch roof barn: the masonry arch, the lamella trussless, the segmental arch, the bent rafter and the laminated rafter (Carter and Foster 1941 [1922]:134-7), all of which reflect slightly different engineering technologies. Typical dimensions are approximately 40' x 60', and 40' high at the arch.

Entry doors are typically centered in the arch (gable) end, with hay hoods at the ridge line and hay doors just below. Rows of windows typically line both of the long (eaves) sides. Although rare, variations on the traditional style of arch roof barns include designs having entry doors in the long (eaves) sides, sometimes covered by arched cross gables duplicating the form of the main roof's arch, or banked arch roof barns, having entry doors on the lower main level for animals, and also on the upper loft level by means of a ramp or bridge. The Dahmen Barn in Whitman County and the Kelsey Creek Farm barns in King County are good examples of arch roof barns [see Figure 16 and 17].

Associative qualities: During the interwar years (1920s – 1940s), arch roof barns grew in popularity, and anecdotal information indicates that they were the most frequently constructed barn type during this time period. As the most recent style of large-scale barn to be developed, arch roof barns represent the last major design innovation for the construction of wood frame agricultural buildings. Typically constructed with the latest patent equipment and most modern building materials, arch roof barns represented prosperity and modernization when constructed, whether they were built as part of a newly established farmstead, or as a modern barn to replace or supplement an earlier frame barn on an existing farmstead. Since many arch roof barns are relatively recent, they are likely to retain their original exterior appearance and less likely than earlier gable or gambrel roof barns to have shed or lean-to additions.

Property Type: Contemporary Barns

As more barns constructed after World War II reach 50 years of age and become eligible for listing the Washington Heritage Barn Register or the National Register, a brief discussion of contemporary barns is included, to guide future documentation of property types from this era. The Washington State Farm Structures research foundation provided advice to farmers from the 1940s onward, regarding construction of new barns and other structures, and adaptation of older buildings for new agricultural purposes. One aspect of the foundation's recommendations focused on the adaptive reuse of surplus military buildings, such as Quonset huts, as farm structures. This organization also encouraged the use of surplus aluminum after World War II, for barn roofing and siding. Starting in 1945, agricultural magazines are filled with advertisements featuring aluminum siding and roofing for barns, by companies such as Alcoa and Reynolds.

National Register of Historic Places Continuation Sheet

Section No. F Page 42

Historic Barns of Washington State
Washington

Barns constructed specifically for saddle horses, whether thoroughbred racing horses, show horses, or recreational riding horses are often elaborately designed buildings with high gable, monitor, or cross-gable roofs, and have become more common since World War II in rural and urban fringe areas.

Alternate Classifications of Barn Types

Distinctions among the property types described above are based primarily on roof form, but as the section describing "Barn Typologies" states, classifications of framing systems and uses of barns are as important as roof form, if not more so, in identifying patterns of barn construction and in assessing the significance of individual barns in the context of local and state history. In addition to describing a barn's exterior appearance and interior configuration, documentation of barns should include a description of the barn's framing systems. Timber frame barns are identified by their hewn or whole log posts and large cross beams secured by mortise and tenon joinery. Plan book, catalog or kit barns are identified by their typically lighter framing system, and the presence of supplier labels or tags, and stenciled component numbers, on milled framing members. Any available information regarding the source of plans should be included in the property's description.

Ancillary Structures

Although this study is focused on barns and does not address general farmstead buildings, silos are often attached to barns, and so merit examination in that regard. The fundamental principle in the preservation of silage is the retention of moisture within the silo and the exclusion of air. Early examples of silos, elsewhere in the country, were often square. It was difficult to make the walls of these silos strong enough, and their sides often bulged. It was also difficult to fill the corners, and a great amount of silage was lost annually through spoiling and freezing. It was only when the round silo was perfected that silage came into general use (Better Farming 1915:508-9).

As commercial dairying expanded throughout the early 20th century, the use of silage extended milk production year round, by providing green feed during the months when it was typically not available in pasture. By 1915, there were four kinds of round silos in practical use: the all-wood silo, of which the Gurler, King and hoop silos are types; the stave silo; the vitrified clay and cement block silo; metal silo and the cement silo. Silos were typically constructed at the end or side of a dairy barn, giving them a direct connection to the feed alley. Silage was chopped when freshly harvested, and was generally blown into the silo if the farmer had access to such equipment. Each kind of silo had its merits and disadvantages.

The wooden stave silo can be moved easily, and its cost is low. Block silos can be built in a very short time and do not require an expert in construction. The concrete silos are the most durable, their cost is low, and their maintenance cost negligible. However, each silo also had its disadvantages. The wooden stave silo causes endless trouble in loosening and tightening staves, and is bound to rot sooner or later. The concrete silo requires an expert to build it, and takes several

National Register of Historic Places Continuation Sheet

Section No. F Page 43

Historic Barns of Washington State
Washington

more days in construction than any other type. The cement silo rapidly gained favor, because of its durability and fire-proof construction, and was not as expensive as the block silo. (Better Farming 1915:532) The Harvestore silo, with its distinctive navy blue metal exterior made from fused glass and steel, was introduced in the late 1940s, and its presence was a symbol of prosperity on post World War II farms.

Like silos, milk houses were often constructed directly adjacent to, and connected with, dairy barns. In the 19th and early 20th centuries, dairy barns often had enclosed milk rooms inside the barn, where milk was stored. Changes in laws regulating the production of Grade A milk in 1910 required that milk be cooled in a stand-alone hygienic building. Articles touting new requirements noted that "every minute that milk is kept in the barn detracts from its quality" (Better Farming 1921:481). These small, generally square milk houses can be a diagnostic feature to indicate that a barn was used primarily as a dairy barn, rather than as a horse or cattle barn.

Changes Over Time

The post World War I agricultural depression, and the Great Depression which followed it, likely reduced the numbers of barns constructed in the mid-20th century. However, the growing use of tractors and other mechanized equipment, particularly during the 1930s and 1940s, meant that a large number of barns were reconfigured to serve new purposes. To accommodate the storage of new equipment and implements, farmers either constructed new open or enclosed implement sheds, or adapted their barns. Typical adaptations included enlarging doorways, or constructing lean-to shed additions. As mechanized equipment replaced the large teams of horses and mules that once powered the wheat harvesting, many horse barns particularly in the Palouse and Big Bend regions became obsolete. Some were converted to use as beef cattle or dairy barns, others were used for storage or general farming purposes, and a small number may have been converted to serve as sheep or hog barns.

In the last 50 years, a variety of alterations to barns are commonly seen which reflect evolution in farming practices and construction materials, and which help to preserve barns as viable working buildings. During the 1950s, 60s and 70s, many barns were re-roofed and re-sided with aluminum. Original dormers which provided light to upper stories during the era before electrification were sometimes removed when metal roofing was added. Ventilators were sometimes added to barns which did not originally have them, and outdated equipment was modernized to improve a barn's efficiency.

As farming practices changed throughout the state and farmsteads evolved, those barns that remained in agricultural use were more likely to retain their original appearance if new structures were built to serve new purposes. For example, dairy barns were more likely to retain integrity if they continued to have some active use, while new loafing sheds or milking parlors were constructed nearby to serve the herd. Similarly, pole barns were constructed on many cattle ranches, which served some purposes previously served by conventional barns, but did not render the older barns

National Register of Historic Places Continuation Sheet

Section No. F Page 44

Historic Barns of Washington State
Washington

completely obsolete. Stand-alone implement sheds or lean-to shed additions to barns provided storage, while additional outbuildings served other specific purposes.

In many cases, entirely new specialized barns were constructed on prosperous farms, adjacent and connected to older general purpose barns, or nearby within the historic farmstead area. When this occurred, the farmstead's primary economic activity typically shifted to the newer barn, while the older barn was repurposed for hay storage, general storage or to serve a new specialized purpose such as a horse stable or hog house. Where barns burned down or were damaged by storms, new barns were often immediately reconstructed on the same footprint, literally reusing the old foundation if possible and duplicating the structure and appearance of the original barn or updating it with a more modern design or new equipment.

Other alterations to existing barns reflect changes in regulations, such as the construction of milk houses, milking parlors and other specialized outbuildings on dairy barns, particularly after 1949. Also typical, although less visible except in historic photos, is the removal of outbuildings that no longer serve viable purposes. Significant alterations to barns of all types may include the construction of foundations and addition of concrete interior floors, the addition of sheds, the enlarging of main entry doors, particularly to accommodate storage of large implements, and changes to interior configurations and equipment which may be associated with electrification or with changes in use.

Registration Requirements

In order to be listed in the National Register as an individual building, a barn must be at least 50 years old and possess significance based on meeting one or more of the four criteria for evaluation, related to association, design, or information value. The barn must demonstrate sufficient integrity of location, design, setting, materials, workmanship, feeling and association to convey this significance. Barns may be associated with more than one time period, especially if their use has changed over time to reflect major changes in regional farming practices or technological innovations.

Criteria for Evaluation

To be eligible for listing a barn under this MPD the structure must meet Criterion C (architectural significance). Adjacent silos or milk houses integral with the operation of the barn should be listed as part of the barn, but if missing would not preclude the barn from listing as part of the MPD.

To have significance under Criterion C, a barn must have the characteristic building form, architectural style, engineering technique, or artistic values that make it a good example its type, period, or method of construction that it represents. Barns meeting this criterion may be representative examples of types of traditional folk architecture, or early examples of particular forms being constructed in Washington such as Round barns, or particularly good examples of plan book or kit barns. Examples of unusual forms, construction methods or materials may also meet Criterion

National Register of Historic Places Continuation Sheet

Section No. F Page 45

Historic Barns of Washington State
Washington

C, such as barns using brick or stone along with wood as primary building materials, barns having unusual roof forms or cross-gable features, or barns which include notable exterior decorations such as painted murals or other historic ornamentation. Methods of construction that represent transitional forms, such as trussed gable roof barns or timber frame gambrel roof barns, could also be considered under this Criterion.

Additional research is needed to document the careers and accomplishments of barn builders who worked in each of the state's agricultural regions. Little is known about who they were, how they learned their trade, what they were paid, whether there are traces of traditional folk architecture styles or construction techniques that are notable in their work, or whether there are particular 'signatures' that indicate the work of specific builders. Barn builders such as Peter Ahola in Klickitat County, the Lindsey Brothers in Island County, Pete Englund in King County, and the Huff Brothers in Whitman County may have constructed multiple barns in a given area, and may be responsible for patterns that shaped the historic identity of that area.

Generally eligibility under Criterion A (association with an event, series of events or activities, or broad patterns in an area's development) would come into play when a barn is part of a larger intact farm complex. This collection of buildings is needed to convey the full story and associations of how the farm operated. Such listing is not part of the MPD. However, this MPD could aid in providing contextual background. Listing under Criterion B (association with the lives of significant persons), though technically possible, would require a uniquely strong association with the particular individual of significance and a direct connection to the barn.

Criteria for Integrity

In addition to meeting one or more of the Criteria for Significance described above, a barn must possess most of the seven Criteria for Integrity in order to be considered for listing in the National Register. These include integrity of location, design, setting, materials, workmanship, feeling and association. These criteria address whether the property possesses the physical features necessary to convey the aspect of history with which it is associated. Unlike many architect-designed buildings in urban settings that are examples of well-documented specific styles, barns were constructed for utilitarian purposes and were intended to be working buildings that are likely to have been altered, reused, and even moved to maintain viability. The most relevant aspects of integrity that a barn should possess to be eligible for listing in the National Register are integrity of setting, retaining a strong relationship to an agricultural landscape, and integrity of design, retaining a recognizable link to its historic development and construction method.

Barns possessing integrity of location and setting are generally on the site where they were originally constructed, and retain a connection to at least some portion of the farm or ranch with which they were originally associated. The type of farming or ranching associated with the barn may have changed, but the character of a rural working landscape is an important aspect of the barn's setting. Integrity of design includes characteristics such as structural system, roof form, footprint, plan and

National Register of Historic Places Continuation Sheet

Section No. F Page 46

Historic Barns of Washington State
Washington

scale. Barns demonstrating integrity of design have a strong link to their original appearance and structure, although they may have been modified in the process of adapting to changes in farming and ranching. For example, a barn's original plan may have been modified by the construction of a milking parlor or other shed addition, while retaining its structural system and original orientation, among other characteristics. Or a barn's exterior may be essentially unchanged, but the interior may have been altered to convert the building from a horse barn to general purpose barn or storage facility, including the removal of equipment or interior features.

In recognizing that barns are working buildings, an evaluation of a barn's integrity of materials includes an assessment of not only original materials that were likely used for framing, cladding, roofing, foundations and other purposes, but also replacement materials that have commonly been used to preserve the function of barns without drastically altering their form or appearance. While many barns were originally constructed with cedar shake or shingle roofs, and others had composition or asphalt roofing, often original roofing materials have been covered or replaced with metal as an economical and pragmatic step to prolong the life of the building. These roof cladding changes do not diminish the barn's integrity. However, wholesale or near whole sale covering of original siding with a new material that was installed outside the period of significance does drastically alter the appearance of these simple buildings, and hence would render a barn not eligible.

Where original foundations were lacking entirely, or were comprised of field stone or similar materials, concrete may have been poured to stabilize and prolong the life of a barn or provide compliance with new regulations. Barns with these alterations would still be eligible. The key consideration is integrity of the barn's structural system that provides the overall form and creates interior spaces. In-kind repairs to the original structural system do not diminish integrity.

Anecdotal accounts describe the types of locally available wood used in construction of barns around the state, including various kinds of fir, pine, oak, cedar, tamarack, and other species. Barn suppliers such as Sears recommended and sold lumber from non-local species including cypress and yellow pine, although it is unclear how often these materials were used in the Pacific Northwest.

To retain acceptable integrity of workmanship, association and feeling, a barn must be able to convey its significance in spite of changes that may have been made to its appearance or surroundings. Hand hewn beams in a timber frame barn, or intact windows in a balloon frame kit barn, are examples of workmanship which should be visible even if other aspects of the barn had changed. Integrity of feeling and association relate to an overall assessment of a barn's relationship to its intended purpose and to its surroundings. For example, even if a barn's central gable-end doors have been replaced and the opening has been enlarged, the doorway may still open into a functioning barnyard or driveway providing access to fields and pastures, thereby retaining integrity of feeling. Similarly, a barn is likely to retain its association within the context of a historic farmstead, even if some of the farmstead's buildings have been altered.

National Register of Historic Places Continuation Sheet

Section No. F Page 47

Historic Barns of Washington State
Washington

Due to low integrity of a barn, it may not be eligible as an individual resource, but may be eligible as part of a group of barns in a particular valley or other definable region thus acting as a contributing resources to a historic district.

Special Criteria Considerations

One Criteria Consideration, the ineligibility of listing in the National Register for buildings that have been moved from their original location, is particularly relevant to barns. It is not unusual for barns and other farm buildings to be moved from their original location, either to accommodate construction of a new building or otherwise alter farmstead layout to reflect changes in farming practices, or to accommodate road construction or other public works projects. Barns or other agricultural buildings that were moved during the historic period (i.e. more than 50 years ago) may still be eligible for listing in the National Register of Historic Places if their current location is on land traditionally associated with the farm or ranch with which they were originally associated, or land associated with a similar ranch or farm that reflects similar patterns of agricultural, social or technological development. The building's retention of original materials and traditional uses may also be evaluated.

(Endnotes)

1 The history of barn construction in Europe and the Eastern United States is documented in several outstanding publications including Endersby et. al. (1992, 2003), Noble and Cleek (1996), Radojkovic (2007), Sloane (1954, 1966) and Vlach (2003). These studies are grounded in traditional folk architecture of Britain, France, Germany, Holland and Scandinavia, and describe how traditional barn structures were brought to the United States by immigrants, and adapted to new climates, building materials, and types of farming.

National Register of Historic Places Continuation Sheet

Section No. G Page 48

Historic Barns of Washington State
Washington

G. Geographic Data

The jurisdictions and geographical units covered by this multiple property group is the entire geographic boundaries of the State of Washington. The statements of context extend to this full area and reference known examples of property types.

National Register of Historic Places Continuation Sheet

Section No. H Page 49

Historic Barns of Washington State
Washington

H. Summary of Identification and Evaluation Methods

The study was developed based on review of extensive primary and secondary source publications, archival collections, cultural resource studies, and other research documents. While a comprehensive statewide survey of historic agricultural resources is lacking in Washington State, review of the Heritage Barn Register nomination forms provided some of the information that would typically be documented through a traditional survey and inventory project. In addition, several properties in Washington State have been previously listed in the Washington Heritage Register or the National Register, and a review of their physical descriptions and statements of significance provided important background information.

Of note are the outstanding collection of publications on historic farm buildings at the Washington State University's Owen Science and Engineering Library, the Washington State Historical Society's collection of ephemera related to the Northern Pacific and Great Northern Railroads, and the King County Historic Preservation Program's sizable collection of barn survey and inventory data, all of which informed this study. A review of county and regional histories, as well as site visits to most of the state's historic farming regions and several community history museums, contributed to the identification of statewide and regional patterns of development and milestones in agricultural, social and economic history.

A steady decline in dairying statewide has led to the deterioration of many dairy barns, although some have gained new uses as storage and production facilities for specialty growers and producers. Many barns have been restored and adaptively reused for both agricultural and non-agricultural purposes, such as event venues, lodging, farm and garden stores, other retail and commercial, as well as residential. Several heritage barns have come into public and non-profit organization ownership through acquisition by cities, counties or community organizations, and have been rehabilitated or are slated to be in the future. Heritage barns have been used as iconic marketing images on wine labels and other product marketing. The preservation and continuity of traditional skills is the focus of organizations such as the Timber Framers Guild, and a variety of information is available to barn owners about rehabilitation options and incentives. The establishment of the Washington State Heritage Barn Program in 2006 has helped to focus public attention on the significance of these resources and the importance of preserving them.

National Register of Historic Places Continuation Sheet

Section No. 1 Page 50

Historic Barns of Washington State
Washington

I. Major Bibliographical References

Barns, Farm Buildings & Farming

- Ardrey, Robert L. 1894. *American Agricultural Implements: A Review of Invention and Development in the Agricultural Implement Industry of the United States*. Chicago, IL: Published by the Author.
- Arthur, Eric and Dudley Witney. 1972. *The Barn: A Vanishing Landmark in North America*. Toronto, Ontario: M.F. Feheley Arts Company.
- Better Farming Association. 1920. *Farm Economy: A Cyclopedia of Agriculture for the Practical Farmer and His Family*. Cleveland, OH: Better Farming Association.
- Carter, Deane G. and W.A. Foster. 1941 [1922]. *Farm Buildings*. New York, NY: Wiley & Sons, Inc.
- Cartwright, Calhoun. 1975. *Barns of Puget Sound Country*. Port Townsend, WA: Cartwright's Oldtime Print Shop.
- Crittendon, Bob. 2006. *Barn in the U.S.A.* Golden, CO: Fulcrum Publishing.
- Goede, Lisa. 2006. *Historic Barns of Southeastern Idaho: A Self-Guided Driving Tour*. Logan, UT: Bear River Association of Governments.
- Ekblaw, K.J.T. 1914. *Farm Structures*. New York, NY: The Macmillin Company.
- Endersby, Elric, Alexander Greenwood, and David Larkin. 2003. *Barn: preservation & adaptation: the evolution of a vernacular icon*. New York, NY: Universe Publishing.
- Endersby, Elric, Alexander Greenwood, and David Larkin; principal photography by Paul Rocheleau. 1992. *Barn: The Art of a Working Building*. Boston: Houghton Mifflin.
- Ensminger, Robert F. 1992. *The Pennsylvania Barn: Its Origin, Evolution and Distribution in North America*. Baltimore, MD: The Johns Hopkins University Press.
- Gordon – Van Tine Company. 1917. *Farm Buildings*. Davenport Iowa: Gordon – Van Tine Company.
- Halsted, Byron D; edited by Nathaniel Tripp. 2000 [originally published 1881]. *Barns and Outbuildings and How to Build Them*. Guilford, Connecticut: Globe Pequot Press.

National Register of Historic Places Continuation Sheet

Section No. I Page 51

Historic Barns of Washington State
Washington

-
- Hart, Arthur A. 1996. *Barns of the West: A Vanishing Legacy*. Boise, ID: Historic Idaho Inc.
- Hopkins, Alfred. 1913. *Modern Farm Buildings*. New York, NY: McBride, Nast & Company.
- Hundertmark, R.E and A.B. Nystrom. 1915. *The Dairy Barn and Milk House, How to Construct Them. Popular Bulletin No. 95*. Pullman, WA: State Agricultural Experiment Station.
- Leffingwell, Randy. 2001. *Barns*. St. Paul, MN: Motorbooks International.
- Leffingwell, Randy. 1997. *The American Barn*. St. Paul, MN: Motorbooks International.
- Louden Machinery Company. 1915 and 1925. *Louden Barn Plans*. Fairfield, IA: Loudon Machinery Company.
- Marsh, Dennis Wayne. 1980. *Skagit Barns*. M.A. Thesis, University of Washington.
- Noble, Allen G. and Richard K. Cleek. 1996. *The Old Barn Book: A Field Guide to North American Barns and Other Farm Structures*. New Brunswick, NJ: Rutgers University Press.
- Noble, Allen G. and Gayle A. Seymour. 1982. "Barn Types in Northeastern United States." *The Geographical Review*, Vol. 72, No. 2:155-170.
- Pennington, A.M. 1954. *Concrete Farm Structures*. London, UK: Concrete Publications Limited / Williams Clowes and Sons.
- Radford, William A. 1909. *Radford's Practical Farm Plans*. Chicago, IL: The Radford Architectural Company.
- Radojkovic, Jon. 2007. *Barn Building: The Golden Age of Barn Construction*. Erin, Ontario: The Boston Mills Press.
- Rakeman, Steven J. and Donald Berg, editors. 1980 [1870]. *The 1870 Agriculturalist for the Farm, Garden and Household*. Rockville Center, NY: Antiquity Reprints.
- Rawson, Richard. 1979. *Old Barn Plans*. Clinton, NJ: The Main Street Press. Sears Roebuck. 2005 [1919]. *Sears, Roebuck Book of Barns: A Reprint of the 1919 Catalog*. Preface by Rebecca Hunter and Dale Patrick Wolicki. Elgin, IL: R L Hunter Press.
- Sloane, Eric. 1954. *American Barns and Covered Bridges*. New York, W. Funk.
- Sloane, Eric. 1966. *An Age of Barns*. New York, Funk & Wagnalls.
- Smith, L.J. 1923. *Plans for Small Barns: Popular Bulletin No. 123*. Pullman, WA: State College of Washington – Agriculture Experiment Station.
- Smith, L.J. and Neal G. Preston. 1934. *Plans for Washington Farm Buildings and Equipment: County Agent Manual*. Pullman, WA: State College of Washington.

National Register of Historic Places Continuation Sheet

Section No. 1 Page 52

Historic Barns of Washington State
Washington

-
- Stoecklein David R.; editor, Carrie Lightner. 2006. *Barns of the Great American West*.
Stoecklein, Hailey, ID.
- Thatcher, Elaine and Lisa Duskin-Goede. 2004. *Historic Barns of Northern Utah: A
Driving Guide*. Logan, UT: Bear River Association of Governments.
- Visser, Thomas Durant. 1997. *Field Guide to New England Barns and Farm Buildings*.
Hanover, NH: University Press of New England.
- Vlach, John Michael. 2003. *Barns*. New York: W.W. Norton; Washington, D.C.:
Library of Congress.
- Wheldon, Wynn. 2003. *Barns*. New York, NY: Barron's.
- Wichers, H.E., Don Lockridge and Ivan H. Loughary. 1953. *Planning Your Dairy
Buildings: Extension Bulletin No. 483*. Pullman, WA: Extension Service –
Institute of Agricultural Sciences.
- Witzel, Michael Karl. 2003. *Barns: Styles and Structures*. St. Paul, MN: MBI
Publishing.
- Wooley, J.C. 1936. *Farm Buildings*. Columbia, MO: The University Co-operative
Store.

Washington State History

- Alwin, John A. 1984. *Between the Mountains: A Portrait of Eastern Washington*.
Bozeman, MT: Northwest Panorama Publishing.
- Bohm, Fred and Craig E. Holstine. 1983. *The People's History of Stevens County*.
Colville, WA: The Stevens County Historical Society.
- Johnson, E. R. and E. D. Strait. 1924. *Farming the Logged-Off Uplands in Western
Washington, United States Department of Agriculture Bulletin 1236*.
Washington D.C.
- Hoover, Glenn Edwin. 1923. *Rural Settlement in Western Washington*. MA Thesis,
University of Washington.
- Keith, Thomas B. 1982. *The Horse Interlude: A Pictorial History of Horse and Man in
the Inland Northwest*. Moscow, ID: University Press of Idaho.
- Kilpinen, Jon. 1994. "Finnish Cultural Landscapes in the Pacific Northwest." *Pacific
Northwest Quarterly* Vol. 86, No. 1:25-34.
- Lewis, William S. 1926. *Early Days in the Big Bend Country*. Spokane, WA: W.D.
Allen.
- Merritt, Louise. 1995. *Early Suise Creek Immigrants*. Mount Vernon Herald. 1921.
Skagit County, Washington. Mount Vernon, WA: Mount Vernon Herald.

National Register of Historic Places Continuation Sheet

Section No. I Page 53

Historic Barns of Washington State
Washington

-
- Nicandri, David L. 1978. *Italians in Washington State*. Washington State American Revolution Bicentennial Commission.
- Olsen, Michael Leon. 1970. *The Beginnings of Agriculture in Western Oregon and Western Washington*. Unpublished Ph.D. dissertation, University of Washington.
- Prevost, Nancy M. 1985. *Paradise in the Palouse*. Fairfield, WA: Ye Galleon Press.
- Scott, James W. and Roland L. DeLorme. 1988. *Historical Atlas of Washington*. Norman, OK: University of Oklahoma Press.
- Washington Farmer, Volume 37 (1914), 38 (1915) and 39 (1916). Spokane, WA.
Including: A Barn With Brains. July 15, 1914.
The Building of a Good Dairy Barn. March 1, 1915.
The Round Barn. May 1, 1915.
What the Silo Means to the Dairyman. May 15, 1915.
Round Barns and Rectangular Ones. December 1, 1915.
Merits of the Round Farm Barn. February 17, 1916.
- Washington State Department of Agriculture. 1963. *Atlas of Washington Agriculture*. Olympia, WA: Washington State Department of Agriculture.
- Washington State Department of Agriculture. 1989. *Washington's Centennial Farms: Yesterday and Today*. Olympia, WA: Washington State Department of Agriculture.
- Washington State Office of Archaeology and Historic Preservation. 1990. *Built in Washington: 12,000 Years of Pacific Northwest Archaeological Sites and Historic Buildings*. Pullman, WA: Washington State University Press.
- White, Sid and S.E. Solberg, editors. 1989. *Peoples of Washington: Perspectives on Cultural Diversity*. Pullman, WA: Washington State University Press.
- Wirsing, Dale R. 1977. *Builders, Brewers and Burghers: Germans of Washington State*. Washington State American Revolution Bicentennial Commission.

Internet references

- Columbia Basin Project, Washington. United States Bureau of Reclamation
www.usbr.gov/dataweb/html/columbia.html accessed 9/24/08
- Fort Vancouver National Historic Site www.nps.gov/fova/ accessed 6/1/08
- Growing a Nation: The Story of American Agriculture
www.agclassroom.org/gan/index.htm accessed 6/1/08
- Historylink.org Essays: www.historylink.org

National Register of Historic Places Continuation Sheet

Section No. 1 Page 54

Historic Barns of Washington State
Washington

-
- Tate, Cassandra. Grand Coulee Dam, Essay #7264, 2005.
Thumbnail Histories for 39 Washington Counties
Port of Lewiston, Idaho www.portoflewiston.com accessed 9/25/08.
Sears Archives www.searsarchives.com accessed 6/1/08
Washington State Farm Bureau History www.wsfb.com/about/history accessed
9/25/08.
Washington State University Extension: A Capsule History
www.ext.wsu.edu/about/history.html accessed 7/14/08
Whitman Mission National Historic Site www.nps.gov/whmi/ accessed 6/1/08

National Register Nominations & Cultural Resource Studies

- Granger, Susan and Scott Kelly. 2005. Historic Context Study of Minnesota Farms 1820-1960. St. Paul, MN: Minnesota Department of Transportation.
Lentz, Florence K. 1993. Dairy Farm Properties of the Snoqualmie Valley, King County. National Register of Historic Places, Multiple Property Listing.
Lindeman, Glen and Craig Holstine. 1988. Grain Production Properties in Eastern Washington. National Register of Historic Places, Multiple Property Listing.
Lindeman, Glen and Keith Williams. 1986. Washington State Agriculture Study Unit, a Resource Protection Planning Process (RP3) report. Manuscript on file: Washington State Department of Archaeology and Historic Preservation.
Stevens, Shanna. 2001. Agriculture in Thurston County. National Register of Historic Places, Multiple Property Listing.
Walls, Robert E. 1987. A Preliminary Survey of Anglo-American Folk Architecture in the State of Washington. Washington State Folklife Council. Manuscript on file: Washington State Department of Archaeology and Historic Preservation.

Archival Collections

- Central Washington University Special Collections
Seattle Public Library Periodicals Collection, including Better Farmer, Carnation Farm Milk News, The Coast, Country Gentlemen, Northwest Dairyman & Farmer, Ruralite, Washington Agriculturalist and Washington Farmer & Stockman.
University of Washington Special Collections
Washington State Historical Society Ephemera Collection
Washington State University Special Collections

National Register of Historic Places Continuation Sheet

Section No. I Page 55

Historic Barns of Washington State
Washington

General References & Other

- Brewer, Richard. 2005. *Conservancy: The Land Trust Movement in America*.
Lebanon, NH: University Press of New England.
- Davis, Jack and George Parmenter, Personal Communication (Interview), Benton City,
Washington; July 25, 2008.
- Josephson, Mathew. 1962. *The Robber Barons*. New York: Harcourt Brace
Jovanovich.

Figure 1



End bent of a gable roof timber frame barn, from Ekblaw (1914:219)

Figure 2



Old Starr Farm Barn (1859), Columbia County, courtesy of the Blue Mountain Heritage Society

Figure 3



Milton & Newton Aldrich Barn (1864), Walla Walla County

Figure 4



Canter-Berry Farm Barn (1879), King County

Figure 5



Beck-Walker Barn (c.1890), Spokane County

Figure 6



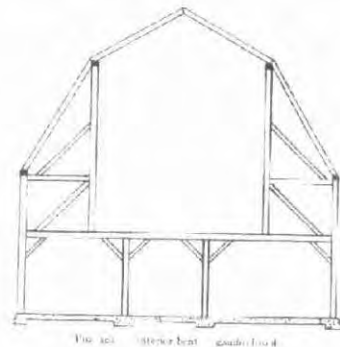
Mary Olson Farm Barn (1897), King County

Figure 7



Albert Nelson Farmstead barn (1910), Kittitas County

Figure 8



Interior bent of a gambrel roof timber frame barn, from Ekblaw (1914:221)

Figure 9



Louden Machinery Company illustration of the superstructure of a gambrel roof plank frame barn (1915:11)

Figure 10



Illustration of plank frame trussed-roof style gambrel barn, Gordon Van Tine Company (1917:23)

Figure 11



Illustration of self-supporting or braced rafter roof style gambrel barn, Gordon Van Tine Company (1917:24)

Figure 12



Wilkinson Barn (1914), Pierce County

Figure 13



Phillip Heinen Barn / Shiloh Farm (c.1908), Columbia County

Figure 14



Dubois Barn, Stevens County

Figure 15



Illustration of Gothic roof (or arch roof) style construction, Gordon Van Tine Company (1917:25)

Figure 16



Dalhmen Barn (1935), Whitman County

Figure 17



Kelsey Creek Farm Barns (1933/1943), King County