

APPENDIX H
HISTORIC, ARCHAEOLOGICAL, AND
PALEONTOLOGICAL CONTEXTS

1 CULTURAL HISTORY

This section includes succinct reviews of the cultural histories of the four geographic regions (encompassing 13 states) that are within the 100-mile corridor of the northern border project area.

1.1 PREHISTORIC CONTEXT

Since the Paleo-Indian period is very similar across the entire northern border, a single discussion of that period is presented below. All other prehistoric/pre-contact traditions are discussed on a regional and state-by-state basis.

1.1.1 PALEO-INDIAN PERIOD

Large portions of the study area were covered by the Laurentide and Cordilleran ice sheets at the time of the Late Wisconsin Glacial Maximum (ca. 21,000 B.P.) (Dreimanis, 1977:71; Hill, 2006:83, 85; Ogden, 1977:18). The exceptions include a small portion of northwestern Pennsylvania and parts of northern Montana, Idaho, and Washington. Besides rendering large portions of North America uninhabitable, the ice sheets also trapped a significant portion of the earth's water, resulting in lower sea levels in parts of the study area along the Atlantic and Pacific coastlines. The ice sheets receded from their maximum extent after 21,000 B.P. and were north of the study area by ca. 14,000 B.P. to 12,500 B.P. (Hill, 2006). As they melted, a series of proglacial water bodies formed along their margins, such as the Champlain Sea, Lake Iroquois, and Glacial Lakes Albany and Vermont in the Northeast, Glacial Lakes Chicago and Whittlesey in the Great Lakes region, and Glacial Lakes Columbia, Brewster, and Missoula in the Northwest. The northern Great Lakes area, including much of the northern peninsula of Michigan, was the last region to be ice free. The landscape south of the melting glaciers was primarily covered with "tundra-like vegetation," although more productive microhabitats were likely distributed along the edges of proglacial water bodies (Sirkin, 1977:210; see also Wright, 2006:107). Numerous types of fauna were present, such as mastodon, caribou, horse, bison, musk-ox, giant ground sloth, white-tailed deer, elk-moose, and wapiti, along with species of smaller mammals, birds, fish, reptiles, and shellfish, many of which were hunted by the area's earliest human occupants (Lepper and Funk, 2006:188; see also Funk, 1993:258).

No archaeological sites are known within the area of glaciation that pre-date the melting of overlying glacial ice. However, the Meadowcroft Rockshelter site, located in an unglaciated part of southwestern Pennsylvania just south of the study area, has yielded definitive dates associated with cultural materials from as early as 15,950 B.P. (Lepper and Funk, 2006:174). Similarly early sites may exist under water along coastal areas that were dry during periods of advanced glaciation. Early Paleo-Indian sites, which date to soon after the glacial retreat (generally between 12,000 B.P. and 10,000 B.P.), have been found throughout the study area. Typically, these sites include Clovis-like projectile points, which have characteristic channels/flutes that were probably used for hafting (Justice, 1995:17-29; Ritchie, 1971:10, 21-22, 74-75). Although the points are broadly similar across much of the continent, some display differences suggesting variation among social groups (Funk, 1983:309; Griffin, 1983:243; Ritchie, 1980:1; Stothers, 1996).

Relatively few early Paleo-Indian sites have yielded radiocarbon dates; the ages of most have been inferred from the presence of fluted points (Funk, 1983:309; Ritchie and Funk, 1973:334). Finds are frequently limited to single projectile points with no accompanying items. Although there is some variation across the study area, typical Paleo-Indian tool kits included unifacially-flaked end- and side-scrapers (some of which are 'limace' (slug-shaped), bifacial preforms, distinct debitage created during point fluting (i.e., 'channel' flakes), burins, wedges, graters, biface knives, large chopping and cutting biface, drills, and denticulates (Funk, 1983:309; Snow, 1980). Tools are generally made with high-quality stone, sometimes procured from exotic (long-distance) sources.

Late Paleo-Indian (ca. 10,900 B.P.-10,000 B.P.) sites are associated with diagnostic, parallel-flaked, lanceolate Plano tradition projectile points. Plano points are most frequently found in the Plains, where some are associated with bison kills/processing sites (Justice, 1995:30-35). They are extremely scarce in Pennsylvania, New York, and New England, but occur more frequently further to the north, where peri-glacial environments endured until after 10,000 B.P. (Funk, 1983:315-316; see also Lepper and Funk, 2006:193).

Paleo-Indian sites can be grouped into any number of several functional classes, among which are: workshops/quarries; small camps; major, recurrently occupied camps; kill sites; rockshelter/cave camps; and possible cremation sites (Buckmaster and Paquette, 1989; Frison, 1996; Mason and Irwin, 1960; Meinholz and Kuehn, 1996; Ritchie and Funk, 1973:333-334). Workshops/quarries are defined by the presence of numerous pieces of debitage and stone tool fragments, a low quantity or absence of evidence for longer-term visits such as hearths, and proximity to a lithic source. Examples include: Munsungun in Maine; West Athens Hill and Divers Lake in New York; and several Knife River quarry sites in North Dakota (Funk, 1983:314; Lepper and Funk, 2006:181). Attributes of small camps include a limited areal extent and relatively few artifacts, which might include items associated with hunting, butchering, woodworking, or knapping. Example sites include: Beacon Hill, Lamontagne, and Keogh in Maine; and Potts, Davis, and Kings Road in New York. Major recurrently occupied camps typically cover larger areas than small camps, have more artifacts representing a greater range of activities, and include several 'hotspots,' probably indicative of multiple occupations or areas used during a single occupation by multiple social groups. Examples include: the Michaud and Taxiway sites in Maine; Reagan in Vermont; Arc in New York; Shoop in Pennsylvania; Paleo Crossing in Ohio; and Samels Field in Michigan (Cleland and Ruggles, 1996; Holliday and Mandel, 2006:36; Ritchie and Funk, 1973:333-334; Shott and Wright, 1999; Witthoft, 1952). Kill sites are represented by disarticulated faunal (skeletal) remains in association with Paleo-Indian artifacts. Example sites include the Vail site in Maine (Lepper and Funk, 2006:182). Rockshelter and cave sites are largely defined by the presence of Paleo-Indian artifacts in proximity to those geographic features; visits to these sites would have been brief and probably by relatively few people (Ritchie and Funk, 1973:334). Examples include the Aurora Run Rockshelter, the Squaw Rockshelter, and Sheriden Cave in Ohio, and Dutchess Quarry Cave in New York (Holliday and Mandel, 2006:36; Lepper and Funk, 2006:175; Ritchie and Funk 1973:334). There is also some evidence for large-scale bison kills in Montana and possible cremation burials have been found on the Upper Peninsula of Michigan (Buckmaster and Paquette, 1989; Frison, 1996; Justice, 1995:33; Mason and Irwin, 1960; Meinholz and Kuehn, 1996).

Paleo-Indian quarries/workshops predictably occur near sources of lithic material with qualities favorable for knapping. By definition rockshelter sites are limited to their geographic settings. Camps were typically on “high, well-drained ground... on such topographic features as hills, drumlins, knolls, or terraces” and probably near animal migration routes (Ritchie and Funk, 1973:334-335; also see Lepper and Funk, 2006:189). Proximity to water was an additional – and perhaps primary – determinative factor in site location (Holliday and Mandel, 2006:35-36). Many sites, such as Arc and Hiscock in New York, Paleo Crossing in Ohio, and several Saginaw River valley sites in Michigan are located along the peripheries of paleolakes, ponds and wetlands (Cleland et al., 1998; Holliday and Mandel, 2006:36; Laub et al., 1996:1; Lepper and Funk, 2006:190; Loring, 1980). Conversely, few Paleo-Indian sites have been found along younger drainages along the Great Lakes - features that developed after the immediate post-glacial period (Holliday and Mandel, 2006:36; Lantz, 1984:219). Paleo-Indians in Maine, New Hampshire, Vermont, and Washington also appear to have been exploiting upland environments not necessarily in proximity to water (Lacy, 1994; 1999; Loring, 1980). In general, fewer Paleo-Indian sites are known for the parts of the study area in Washington, Idaho, Montana, and North Dakota than for states further to the east.

1.1.2 NEW ENGLAND REGION

1.1.2.1 State of Maine

Early and Middle Archaic Periods

Once thought to be rare in Maine, sites of the Early Archaic and Middle Archaic periods (ca. 10,000 B.P.-8,000 B.P. and 8,000 B.P.-6,000 B.P., respectively) have become much more understood in the last 25 years. Early and Middle Archaic period components have been identified at multi-component stratified sites along the Penobscot, Piscataquis, Kennebec, and Androscoggin rivers and are known from private collections from many Maine lake inlet and outlet sites, including some along the Saint Croix and Saint John Rivers.

These sites exhibit tool assemblages typical of the Gulf of Maine Archaic tradition and include quartz core and flake tools such as thick core/uniface scrapers, fully channeled gouges, celts and stone rods of several forms with few, if any, flaked stone projectile points, although biface manufacture is evident among debitage assemblages. Early Archaic period bifurcate-based points and Middle Archaic period Neville and Stark stemmed points are rarely recovered but are more common in southwestern Maine private collections. Their apparent rarity contributed to early assessments of regional low populations during these periods. Broadly flaring, flat-bottomed, fully channeled gouges are likely earlier than narrower or parallel-sided forms and the later two forms persist well into (or through) the Middle Archaic period. Various forms of slate projectile points and the semi-lunar knife or “ulu” may have appeared by the end of the Early Archaic period and certainly are present in some Middle Archaic period site assemblages.

Subsistence and seasonality evidence from Native American sites in Maine begins to accrue in the Early Archaic period. Early and Middle Archaic period components at sites such as the stratified sites on the Piscataquis River in Milo and N'tolonapemk at the outlet of Meddybemps Lake, among others, contain calcined bones of anadromous fish such as alewife and shad and catadromous eels among other fish, as well as turtle, beaver, muskrat, woodchuck, otter and fox. N'tolonapemk also contained the remains of two semi-subterranean house pits radiocarbon dated

to 8,690±50 B.P. and 8,670±60 B.P. No definitive evidence of Early or Middle Archaic period mortuary sites has been identified within the overall study area but it is expected that people practiced the mortuary ceremonialism identified at other Gulf of Maine Archaic period mortuary sites in the broad region.

Late (and Transitional) Archaic Periods

Sites of the Late Archaic period (ca. 6,000 B.P.-3,900 B.P.) are numerous in Maine and are associated with the Moorehead Burial tradition, apparent elaborations of the Gulf of Maine mortuary ceremonialism that include cemeteries with pit features containing abundant red ochre, suites of typical lithic artifacts that were consistently associated with certain portions of the Late Archaic period, and occasional evidence of cremations. These cemeteries are generally located on elevated well-drained landforms overlooking suitable places to harvest anadromous fish and support band-sized gatherings, and may have served as territorial boundary indicators.

The earliest Late Archaic period occupations have been found in Maine's interior and appear related to the Laurentian tradition Vergennes phase as defined in New York. Artifact assemblages from these sites vary little from earlier Middle Archaic period assemblages apart from the inclusion of broadly side-notched "Otter Creek" projectile points. Also included are ulus, short channeled gouges, celts, slate points, and stone rods. Pecked stone plummets are fairly common at this time but may have initially appeared at the end of the Middle Archaic period. A feature at the Sharrow site in Milo (F.17), with two radiocarbon dates of 5,900 B.P. and 6,000 B.P., contained a plummet and conjoining fragments of a bone or antler point with multiple barbs. A similar barbed point of swordfish rostrum was recovered from a feature associated with the Vergennes phase at Site 96.02 at the outlet of Lewey Lake in Princeton. Interior sites of the Late Archaic period continue to be located along rivers at good fishing spots and at lake inlets and outlets and also include turtle, beaver, and occasional bird and large mammal subsistence remains. The Seabasticook Fish Weir in Newport was initially constructed at this time.

It is also during the Late Archaic period that sites of the small stemmed point tradition (ca. 5,000 B.P.-4,500 B.P.) appear along the coast of Maine. Earlier Archaic occupations undoubtedly occurred on the coast, but were later submerged by rising sea levels due to coastal subsidence. The small stemmed point tradition may have arrived in Maine somewhat later than the Vergennes phase, but is at least partly contemporary with the Vergennes phase and may have persisted longer. Artifact assemblages of the small stemmed point tradition are similar to contemporary assemblages in the interior with the exception of the diagnostic projectile point styles and the apparent absence of ulus in small stemmed point tradition assemblages. As already mentioned, sites of the small stemmed point tradition occur along the coast but also occur on some major islands and to the head of tide on major river estuaries.

Subsistence evidence is more common in small stemmed point tradition faunal assemblages as the presence clam shells neutralizes soil acidity. The small stemmed point component (Occupation 1) at the Turner Farm site demonstrates a clear focus on procuring fish (including swordfish) from the ocean, with a secondary reliance on deer, with clam as a supplementary resource.

Succeeding or developing from the small stemmed point tradition, the Late Archaic period Moorehead phase people (ca. 4,500 B.P.-3,800 B.P.) often occupied the same sites, focused on the same coastal resources, and continued the Moorehead burial tradition. Projectile points of the Moorehead phase are generally longer with proportionately narrower blades than those of the small stemmed point tradition and resemble roughly contemporary Sylvan Stemmed projectile points associated with the Mast Forest Archaic tradition of New York. Short channeled gouges, plummets, celts, and slate points continued in use and were variously included as burial goods, although slate points of the Moorehead phase burials are often long, narrow faceted “bayonets,” sometimes decorated with incised designs on one face and possibly intended as strictly ritual items. Some otherwise utilitarian items such as plummets exhibit effigy-like characteristics. Evidence of long distance cultural connections during Maine’s Late Archaic period Moorehead phase includes Ramah quartzite bifaces from northern Labrador and side-notched bifaces resembling Normanskill projectile points from New York and Vermont, some made of Vermont Cheshire quartzite, in some cemeteries.

The Transitional Archaic period (ca. 3,800 B.P.-2,800 B.P.) of much of Maine is mostly associated with the Susquehanna tradition, often considered to be an example of the migration of people from the Mid-Atlantic states into New England. The initial regional manifestation of the Susquehanna tradition is similar to the Atlantic phase of Massachusetts and includes large broad stemmed projectile points referred to as Snook Kill or Atlantic points, distinctive drills, celts, occasional fully grooved axes, and short-channeled gouges and cremation burials with little or no red ochre included. Susquehanna sites (and cemeteries) are often located on the same landforms as Moorehead sites but are sometimes very large and possibly more numerous and widely distributed through much of Maine. As seen from Turner Farm, Susquehanna subsistence on the coast, even at this island site, is more focused on terrestrial resources such as deer than is the Moorehead phase occupation, with some use of inshore fish and no swordfish exploitation. This may be, at least in part, due to cooling of the Gulf of Maine waters.

The next Susquehanna tradition manifestation in Maine apparently differs little from the earlier Atlantic other than that projectile points resemble the “Wayland Notched” points of Massachusetts and the number of sites and site size appears to have decreased. This decrease may be a result of sampling as much of the forested parts of Maine have received relatively little professional attention while the many lakes that are seasonally lowered in the fall are well known to attract the attention of collectors. The later manifestations of the Susquehanna tradition to the west of Maine are poorly represented in Maine collections. Projectile points of the Orient phase are occasionally recovered, particularly in central and western Maine, and a few possibly associated steatite bowls are known.

Although some early Susquehanna sites are known, notably the Mud Lake Stream site, very little evidence of the Susquehanna tradition is known from the Canadian Maritime provinces or from eastern Maine. Instead, a regional Transitional Archaic presence has been suggested for the areas adjacent to the Saint John and Saint Croix Rivers and Passamaquoddy Bay.

Ceramic (Woodland) Period

The Ceramic period (ca. 2,800 B.P.-2,100 B.P.) in Maine begins with the arrival of Native American pottery into the region about as early as any other place in the Northeast, as demonstrated by a 2,720±90 B.P. associated with a semi-subterranean house pit within the shell

midden at the Knox site. The first ceramics to appear in Maine consisted of conical pots with cordage or fabric-impressed interiors and exteriors. Early Ceramic period sites often demonstrate evidence of cultural contact with cultures to the west in the form of “Meadowood” side-notched projectile points and lobate-stemmed points similar to those associated with the Early Woodland Middlesex Adena culture, although made of local materials. Occasionally, blocked-end tubular tobacco pipes of Ohio pipe clay have been found in Maine. Early Ceramic sites often contain numerous small end scrapers and occasional diagnostic tear drop-shaped bifacial scrapers. The Early Ceramic people of Maine continued the hunter/gatherer subsistence economy of their Archaic period predecessors. Seasonality assessments of clam shells from a variety of Ceramic period shell midden sites suggest that coastal people exploited the resources of the exposed coast and islands during the warmer months and moved to sheltered coves in the winter. There are also many sites spanning the entire Ceramic period throughout the interior of Maine but, likely due to preservation conditions and sampling biases, no evidence of the location of winter occupations has been recovered.

Most of Maine’s shell middens appear to have begun accumulating during the Middle Ceramic period (ca. 2,100 B.P.-1,000 B.P.) and suggests an expanding population. Early Middle Ceramic period pottery is well-fired and thin with pseudo scallop shell and/or rocker dentate decoration over much of the exterior. Subsequent Middle Ceramic period pottery became thicker and less well fired with cord-wrapped stick and punctate decoration confined to the shoulder, neck, and rim of pots. Projectile points during this time exhibit a variety of stemmed and notched styles and the recovery of numerous small end scrapers of high quality materials from distant source areas demonstrate expanding Middle Ceramic period social connections with people to the east, west, and north.

Late Ceramic period (ca. 1,000 B.P.-400 B.P.) sites are well represented in both the interior and on the coast of Maine. Late Ceramic pottery becomes globular, thinner, and well fired once again, with zoned incised exterior decoration of the collar and rim most common, following ceramic patterns elsewhere in the Northeast. Projectile points are of side-notched and corner-notched forms, with corner-notched points most common in eastern Maine and side-notched points dominant in central Maine, although both forms are found at many sites. In western Maine triangular “Levanna” projectile points become dominant and likely indicate cultural influences from the west. Agriculture with maize, beans, and squash also appears in western Maine in the Late Ceramic period associated with larger, more permanent settlements. The adoption of maize agriculture never spread further east than the Kennebec River during the pre-Contact era. In central and eastern Maine Native Americans never abandoned the mobile hunter/gatherer lifestyle of their ancestors, likely an indication of the abundance of resources available to them and the shorter growing season west of the Kennebec River.

Native Americans in the Historic Period - Contact Period

The ancestors of the Micmac people of Nova Scotia began regular contact with European fishermen in the early sixteenth century. Almost certainly European material culture items such as kettles, iron tools, weapons and cloth were available to the people of Maine well before they ever saw a European. By the early seventeenth century, the fur trade was well established and competition between the English, Dutch and French created a complex trading sphere with Native Americans at the nexus. Maine’s Native American populations were drawn into warfare

due to conflicts between these European countries over trading connections as well as pressure from English colonists spreading eastward along the coast.

Depopulation as a result of epidemics of European diseases, warfare, and the conversion of many Maine people to the Catholic faith caused many Native Americans to abandon their traditional homelands, sometimes temporarily, to seek refuge in Canada where many of their descendants still live. Others returned or never left their homelands and became the ancestors of today's Maine's Passamaquoddy, Maliseet, Penobscot, and Micmac people. Contact period archaeological sites containing a combination of both European and Native American artifacts are distributed along the coast and at several historically recorded villages on the Androscoggin, Kennebec, Penobscot, and Saint Croix Rivers, as well as a recently discovered site on the U.S.-Canada border at East Grand Lake.

1.1.2.2 State of New Hampshire

Archaeologists generally group Native American sites in New Hampshire into the Paleo-Indian, (ca. 11,500 B.P.-9,000 B.P.), Archaic, (ca. 9,000 B.P.-2,700 B.P.), and Woodland or Ceramic (ca. 2,700 B.P.-400 B.P.) periods (Haviland and Power, 1994; Thomas 1994; Bunker 1994). In addition, there is a time-transgressive period of early European exploration and settlement referred to as the Contact period, ca. 1400-1660 A.D. for New Hampshire's seacoast and 1623-1770 A.D. for New Hampshire's interior. These major periods are subdivided further into narrower temporal units with every period and subdivision represented in the 100-mile corridor of the northern border project area.

In general, early archaeological sites are assigned time periods based on seriation of projectile point or ceramic styles, and radiocarbon dating. Due to the impacts of long-term and extensive agricultural plowing during the historic period, a majority of archaeological sites not only in New Hampshire, but in the Northeast in general, are shallow, often lack intact features, and are typically dated using temporally diagnostic projectile points, tools, or pottery alone. Radiocarbon dating of sites in this region is therefore relatively rare. Cultural affiliation is easier to document from the Woodland period forward because greater numbers of artifacts have survived for archaeologists to examine.

Archaic Period

The Archaic period is the longest and perhaps the best-represented period in the archaeological record of New Hampshire because of the attention it has received from archaeologists (Starbuck, 2006). The Paleo-Indian period appears to have ended when the focal adaptation the Paleo-Indians relied on collapsed, forcing a rapid readjustment of their culture (Spiess and Wilson, 1987). This is evidenced by a "clear archaeological discontinuity, for the artifact styles and overall adjustments of Indians during the Early Archaic are indisputably different from those of the preceding Paleo-Indian period" (Snow, 1980:157).

Study of the Archaic period can provide an understanding of the social, cultural, and technological changes that occurred when the climate transitioned from the end of the Ice Age and to milder environmental conditions. The beginning of the Archaic period corresponds with the establishment of a closed forest environment across the Northeast sometime between 10,000 B.P. and 9,000 B.P., depending on the particular region (Spiess and Wilson, 1987; Robinson et al., 1992). With the transition to a closed forest environment, reliance on big-game terrestrial

fauna diminished (as did the species themselves). Thus, strong evidence for hilltop lookout campsites is not present in the Early Archaic period (Thomas et al., 1981).

Well-known sites in New Hampshire associated with the Early Archaic period are Weirs Beach on Lake Winnepesaukee and the Neville site at Amoskeag Falls. Evidence of surface hearths and deep pits, along with a wide range of tool types, nutshell remains, and faunal remains representing mammals and fish, were also recovered (Thomas, 1994:51, 53). Preservation of faunal and floral remains associated with Early Archaic sites is rare, but a mixed diet of different resources is suggested. At one time, continuity of human occupation in the Northeast after the Paleo-Indian period remained a subject of considerable doubt (Sanger, 1979). Site preservation factors related to environmental change have provided keys for interpretation of the Early Archaic archaeological record in the northeast and elsewhere. Thomas (1994) and other archaeologists working in the Northeast believed that Early Archaic sites would continue to be very difficult to locate, because in addition to shallow contexts, they were believed to have survived in deep alluvial deposits along major rivers, in areas currently submerged by lakes such as Lake Champlain, or in environments that were not usually surveyed.

In the southeast, early Archaic sites had been primarily identified in stratified alluvial contexts; often sites had been deeply buried through active floodplain sedimentation (Jennings, 1989). As early as 1994, Thomas (1994:50) concluded that archaeological projects in New England had also begun to show the existence of deeply buried Early and Middle Archaic period sites on riverine terraces. Manifestations of the early Archaic period on upland ridges and deflated hill tops are now deemed as peripheral to the main occupations on riverine terraces (Chapman, 1980). Thomas (1994:53) also argued that we have a “poor understanding of the factors which may affect [Early Archaic] site discovery . . . and the complex natural environment to which people had adapted.” Because of this, Early Archaic cultural adaptations are difficult to reconstruct. However, evidence from sites outside the Northeast suggests a broadening of the subsistence base to a more diffuse subsistence adaptation (Thomas, 1994). This coincides with the collapse of the focal subsistence adaptation of the Paleo-Indians. It also appears that seasonal movements were more complex with the broader range of resources utilized during the Early Archaic period. Little is known about Early Archaic cultural preferences for site locations and the association of those sites with past local and regional environments.

In contrast to Paleo-Indian sites, most of the lithic materials recovered from Early Archaic contexts appear to derive from local sources of chert, quartzite, or quartz. Flaked stone tools seem less common in New Hampshire during the Early Archaic as seen at the Weirs Beach site which contained an unusual assemblage of quartz debitage, cores, steep-bitted quartz scrapers, and elongated stone rods made of schist (Bolian, 1980; Maymon and Bolian, 1992). Expedient tools, however, are a frequent component of Early, Middle, and even Late Archaic sites in both states. Extensive manufacture and use of expedient tools using local materials during the Archaic period cautions that archaeologists need to take more care not to prematurely discard materials, such as phyllite, typically not associated with flaked or ground tools (c.f., Klink, 1992; Stone, 1994; Brigham et al., 2001). Lithic projectile points made during the early Archaic period often have characteristic bifurcate bases and occasionally serrated edges (Snow, 1980). Preservation of faunal and floral remains associated with Early Archaic archaeological sites is rare, but a mixed diet of different resources is suggested (Thomas, 1994).

Archaeological data from New Hampshire, particularly from sites in Manchester and Concord, shows that by the Middle Archaic period fairly sizeable settlements had developed on waterways and lakes that exhibited a greater reliance on fish (Starbuck, 2006). Dincauze's work at the Neville site, a deeply stratified site on the Merrimack River, was a great contribution in understanding temporal subdivisions of the Archaic period for southern and coastal New England. Middle Archaic peoples continued to heavily rely on quartz, but volcanic materials were also increasingly used (Bunker, 1994).

Archaeologists believe that by the Late Archaic Period, the Northeast had a substantial resident population. Regionally, archaeologists define four major archaeological traditions for the Late Archaic period (i.e., Laurentian, Narrow Point, Susquehanna, and Maritime Archaic), and these are subdivided into phases. All traditions but the Maritime Archaic appear to occur in New Hampshire and may exhibit a blending of the four traditions that created a culture unique to the region (Starbuck, 2006). Late Archaic sites have been found in association with major drainages and bordering wetlands, in minor streams and tributaries, in once marginal upland areas, and on upland ridges. While Late Archaic sites are by no means rare in New Hampshire (Starbuck, 2006), well-documented assemblages with absolute dating of associated features are uncommon. While Late Archaic sites are represented on the Vermont side of the Connecticut River, little is reported for the New Hampshire side of the river. The use of diverse lithic raw material for the Late Archaic has also been documented in New Hampshire (Starbuck, 2006). New Hampshire Late Archaic sites also exhibit intensive settlement with many location reoccupied on the basis of seasonal hunting and gathering patterns. In New Hampshire's Lakes Region, the Davison Brook Site (17-GR-201) provided a significant contribution to our understanding of Late Archaic settlement, technology, resource acquisition, consumption, and possibly mortuary practices (Goodby, 2001).

During the Late Archaic, differential temporal and spatial environmental exploitation for habitation and burial sites is typical. By the Late Archaic period, habitation and resource exploitation sites appear to have been associated with present-day upland ridges, lake shorelines, wetland borders, and along streams and rivers. Therefore, Late Archaic site locations are expected to contrast with older Paleo-Indian through Middle Archaic sites that have been closely associated with late Pleistocene-aged "*fossil*" shorelines and landforms or stratified alluvial contexts.

At the close of the Late Archaic period, a transitional period from the preceramic Late Archaic to the ceramic Early Woodland followed. This period is termed the Terminal Archaic or Transitional period (ca. 3,700 B.P.-2,700 B.P.). The Terminal Archaic period is defined as "essentially preceramic and marked by carved soapstone (steatite) vessels, together with new varieties of projectile points" (Ritchie, 1980:150), including the broad points of the Susquehanna tradition and the later Orient "fishtail" points. The presence of various types of Archaic archaeological sites in the northern border project area of New Hampshire suggests that there is a high probability of encountering additional archaeological sites of this age. The most sensitive areas for these sites appear to be beside larger rivers, and especially near falls or rapids, beside modern lakes, ponds or wetlands or submerged under their waters, on prominent knolls and terraces along major drainages and valley edges, and upon sandy deltas.

Woodland Period

The first use of ceramics marks the Woodland period in northern New England. Many northern New England archaeologists prefer the term Ceramic Period, rather than Woodland Period. Although ceramics were present, other typical “Woodland” characteristics such as domesticated crops (e.g., corn and tobacco) did not play a large part in annual subsistence patterns in this area. The Woodland period is subdivided into three sub-periods: the Early Woodland period (ca. 2,800 B.P.-1,850 B.P.); the Middle Woodland period (ca. 2,050 B.P.-900 B.P.); and the Late Woodland period (ca. 900 B.P.-350 B.P.; Thomas, 1994; Bunker, 1994). The transformation into the Woodland period is distinguished by the development and use of ceramics. The use of ceramic containers may have influenced settlement patterns due to their capacity for use as food storage containers in addition to their use for cooking.

The ability to store food made possible more sedentary, long-term settlements and partially offset the seasonal fluctuation of resources (Petersen and Power, 1985). Ironically, recovery of pottery from nearly all but the best archaeological contexts in New Hampshire is rare. Much of New Hampshire’s Woodland period is known from excavation of several deeply stratified sites on the Merrimack River, such as the Neville site at Amoskeag Falls (Dincauze, 1976), the nearby Smyth Site (Kenyon, 1981; 1983; 1985), the Eddy Site (Bunker, 1992) Garvin’s Falls (Starbuck, 1983; 1985b), and Seawall’s Falls (Starbuck, 1982; 1983; 1985a). However, on occasion, even fairly shallow deposits such as those at the Lodge Site in Tilton, New Hampshire (NH-31-6-6) have yielded significant information (Gengras and Bunker, 1998).

Early Woodland habitation sites often suggest a pond, lake, or riverine orientation. Upland locations may have been virtually abandoned in favor of more productive alluvial environments (Thomas, 1994). Large habitation sites appear to be rare during this period. Evidence from other sites in the Northeast suggests that the absence of these sites might be attributed to a regional climatic cooling trend that began in about 3,000 B.P. As the climate cooled, forest composition changed, which may have resulted in lowering the distribution and diversity of game species. This shift in the resource base may have caused a change in settlement patterns. If this is correct, “during this period of climatic pressure, families may have remained in small groups which exploited a diversity of resources throughout the year, so that only small sites were ever occupied” (Thomas et al., 1981:73). Evidence from these small sites would be scant, thereby making it difficult to locate habitation sites.

Annual subsistence patterns still included hunting, fishing, and gathering, although environmental characteristics, and therefore manner of exploitation of the resources, had changed from that evidenced in the Archaic Period. Faunal remains recovered from the Boucher site in Vermont suggest that moose, deer, bear, raccoon, beaver, and turkey were exploited (Thomas, 1994:72). Thomas (1994:72) writes “the season of site occupation and the environmental characteristics of the territory surrounding any specific [Early Woodland] site undoubtedly had a great deal to do with types of foods which were available.” Much more remains to be determined about Early Woodland Period interactions with the local environments. The presence of Early Woodland sites within the northern border project area however, suggests that there is potential to encounter additional sites of this age.

Early Woodland archaeology of the Northeast may be better known from burial sites than habitation sites. Many Early Woodland mortuary sites were accidentally discovered near Lake

Champlain and on the Lower Missisquoi River in Vermont as surface finds by collectors or during modern industrial quarrying for sand and gravel.

Middle Woodland sites are quite common and well dated. Well-documented stratified sites exist and “some aspects of the Middle Woodland cultural system are better documented than they are for all other periods of prehistory” (Thomas, 1994:74). Middle Woodland period sites are large in size and contain extensive archaeological materials. This seems to indicate that large numbers of people regularly gathered at these sites to exploit local food resources. Evidence from stratified levels at Middle Woodland period sites reveals that the use of non-local cherts predominated in the manufacture of stone tools. In addition, ceramic assemblages from sites of this period are related to styles from the Great Lakes and St. Lawrence River drainage (Petersen and Power, 1983).

The Late Woodland is characterized by a pattern of population growth and territorial expansion across the Northeast (Calloway 1990). As noted for the Archaic period, well-documented archaeological sites on the New Hampshire side of the Connecticut River for the Late Woodland period are rare. The Late Woodland is also marked by the confirmed cultivation of non-indigenous plants. Recently, Chilton (2006, 2008) reassessed the introduction of corn in New England. Heckenberger and Petersen (1988; Heckenberger et al., 1992) hypothesize that cultigens quickly became an important dietary focus soon after their adoption and local populations became increasingly tethered to floodplain sites, minimally from April through September (Haviland and Power, 1994). Archaeological investigations at Shelburne Pond in Vermont suggest that aboriginal utilization of the rich wetland and marsh environments increased as waters became more eutrophic.

After 500 B.P there appears to be a decline in evidence of Native American occupation. Data from Late Woodland sites located on the Missisquoi River in Vermont suggests a heavy reliance on hunting and horticulture. The Woodland Period Abenaki probably did not grow corn along the Missisquoi until after 1100 A.D. Thomas (1994:86) suggests that further study is “clearly needed to determine whether the poor visibility [of these Late Woodland Period sites] today resulted from a substantial shift in settlement focus to areas which are not commonly surveyed, from major demographic changes [perhaps resulting from Iroquoian movement into the St. Lawrence Valley], from site loss due to historic plowing and pilfering, or from other causes.” Although few Late Woodland period archaeological sites are known within the northern border project area of New Hampshire, their presence and recent discoveries suggest that the possibility for encountering additional sites of this age is high.

1.1.2.3 State of Vermont

Archaeologists generally group Native American sites in Vermont into the Paleo-Indian, (ca. 11,500 B.P.-9,000 B.P.), Archaic, (ca. 9,000 B.P.-2700 B.P.), and Woodland or Ceramic (ca. 2700 B.P.-400 B.P.) periods (Haviland and Power, 1994; Thomas 1994; Bunker 1994). In addition, there is a time-transgressive period of early European exploration and settlement referred to as the Contact period, ca. 1609 A.D.-1790 A.D. for Vermont. These major periods are subdivided further into narrower temporal units with every period and subdivision represented in the 100-mile corridor of the northern border project area.

In general, early archaeological sites are assigned time periods based on seriation of projectile point or ceramic styles, and radiocarbon dating. Due to the impacts of long-term and extensive agricultural plowing during the historic period, a majority of archaeological sites in not only Vermont and New Hampshire, but the Northeast in general, are shallow, often lack intact features, and are typically dated using temporally diagnostic projectile points, tools, or pottery alone. Radiocarbon dating of sites in this region is therefore relatively rare. Cultural affiliation is easier to document from the Woodland period forward because greater numbers of artifacts have survived for archaeologists to examine.

Archaic Period

In Vermont, later Woodland sites appear to be more common than Middle Archaic sites, which are poorly represented (Thomas, 1994). The Paleo-Indian period appears to have ended when the focal adaptation the Paleo-Indians relied on collapsed, forcing a rapid readjustment of their culture (Spiess and Wilson, 1987). This is evidenced by a “clear archaeological discontinuity, for the artifact styles and overall adjustments of Indians during the Early Archaic are indisputably different from those of the preceding Paleo-Indian period” (Snow, 1980:157).

Study of the Archaic period can provide an understanding of the social, cultural, and technological changes that occurred when the climate transitioned from the end of the Ice Age and to milder environmental conditions. The beginning of the Archaic period corresponds with the establishment of a closed forest environment across the Northeast sometime between 10,000 B.P. and 9,000 B.P., depending on the particular region (Spiess and Wilson, 1987; Robinson et al., 1992). With the transition to a closed forest environment, reliance on big-game terrestrial fauna diminished (as did the species themselves), with the result that strong evidence for hilltop lookout campsites is not present in the Early Archaic period (Thomas et al., 1981).

Well-known sites in Vermont associated with the Early Archaic period are the John’s Bridge site in Swanton, Vermont, the Ewing and Auclair sites on Shelburne Pond, and Weirs Beach on Lake Winnepesaukee. The John’s Bridge site (VT-FR-69) contains the best known and dated assemblage of Early Archaic tools in Vermont. The John’s Bridge site is a small single-component site situated on a bedrock-defended terrace overlooking the Missisquoi River. The triangular to ovate, corner-notched projectile points recovered from John’s Bridge were named Swanton Corner-Notched, after several similar projectile points were recovered from the Champlain Basin (identified at 13 other sites in Vermont), and as far northeast as Maine (Thomas, 1994:50). Evidence of surface hearths and deep pits, along with a wide range of tool types, nutshell remains, and faunal remains representing mammals and fish, were also recovered (Thomas, 1994:51, 53). Preservation of faunal and floral remains associated with Early Archaic sites is rare, but a mixed diet of different resources is suggested. At one time, continuity of human occupation in the Northeast after the Paleo-Indian period remained a subject of considerable doubt (Sanger, 1979). Site preservation factors related to environmental change have provided keys for interpretation of the Early Archaic archaeological record in the northeast and elsewhere. Thomas (1994) and other archaeologists working in the Northeast believed that Early Archaic sites would continue to be difficult to locate, because in addition to shallow contexts, they were believed to have survived in deep alluvial deposits along major rivers, in areas currently submerged by lakes such as Lake Champlain, or in environments that were not usually surveyed.

In the southeast, early Archaic sites had been primarily identified in stratified alluvial contexts; often sites had been deeply buried through active floodplain sedimentation (Jennings, 1989). As early as 1994, Thomas (1994:50) concluded that archaeological projects in New England had also begun to show the existence of deeply buried Early and Middle Archaic period sites on riverine terraces. Manifestations of the early Archaic period on upland ridges and deflated hill tops are now deemed as peripheral to the main occupations on riverine terraces (Chapman, 1980). Thomas (1994:53) also argued that we have a “poor understanding of the factors which may affect [Early Archaic] site discovery . . . and the complex natural environment to which people had adapted.” Because of this, Early Archaic cultural adaptations are difficult to reconstruct. However, evidence from sites outside the Northeast suggests a broadening of the subsistence base to a more diffuse subsistence adaptation (Thomas, 1994). This coincides with the collapse of the focal subsistence adaptation of the Paleo-Indians. It also appears that seasonal movements were more complex with the broader range of resources utilized during the Early Archaic period. Little is known about Early Archaic cultural preferences for site locations and the association of those sites with past local and regional environments.

In contrast to Paleo-Indian sites, most of the lithic materials recovered from Early Archaic contexts appear to derive from local sources of chert, quartzite, or quartz. Thomas (1994:52) infers that this predominance of local raw materials implies that “people had settled into Vermont by this time and knew where to easily find workable stone” and other resources. Flaked stone tools seem less common in New Hampshire during the Early Archaic as seen at the Weirs Beach site, which contained an unusual assemblage of quartz debitage, cores, steep-bitted quartz scrapers, and elongated stone rods made of schist (Bolian, 1980; Maymon and Bolian, 1992). Expedient tools, however, are a frequent component of Early, Middle, and even late Archaic sites in both states. Extensive manufacture and use of expedient tools using local materials during the Archaic period cautions that archaeologists need to take more care not to prematurely discard materials, such as phyllite, typically not associated with flaked or ground tools (c.f., Klink, 1992; Stone, 1994; Brigham et al., 2001). Lithic projectile points made during the early Archaic period often have characteristic bifurcate bases and occasionally serrated edges (Snow, 1980). Preservation of faunal and floral remains associated with Early Archaic archaeological sites is rare, but a mixed diet of different resources is suggested (Thomas, 1994).

Middle Archaic peoples continued to heavily rely on quartz, but volcanic materials were also increasingly used (Bunker, 1994). Two sites on Indian Brook in Essex, Vermont (VT-CH-229 and VT-CH-230) produced numerous large, blocky quartz scrapers similar to ones found in New Hampshire and Maine tentatively attributed to the Middle Archaic, despite a few Early and Late Archaic projectile points found at or near these sites (Thomas, 1992; Dillon et al., 1985).

The archaeological picture by Middle Archaic times was somewhat different in Vermont, in contrast to New Hampshire’s growing data on Middle Archaic sites. “Recognition of Middle Archaic period sites in Vermont is so limited at this time that little can be said about settlement patterns. Furthermore, no subsistence data have been recovered from any Middle Archaic period site in Vermont” (Thomas, 1994:55). This pattern sharply contrasts with other northern New England manifestations of the Middle Archaic where an increasing number of projectile points diagnostic of the time period and a higher number of excavated sites point to a mid-Holocene population expansion. Thomas (1992, 1994) argues that the artifact technology in the Champlain Lowlands of Vermont may remain unrecognized, and that this region may have been influenced

more during the Archaic period by cultures to the north and west. Another hypothesis is related to early terrace preservation from ongoing lateral fluvial erosion during the Holocene. However, preservation biases would seem as likely to have affected Early Archaic sites as Middle Archaic sites.

Yet another hypothesis offered is that sites of the period that were oriented toward wetland and anadromous resources may now be eroded (e.g., by a rise in freshwater Lake Champlain levels) or impacted by development during the historic and modern time periods. For example, if sites were located near Missisquoi Bay in northwestern Vermont in order to exploit wetland resources in the Archaic, those sites would now lie well below the present-day surface of Lake Champlain. Drowned sites off Lake Champlain's present shoreline remain a possibility, although shoreline erosion would probably have affected the integrity of such sites. While the upper reaches of the Missisquoi River might not have supported significant anadromous fishing sites, archaeologists could expect to find some evidence of human exploitation of aquatic resources in the northern border project area. Refinement of Vermont's Middle Archaic awaits more exploration of well-dated archaeological contexts.

Archaeologists believe that by the Late Archaic Period, the Northeast had a substantial resident population. Regionally, archaeologists define four major archaeological traditions for the Late Archaic period (i.e., Laurentian, Narrow Point, Susquehanna, and Maritime Archaic), and these are subdivided into phases. All traditions but the Maritime Archaic appear to occur in Vermont and New Hampshire, where a blending of the four traditions appear that created a culture unique to the region (Starbuck, 2006). Late Archaic sites have been found in association with major drainages and bordering wetlands, in minor streams and tributaries, in once marginal upland areas, and on upland ridges. While Late Archaic sites are by no means rare in Vermont (Bailey, 1939; Thomas, 1992; Haviland and Power, 1994; Thomas, 2002), well-documented assemblages with absolute dating of associated features are uncommon. Late Archaic occupations at the Grand Isle Fish Hatchery are consistent with settlement patterns anticipated for this period. The radiocarbon dated Late Archaic Saxe Brook North Site in Highgate, Vermont was positioned at an important river confluence. Its artifacts and faunal remains point to strong use of wetland resources along the fringes of the Rock River, and are consistent with what we know of the Late Archaic period (Sloma and Callum 2001). Late Archaic sites are also represented on the Vermont side of the Connecticut River at Sumner's Falls and Skitchewaug. Occasionally, unusual finds have been discovered associated with the Late Archaic, such as the unearthing of a rare cache of sixteen Late Archaic projectile points in Rutland, Vermont in 2010 (Minichiello, 2010).

Although rare in the Northeast, one example of a Glacial Kame burial site dated to the Late Archaic was identified in western Vermont in a gravel pit on Isle LaMotte (Haviland and Power, 1994; Thomas et al., 1992). Ceremonial burials of this kind are found in gravel ridges or glacial kames. The Isle La Motte Cemetery site yielded two burials consisting of burned and unburned bone stained with red ochre. Sandal sole gorgets made of marine shell and other exotic items suggest an affiliation with the Glacial Kame burial complex that is focused in the south-central Great Lakes (Thomas, 1994:65). During the Late Archaic, differential temporal and spatial environmental exploitation for habitation and burial sites is typical. Distribution of sites across Vermont's landscape is extensive and "sites in a number of environments will be difficult to locate" (Thomas, 1994:66). By the Late Archaic period, habitation and resource exploitation

sites appear to have been associated with present-day upland ridges, lake shorelines, wetland borders, and along streams and rivers. Therefore, Late Archaic site locations are expected to contrast with older Paleo-Indian through Middle Archaic sites that have been closely associated with late Pleistocene-aged “*fossil*” shorelines and landforms or stratified alluvial contexts. Late Archaic period sites are expected farther from the modern Missisquoi River channel on former knolls, old point bars, and near abandoned river channels and tributaries that might likely supported a marshy habitat.

At the close of the Late Archaic period, a transitional period from the preceramic Late Archaic to the ceramic Early Woodland followed. This period is termed the Terminal Archaic or Transitional period (ca. 3,700 B.P.-2,700 B.P.). The Terminal Archaic period is defined as “essentially preceramic and marked by carved soapstone (steatite) vessels, together with new varieties of projectile points” (Ritchie, 1980:150), including the broad points of the Susquehanna tradition and the later Orient “fishtail” points. The presence of various types of Archaic archaeological sites in the northern border project area of Vermont suggests that there is a high probability of encountering additional archaeological sites of this age. The most sensitive areas for these sites appear to be beside larger rivers, and especially near falls or rapids, modern lakes, ponds, or wetlands or submerged under their waters, on prominent knolls and terraces along major drainages and valley edges, and upon sandy deltas.

Woodland Period

The first use of ceramics marks the Woodland period in northern New England. Many northern New England archaeologists prefer the term Ceramic Period, rather than Woodland Period. Although ceramics were present, other typical “Woodland” characteristics such as domesticated crops (e.g., corn and tobacco) did not play a large part in annual subsistence patterns here. The Woodland period is subdivided into three subperiods. These are the Early Woodland period (ca. 2,800 B.P.-1,850 B.P.); the Middle Woodland period (ca. 2,050 B.P.-900 B.P.); and the Late Woodland period (ca. 900 B.P.-350 B.P.; Thomas, 1994; Bunker, 1994). The transformation into the Woodland period is distinguished by the development and use of ceramics. The use of ceramic containers may have influenced settlement patterns due to their capacity for use as food storage containers in addition to their use for cooking.

The ability to store food made possible more sedentary, long-term settlements and partially offset the seasonal fluctuation of resources (Petersen and Power, 1985). Ironically, recovery of pottery from nearly all but the best archaeological contexts in Vermont and New Hampshire is rare. Relatively intact sherds are more likely to be found in stratified deposits like Vermont’s Winooski site (VT-CH-46; Petersen and Power, 1983).

Early Woodland habitation sites often suggest a pond, lake, or riverine orientation. Upland locations may have been virtually abandoned in favor of more productive alluvial environments (Thomas, 1994). Large habitation sites appear to be rare during this period. Evidence from other sites in the Northeast suggests that the absence of these sites might be attributed to a regional climatic cooling trend that began about 3,000 B.P. As the climate cooled, forest composition changed, which may have resulted in lowering the distribution and diversity of game species. This shift in the resource base may have caused a change in settlement patterns. If this is correct, “during this period of climatic pressure, families may have remained in small groups which exploited a diversity of resources throughout the year, so that only small sites were

ever occupied” (Thomas et al., 1981:73). Evidence from these small sites would be scant, thereby making it difficult to locate habitation sites. Annual subsistence patterns still included hunting, fishing, and gathering, although environmental characteristics, and therefore manner of exploitation of the resources, had changed from that evidenced in the Archaic Period. Early Woodland occupations in the Connecticut River valley include certain components found in lower terraces of the Skitchewaug site (Heckenberger and Petersen, 1988) and Canaan’s Bridge Site. Cassedy (1991) documents many other scattered occurrences of Early Woodland projectile points or pottery in the Connecticut River valley. A site located in Highgate (VT-FR-161) shows evidence of Early Woodland subsistence activities, including hunting of deer, beaver, and bear (Thomas and Dillon, 1985). A small site in Vergennes, Vermont yielded big information on an Early Woodland hunting camp (Donta and Medina, 2008). Faunal remains recovered from the Boucher site suggest that moose, deer, bear, raccoon, beaver, and turkey were exploited (Thomas, 1994:72). Thomas (1994:72) writes “the season of site occupation and the environmental characteristics of the territory surrounding any specific [Early Woodland] site undoubtedly had a great deal to do with types of foods which were available.” Much more remains to be determined about Early Woodland Period interactions with the local environments. The presence of Early Woodland sites within the northern border project area however, suggests that there is potential to encounter additional sites of this age.

Early Woodland archaeology of the Northeast may be better known from burial sites than habitation sites. Many Early Woodland mortuary sites were accidentally discovered near Lake Champlain and on the Lower Missisquoi River as surface finds by collectors or during modern industrial quarrying for sand and gravel. Some of these cemetery/burial sites include the Frink Farm site (VT-FR-1) in Highgate (Robinson et al., 1993; Perry, 1868; Perkins, 1873), the Boucher site in Swanton (VT-FR-26; Heckenberger et al., 1990a; 1990b), and the East (VT-AD-26), and Bennett (VT-AD-298) sites in Orwell. Two additional sites in the Champlain Lowland, VT-FR-16 and VT-FR-48, contained blocked-end tubular pipes and birdstones; artifacts commonly found in association with human burials. These rare artifacts suggest that burials could have been present, and that excavation failed to recover fragile osteological remains, or simply these less durable materials did not survive. The Ewing and Auclair sites on Shelburne Pond both produced evidence of Early Woodland burial plots.

Middle Woodland sites are quite common and well dated. Well-documented stratified sites exist and “some aspects of the Middle Woodland cultural system are better documented than they are for all other periods of prehistory” (Thomas, 1994:74). The Winooski site in northwestern Vermont serves as a type-site for Middle Woodland archaeological sequences in western Vermont (Thomas, 1994). Archaeological remains were recovered from stratified alluvial deposits along the lower reaches of the Winooski River about “a half-mile downstream from the first falls and rapids” (Thomas, 1994:74). Middle Woodland period sites are large in size and contain extensive archaeological materials. This seems to indicate that large numbers of people regularly gathered at these sites to exploit local food resources. In particular, the large Winooski site contained evidence of fishing, hunting, and nut harvesting (Petersen and Power, 1983). Evidence from stratified levels at Middle Woodland period sites reveals that the use of nonlocal cherts predominated in the manufacture of stone tools. In addition, ceramic assemblages from sites of this period are related to styles from the Great Lakes and St. Lawrence River drainage (Petersen and Power, 1983). These characteristics suggest that long-distance trade or exchange networks existed during the Middle Woodland period in Vermont (Petersen and Power, 1983).

The Late Woodland is characterized by a pattern of population growth and territorial expansion across the Northeast (Calloway, 1990). Thomas (1994:83) also notes that “sites dating to the Late Woodland Period occur throughout Vermont, but the actual time of their occupation has been very difficult to determine” as radiocarbon dates only exist for six Late Woodland sites. Half of these, Sumner’s Falls (800 ±80 B.P.), Skitchewaugh (850 ±50 to 580 ±60 B.P.), and Dewey’s Mills (490 ±120 B.P.) lie in the Connecticut River valley or along one of its major tributaries (Thomas, 1994). Haviland and Power (1994) note that house features have been identified at a site in Fairlee, Vermont. Further toward southern Vermont in the Connecticut River Valley are VT-WD-14 on Dummerston Island, a single sherd recovered from Fort Dummer in Brattleboro, Vermont, and a number of sites in the Great Bend area at Vernon, Vermont. The Late Woodland is marked by the confirmed cultivation of non-indigenous plants. For example, carbonized corn, beans, and squash were recovered from storage pit and associated shallow pit house features at Skitchewaugh (Heckenberger and Petersen, 1988; Thomas, 1994). Recently, Chilton (2006, 2008) reassessed the introduction of corn in New England. Heckenberger and Petersen (1988; Heckenberger et al., 1992) hypothesize that cultigens quickly became an important dietary focus soon after their adoption and local populations became increasingly tethered to floodplain sites, minimally from April through September (Haviland and Power, 1994). Archaeological investigations at Shelburne Pond suggest aboriginal utilization of the rich wetland and marsh environments increased as waters became more eutrophic. Similarly, hydrological changes affecting Lake Champlain and associated riverine water levels may have influenced the size and location of marshlands where Native Americans sought resources during the Late Woodland period.

After 500 B.P there appears to be a decline in evidence of Native American occupation. Abenaki oral traditions and ceramic vessels in older artifact traditions indicate local continuity of occupation in northwestern Vermont between 500 B.P. and 350 B.P. Data from Late Woodland sites located on the Missisquoi River suggests a heavy reliance on hunting and horticulture and that the Woodland Period Abenaki probably didn’t grow corn along the Missisquoi until after 1100 A.D. Perhaps the most important Late Woodland archaeological discovery occurred just a few years ago when the Vermont Agency of Transportation was preparing to reconstruct the Missisquoi Bridge at the north end of Lake Champlain. Initial sampling and subsequent evaluation discovered a late pre Contact or early Contact period village site with impressive features, faunal and flora remains, and ceramics. The Bohannon site (VT-GI-26/32) was occupied sometime between 1400 A.D. and 1600 A.D. (Crock and Mandel, 2001). Thomas (1994:86) suggests that further study is “clearly needed to determine whether the poor visibility [of these Late Woodland Period sites] today resulted from a substantial shift in settlement focus to areas which are not commonly surveyed, from major demographic changes [perhaps resulting from Iroquoian movement into the St. Lawrence Valley], from site loss due to historic plowing and pilfering, or from other causes.” Although few Late Woodland period archaeological sites are known within the northern border project area of Vermont, their presence and recent discoveries suggest that the possibility for encountering additional sites of this age is high.

1.1.3 GREAT LAKES REGION

1.1.3.1 State of New York

Early and Middle Archaic

In the Northeast, the Early and Middle Archaic (ca. 10,000 B.P. to 8,000 B.P. and ca. 8,000 B.P. to 6,000 B.P., respectively) have come to be primarily defined in terms of climatic/environmental transition. During these times, the ecological setting transformed from immediate post-glacial tundra and spruce-park forests through denser spruce-fir, pine-oak, and deciduous oak-hemlock forests to an essentially modern oak-hickory forest system (Funk, 1983:304-305; Lepper and Funk, 2006:171-172). As is the case for the Paleo-Indian period, archaeological sites from the Early and Middle Archaic have mostly been identified by the presence of diagnostic projectile points, including Hi-Lo, Kanawha Stemmed, Kirk, LeCroy Bifurcated Stem, MacCorkle, Palmer, Raddatz Side-Notched, and St. Albans Side-Notched points (Abel and Fuerst 1999:12-13; Calkin and Miller 1977:309; Justice 1995:44-46, 54-58, 67-69, 71-79, 81-85, 86-96). Many of these point types have characteristic bifurcated bases.

Relatively few Early and Middle Archaic sites have been found in New York (Funk, 1978:20). The low frequency of sites probably correlates with small populations, even relative to earlier Paleo-Indian levels (Fitting, 1978a:14; Funk, 1983:316-319; Griffin, 1983:248; Lepper and Funk 2006:193). These low population levels may be related to a minimally-productive environment; for example “coniferous forests with their low carrying capacity for deer and other game constituted an unfavorable environment for hunters and gatherers” (Funk, 1978:23; Calkin and Miller, 1977:309; cf. Nicholas, 1987:100-105). However, many sites probably remain to be found in less-studied areas, since the post-glacial environment in the Northeast was not uniformly desolate and included highly productive diverse environments like “lakes, ponds, extensive wetlands, and emergent riverine systems” that formed in the basins of former glacial lakes (Lepper and Funk, 2006:193; Nicholas, 1987:105-106).

Many Early and Middle Archaic sites in the Northeast cluster on former glacial lakes (Nicholas, 1987:106). In the Susquehanna Valley in New York (just outside the study area), Early Archaic projectile point forms have been found in both uplands and valley floors (Funk, 1993:317). The Zawatski Site, an Early Archaic site in western New York, was situated on the floodplain of the Allegheny River in Cattaraugus County (Calkin and Miller, 1977:310-312), suggesting that an Early Archaic preference towards occupation on valley floors was not confined to the Susquehanna (cf. Lepper and Funk, 2006:193).

In general, there is meager direct evidence concerning Early and Middle Archaic subsistence, site types, and tool assemblages (with the exception of projectile points) in New York (Abel and Fuerst, 1999:13; Funk, 1993:258-265). The Haviland site, located in a relic meander of Cobleskill Creek in Schoharie County, New York is a rare example of an excavated Early Archaic lithic workshop (Ferguson, 1995). Artifacts from the site include Kanawha bifurcate-base projectile points, thin bifacial ovate knives, thin unifacial tools, cores, hammerstones, debitage, abraders, anvils, choppers, and pitted stones. Middle Archaic tool kits are more extensive than those from the Early Archaic and include pecked and ground stone items (axes, adzes, gouges, celts, mortars, pestles, plummets, and netsinkers), polished tools such as

bannerstones, and bone artifacts (awls, barbed harpoon tips, gorges, and fishhooks) (Stothers et al., 2001:237-238).

Late Archaic

The Late Archaic Period in New York is most typically defined as the time between the stabilization of post-glacial forest systems to roughly modern states (deciduous forests across the Lake Plain portions of the state and Hemlock-Pine-Hardwoods forests elsewhere in the study area (Tuck, 1978:29; Wright, 2006:103-104) and the appearance of ceramic vessels.

Conventional dates for the period are ca. 6,000 B.P. to 3,000 B.P. The Late Archaic contrasts sharply with the Early and Middle Archaic in terms of volume of data; far more Late Archaic sites are known than for the other parts of the Archaic (Funk, 1983:320; Prufer, 2001:188).

As is the case for earlier times, the majority of temporally diagnostic/representative Late Archaic artifacts are projectile points, although more is known about their accompanying tool kits (Funk, 1983:320). Projectile points from the first millennium of the Late Archaic include large broad side-notched styles that have square tangs and indented or straight bases, known throughout the Northeast as Otter Creek (Funk, 1983:320; Justice, 1995:61-62; Stothers et al., 2001:237). These points have been found with bifacial knives, unifacial side and end scrapers, anvilstones, and hammerstones (Funk, 1983:321; cf. Ritchie, 1979).

For the part of the Late Archaic beginning ca. 5,200 B.P., Ritchie and others have defined several large-scale archaeological 'traditions' that extend across the Northeast, including the Laurentian/Lake Forest, and Narrow-Stemmed/Piedmont Traditions (Funk 1983:321-329; Ritchie 1944:234-253; 1980:79-125; Ritchie and Funk 1973:338-341; Stothers et al. 2001:238; Tuck 1978:29-32). The Laurentian/Lake Forest Tradition includes northwestern Pennsylvania and much of New York State and extends across southeastern Ontario into eastern Michigan and extreme northwestern Ohio (Dragoo 1971; Prufer 2001:188-189; Stothers et al. 2001:238; Tuck 1978:29). Sites generally date between 5,200 B.P. and 4,000 B.P. Associated projectile point types include: Vergennes (which are early [ca. 5,200 B.P.] and primarily confined to central and northern New York State); the Brewerton point series (Brewerton Corner-Notched, Brewerton Eared-Notched, Brewerton Eared Triangle, and Brewerton Side-Notched); Vosburg; Genesee; and Snook Kill (all of which are found throughout the state with the exception of the extreme north) (Funk 1983:321; Justice 1995:115-118, 120-124; Ritchie 1971).

In addition to the chipped stone projectile points, Laurentian Tradition assemblages typically include: end and side scrapers; knives; drills; bannerstones; ground stone points, axes, knives, 'ulu'-like tools, adzes, celts, and gouges (the groundstone points, knives, and 'ulus' are mostly limited to Vergennes contexts); plummets; hammerstones; anvilstones; and bone awls, gorges, and leister points (Funk, 1983:323; Prufer, 2001:190-193). There are numerous Laurentian Tradition sites in the state, among which are: Candee, FDP1002 and FDP1025 (in Fort Drum), Frontenac Island, O'Neil 1, Oberlander No. 1, Robinson, and Smoky Hollow (Abel and Fuerst 1999:14-15; Ritchie 1940; 1944:234; 1945; 1980:40-41, 79-125; Ritchie and Funk, 1973:4, 74-95).

Narrow Stemmed/Piedmont Tradition assemblages date to ca. 4,500 to 3,500 B.P. (Funk, 1983:324; Stothers et al., 2001:238). Although they tend to be found south of Laurentian sites, there is a great deal of overlap between the traditions, and they are occasionally found in the

same contexts, such as at the Frontenac Island Site in Cayuga County (Funk, 1983:329; Ritchie, 1944:260-273, 292-310; 1945; 1980:36-79; Tuck, 1978:29). The defining characteristic of the Narrow Point is a series of narrow-stemmed and narrow side-notched projectile points, including types such as Lamoka (known from throughout New York). The only other common element of Narrow Point Tradition assemblages appears to be a “general scarcity of uniface tools” (Funk, 1983:324). Sites in the Lamoka phase of the tradition also sometimes yield distinct ground stone ‘beveled adzes,’ along with ornaments and tools made from antler and bone. The Lamoka Lake site in western New York is the largest, most productive, and perhaps best-known of the Narrow Stemmed Tradition sites in the study area (Funk, 1983:327).

Late Archaic sites in New York can be divided into four general classes: small open camps, large camp sites, quarries/workshops, and rockshelters/caves (Ritchie and Funk, 1973:337-338; Stothers and Abel, 1993; Stothers et al., 2001:242-246). Small open camps are typically located “inland from large waterways, frequently on small streams, on marshes, or near copious springs” while the larger camps are “on major bodies of water, near good fishing grounds” (Ritchie and Funk, 1973:337-338; also see Funk, 1983:327). Quarries and workshops are located near raw material sources. The oldest known burial/mortuary sites in the state date to the Late Archaic and include Frontenac Island (Ritchie 1945).

Transitional/Terminal Archaic

In the Northeast, the Transitional/Terminal Archaic is defined as the time before the adoption of clay vessel technology during which people were making stone containers, which were primarily made from soft soapstone/steatite (Ritchie 1980:150; Ritchie and Funk, 1973:71; Tuck, 1978:37). Obviously the timing of these developments varied from one part of New York State to another, but typically-used dates fall in the range of ca. 3,700 B.P. to 2,700 B.P. The definitional basis for this time period is highly problematic since recent research has demonstrated that contexts with early ceramic vessels temporally overlap with those that have steatite containers entirely (Hoffman, 1998; see Ritchie, 1980:157). In central New York, the Transitional Archaic is represented by the Frost Island phase (Ritchie, 1980:156-164).

Besides the soapstone containers, the Transitional Archaic in New York is associated with a series of Susquehanna tradition broad-headed stone spear points that were initially developed in the Southeast (Funk, 1983:331; Trubowitz and Snethkamp, 1975:19; Witthoft, 1971; some researchers associate Genesee and Snook Kill points with the broad point tradition (Funk, 1983:331; 1993:224; Stothers et al., 2001:238). Examples of these projectile points in New York include: Susquehanna Broad, Perkiomen Broad (found throughout the state, outside its most northerly areas), and ‘Turkey-tail’ blades/points (found in the western part of the state) (Justice, 1995:167-170; Ritchie, 1971; Stothers et al., 2001:238). In addition to steatite vessels and projectile points, other typical Transitional Archaic artifacts include: chipped stone scrapers, drills, and graters (many of which have bases similar to Susquehanna tradition projectile points, suggesting expedient reuse); possible ‘strike-a-lights’; netsinkers manufactured from pebbles; hammerstones; rectangular shale gorgets; ‘cupstones’; adzes; and anvils (Ritchie, 1980:151, 159).

Transitional Archaic sites in New York tend to “occupy a riverine setting, never far from the main stream” and are typically small or “occur as superimposed components marking a succession of temporary sojourning places by the same group” (Ritchie, 1980:157; see also

Tuck, 1978:37). The presence of netsinkers on some sites suggests that fishing was a prominent element of subsistence (Ritchie, 1980:151, 157-159; Ritchie and Funk, 1973:72). Transitional Archaic sites in the western part of the state have been found in a variety of ecological settings including glacial uplands, terraces, and river floodplains (Trubowitz and Snethkamp, 1975:20). Example sites in the study area include O'Neil and Hickory Hill Marsh in New York (Ritchie 1980:156-164; Ritchie and Funk 1973:71-95).

In general, very little is known about Transitional Archaic burials in central New York (Ritchie, 1980:163). However, people inhabiting the northern part of the state in the final years of the Archaic were participating in the earliest known of a series of practices relating to elaborate burial treatment of the deceased that included interments in mounds and the presence of exotic grave goods, the so-called "Glacial Kame culture" (Abel and Fuerst, 1999:16; Tuck, 1978:39). As the name suggests these burials were placed in natural gravel knolls. They include items such as distinctive "sandal sole shell gorgets," rectangular shell gorgets, rolled copper beads, shell beads, copper adzes, projectile points, leather fragments, and pieces of galena (Funk, 1983:334; Griffin, 1983:253; Ritchie, 1980:133-134). Some of these items imply the existence of long-distance trade routes, including copper, which came from the upper Great Lakes and the shell, which originated along the eastern North American coast. Burials were also occasionally accompanied by red ocher (Ritchie, 1980:133). Example sites in the study area include Muskalonge Lake in northern New York and Isle La Motte in Vermont (Abel and Fuerst, 1999:16-17; Ritchie, 1980:132-134).

Woodland

The Woodland Period is defined as the time during which people adopted and used ceramic vessel technology (Feder, 1984:101-102; Sears, 1948; see also Willey, 1966:267-268; discussion in Snow 1980:262). Although the timing of the adoption of clay container technology varied across the New York, 3,000 B.P. is generally used as a convention for the beginning of the Woodland (Funk 1983:306-307; 1993; Kent et al., 1971:195-196; Ritchie, 1980:179; see also Snow 1980:262; Stoltman 1978). The period extended to historic times (ca. 1600 A.D.-350 B.P.). General developments during the Woodland include increases in population, the adoption of horticulture and domestication of plants such as maize, beans, and squash, nucleation of settlement patterns in some areas, and an elaboration and intensification of the burial practices and long-distance interaction presaged by the Glacial Kame phenomenon.

Early Woodland

Besides the initial appearance of pottery, the Early Woodland period in New York is associated with an elaborate suite of mortuary practices collectively known as Adena (Stothers and Abel, 2008:79). Just outside the study area in southern Ohio and southwestern Pennsylvania, Adena burials are in man-made mounds (Coe et al., 1986:51; Dragoo, 1963:134). While such tumuli are rare in the state (one exception is the Long Sault Island site in northern New York [Ritchie and Funk, 1973:97]), Adena grave goods have been found with burials across New York (Dragoo, 1963:177). Items associated with Adena-like burials in the state include: stone (sometimes clay) block-end tubes; lanceolate and leaf-shaped bifaces; trianguloid and ovoid cache blades; stemmed or side-notched projectile points, frequently falling in the range of the 'Adena' type (Justice, 1995:191-192, 196; Ritchie, 1971:12-13); bar amulets; copper awls and celts; gorgets; birdstones; cylindrical copper beads; and shell beads (Dragoo, 1963:176-188;

Ritchie and Funk, 1973:97). Graves were frequently accompanied by red ocher (Ritchie and Funk, 1973:97). Also, as with Glacial Kame burial practices, some Early Woodland graves and cemeteries in New York are on natural knolls and many items are made from exotic raw materials. Examples of Early Woodland Adena-like cemeteries and burial sites include Vine Valley, Morrow, and Palatine Bridge in New York (Funk, 1983:312-313, 335; Granger, 1978a:100). Most of these burial sites tend to be on “terraces of major streams or near large deep water lakes in the Erie-Ontario Lowland Zone” (Granger, 1978a:100; see also Ritchie and Funk, 1973:348).

Less is known about Early Woodland settlement and subsistence patterns in New York than burial practices (Funk, 1973:336; Granger, 1978a:96). However, at least two archaeological cultures, typically designated as the Meadowood and Middlesex phases (Ritchie, 1980; Meyer-Oakes, 1955:58), were closely associated with elements of Adena in the state (Granger 1978a). Middlesex refers to sites with Adena-like burials, as well as assemblages from non-burial contexts that include Adena artifacts (Funk, 1983:335). Meadowood phase sites have yielded more data concerning settlement and subsistence than those from the Middlesex. These sites are primarily clustered in central and western New York and are generally found adjacent to major streams and lakes, although some are known from areas near wetlands and smaller water bodies. Typical artifact assemblages include: early pottery (primarily the Vinette I type - conoidal-based, “unornamented,” straight-sided pots, cord-roughened on the entirety of their interiors and exteriors (Ritchie and MacNeish, 1949:100); diagnostic Meadowood-style projectile points (Justice, 1995:170-172; Ritchie, 1971:35-36); other tools such as drills and scrapers with bases suggesting they are re-worked projectile points; anvilstones; abrading stones; hammerstones; cigar/tube-shaped smoking pipes; birdstones; and gorgets (Funk, 1983:335; Ritchie, 1980:191-196). Some sites have produced data suggesting oblong house forms measuring about 4 m by 5 m (12 ft by 16 ft) (Ritchie and Funk, 1973:107; Stothers and Abel, 1993:33, 62-63). Fragments of basketry and fish nets have also been found (Ritchie, 1980:194-195). Burials with Adena-like qualities are also sometimes present. Example sites include: Riverhaven No. 2, Vinette, Scaccia, and Sinking Ponds (Funk, 1983:335; Granger, 1978b; Ritchie, 1980:190-191; Ritchie and Funk, 1973:96).

Middle Woodland

In New York, the appearance of several types of decorated ‘post-Vinette I’ ceramic vessels around 2,000 B.P. marks the beginning of the Middle Woodland (Kostiw, 1995). In areas to the southwest, the period is associated with the appearance of the ‘Hopewell Interaction Sphere,’ a phenomenon largely defined by the presence of earthworks and burial mounds sometimes including lavish quantities of exotic grave goods. Hopewell-like mounds and artifacts are found in western and central New York, but they did not appear there until several centuries after their beginnings in Ohio. In New York, the Middle Woodland extends to 1,000 B.P.

Hopewell-like burial mounds in western and central New York are up to 50 ft in diameter and 9 ft in height. Burials were inside stone slab cists and were typically extended; cremated remains of other individuals are occasionally found in the mounds outside the cists (Ritchie, 1980:227). Among the elaborate grave goods found in the mounds are: platform pipes (made from both ‘Ohio fireclay’ and local materials), some with animal effigies; slate pendants; red and yellow ocher; two-holed gorgets; copper beads, ear spools, breast ornaments, celts, and awls; copper or silver panpipe covers; stone celts and adzes; prismatic flake knives; and projectile points (some

of which are large examples of the Snyders type manufactured from high-quality stone from Ohio) (Coe et al., 1986:50-55; Funk, 1983:340; Justice, 1995:201-204; Ritchie, 1938; 1980:227). Examples of Middle Woodland burial mounds in New York include Squawkie Hill, Geneseo, Cain, Bluff Point, and Wheatland (Carpenter, 1950; Ritchie, 1938; 1980:217-228). Mounds tend to be near major rivers or large bodies of water, such as the Genesee, Finger Lakes, and Lake Ontario. They also are frequently not near habitation sites (Kostiw, 1995:41).

Relative to burial practices, little is known about Middle Woodland subsistence, settlement, and other aspects of culture throughout the Northeast (Bowen, 1992:63; Funk, 1983:339; 1993:200; Ritchie, 1980:226). However, the period is known to have witnessed numerous cultural innovations, including the adoption of the bow-and-arrow (Kostiw, 1995:38) and maize agriculture (Hart and Brumbach, 2003; Hart et al., 2007). New York habitation sites are typically grouped into the Point Peninsula Tradition (Brose, 2000:99; Funk, 1983:338; Ritchie and Funk, 1973:118-119; Stothers and Abel, 1993:31; 2008:96). Typical ceramic vessels from the early parts of the Middle Woodland were small (one to four quart capacities) and conoidal-based, while later pottery was larger and had increasingly globular bodies (Hart and Brumbach, 2009; Ritchie and Funk, 1973:117; Ritchie and MacNeish, 1949). Other artifacts include small projectile points (such as the Levanna, Jack's Reef and Raccoon Notched types), larger points (such as the Fox Creek type, which is limited to eastern New York), bone awls and barbed points, bifacial knives, scrapers, drills, netsinkers, celts, adzes, copper fishhooks and gorges, antler points, bone daggers, and compound bone fishhooks (Funk, 1983:337-343; Justice, 1995:215-220, 228).

Later Middle Woodland sites in New York have post mold patterns suggesting round houses (Funk 1983:340). Several types of sites are known, including large semi-permanent recurrently-occupied camps, small seasonal recurrently occupied camps, workshops, and small temporary camps (Brose, 2000:99; Ritchie and Funk, 1973:349-354). Sites typically occur on rivers, lakes, and in areas near marshes, bogs, and springs (Ritchie and Funk, 1973:349-354). Examples include: Felix, Kipp Island, Canoe Point, and Davenport Creamery (Funk and Hoagland, 1972; Ritchie and Funk, 1973).

Late Woodland

In New York, the Late Woodland spans the years between 1,000 B.P. and the Protohistoric period – the time when European goods were reaching Native American groups, but before the point when there was direct contact between Indians and Europeans (generally around 1525-1550 A.D./425 B.P.-400 B.P. in New York (Bradley, 2005; Engelbrecht, 2003:133-137; Snow, 2000:77-78; Stothers, 2000:52-53). Developments during the Late Woodland include the adoption of horticulture based on maize, squash, and beans, increasingly sedentary settlement patterns, the nucleation of groups into historically-known population centers, and the appearance of palisaded villages with longhouses. In the New York part of the study area, the Late Woodland is largely synonymous with the Iroquoian tradition. People throughout the Northeast were manufacturing diagnostic small triangular (Madison-type) projectile points (Justice, 1995:224-227). Late Woodland inhabitants of New York State were probably mostly speakers of Iroquoian languages.

For the first half of the Late Woodland (ca. 1,000 B.P. to 700 B.P.), settlements/occupation sites in New York remained relatively small and some, such as the Bates site, had low numbers of

rectangular-shaped houses (Engelbrecht, 2003:89). Settlements gradually shifted from river floodplains and areas near wetlands to more elevated settings away from canoe-navigable waterways – a movement indicating “an increasing focus on features favorable to maize horticulture” (Hasenstab, 2007:169) and possibly a preference for easily-defensible locations. By 450 B.P. to 350 B.P., Iroquoian speaking people throughout central and western New York were living in villages up to eight to ten acres in extent that had longhouses and palisades (Engelbrecht, 2003:89). These village sites cluster in the historical homelands of the Five Nations Iroquois (the Seneca, Cayuga, Onondaga, Oneida, and Mohawk (Niemczycki, 1984; Pratt, 1976; Tuck, 1971), as well as nearby groups, such as the Erie who occupied the east end of Lake Erie (Engelbrecht, 2003:143; White, 1961; 1978). Outside these permanent villages, people occasionally visited other areas, such as zones along large rivers and water bodies, for resource procurement activities (such as fishing and hunting), during which they occupied smaller camps, such as that represented by the Street site (Rieth, 2002). There were gradual changes in ceramic vessel morphology throughout the Late Woodland in New York (Hart and Brumbach, 2009; MacNeish, 1952; Ritchie and MacNeish, 1949). Early pots have conoidal bodies with cord-roughened exteriors, lack collars, and were typically decorated with cord-wrapped stick impressions, while later (post ca. 650 B.P.) vessels had globular bodies with smooth exteriors, collars, and incised decorations, sometimes with castellations and anthropomorphic designs.

Protohistoric and Historic Periods

Items of European manufacture appear on Native American archaeological sites throughout the study area in New York beginning in the first half of the sixteenth century A.D. (ca. 450 B.P.-400 B.P.). Such artifacts were quickly integrated into the material culture inventories of native groups and included: sheet brass, copper and iron kettles; items derived from sheet metal kettles, including tinkling cones, projectile points, and other tools and ornamental items; colorful glass trade beads; and iron axe blades (Bradley, 2005:69-80). 'True' Wampum - small white and purple beads made from marine shells drilled with metal tools - also dates to the Protohistoric (Ceci, 1989:72-73; Tooker, 1978:422). Site locations were generally similar to those during the Late Woodland; examples include the Onondaga sites at Temperence House, Quirk, and Chase, and the Seneca site at Richmond Mills (Bradley, 2005:49-50; Engelbrecht, 2003:133). The five Iroquois nations likely began the process of forming the League of the Iroquois during the Protohistoric (Engelbrecht, 2003:130).

Early historical events involving Indian groups living in New York, Pennsylvania, and Ohio were heavily influenced by the European fur trade and the roles the Five Nations Iroquois played in it. The French established a trading outpost at Tadoussac on the St. Lawrence River about 1600 A.D. and the Dutch settled around Albany by ca. 1620 A.D. The Dutch were later forced out of their land holdings in the Northeast by the British in the 1660s. The Five Nations benefited from trade with the French, Dutch, and British which, among other items brought them European weapons. The European hunger for beaver pelts also drove Five Nations expansion to areas to the west, and by the middle of the 1600s, they had largely dispersed/destroyed many of their neighbors, including the Neutral and Erie in western New York (and probably northwestern Pennsylvania) and the Algonquian groups living in northern Ohio (Engelbrecht, 2003:142-144; Trigger, 1978; White, 1991). Meanwhile, the Iroquois suffered as a result of European epidemic diseases; in some cases mortality rates were as high as 90 percent (Engelbrecht, 2003:158). In the early eighteenth century, Iroquois relations with the French and British stabilized for a time,

during which settlements became increasingly dispersed and varied, consisting of small numbers of large villages and larger numbers of small settlements, some of which were located on major bodies of water (Engelbrecht, 2003:166).

During this same time, the Tuscarora, an Iroquoian-speaking group that migrated from North Carolina, joined the Five Nations. After the French and Indian war (1754-1762), the Iroquois, who had sided with the British, benefited from the subsequent Royal Proclamation of 1763, by which the British Crown prohibited settlement west of the Appalachian Mountains. However, this reprieve was brief, since after the American Revolution, Iroquois lands were increasingly encroached on by American settlers and the Iroquois were forced to relocate to ever-dwindling reservations.

1.1.3.2 Commonwealth of Pennsylvania

Early and Middle Archaic

In northwestern Pennsylvania the Early and Middle Archaic (ca. 10,000 B.P.-8,000 B.P. and ca. 8,000 B.P.-6,000 B.P., respectively) have come to be primarily defined in terms of climatic / environmental transition. During these times, the ecological setting in the Northeast transformed from immediate post-glacial tundra and spruce-park forests through denser spruce-fir, pine-oak, and deciduous oak-hemlock forests to an essentially modern oak-hickory forest system (Funk, 1983:304-305; Lepper and Funk, 2006:171-172). As is the case for the Paleo-Indian period, archaeological sites from the Early and Middle Archaic have been mostly identified by the presence of diagnostic projectile points, including Hi-Lo, Kanawha Stemmed, Kirk, LeCroy Bifurcated Stem, MacCorkle, Palmer, Raddatz Side-Notched, and St. Albans Side-Notched points, all of which have been found throughout the Northeast; and Thebes and St Charles points, which are known in western Pennsylvania (Abel and Fuerst, 1999:12-13; Calkin and Miller, 1977:309; Justice, 1995:44-46, 54-58, 67-69, 71-79, 81-85, 86-96; Stothers, 1996:179-181; Stothers et al., 2001:235). Many of these point types have characteristic bifurcated bases.

Relatively few Early and Middle Archaic sites have been found in northwestern Pennsylvania (Funk, 1978:20; Prufer, 2001:187-188). The low frequency of sites probably correlates with small populations, even relative to earlier Paleo-Indian levels (Fitting, 1978a:14; Funk, 1983:316-319; Griffin, 1983:248; Lepper and Funk, 2006:193). These low population levels may be related to a minimally-productive environment; for example “coniferous forests with their low carrying capacity for deer and other game constituted an unfavorable environment for hunters and gatherers” (Funk, 1978:23; Calkin and Miller, 1977:309; cf. Nicholas, 1987:100-105). However, many sites probably remain to be found in less-studied areas, since the post-glacial environment in the Northeast was not uniformly desolate and included highly productive diverse environments like “lakes, ponds, extensive wetlands, and emergent riverine systems” that formed in the basins of former glacial lakes (Lepper and Funk, 2006:193; Nicholas, 1987:105-106).

Many Early and Middle Archaic sites in the Northeast cluster on former glacial lakes (Nicholas, 1987:106). In the Susquehanna Valley in New York (just outside the study area), Early Archaic projectile point forms have been found in both uplands and valley floors (Funk, 1993:317). The Zawatski Site, an Early Archaic site in western New York, was situated on the flood plain of the Allegheny River in Cattaraugus County (Calkin and Miller, 1977:310-312), suggesting that an

Early Archaic preference towards occupation on valley floors was not confined to the Susquehanna (cf. Lepper and Funk, 2006:193).

In general, there is meager direct evidence concerning Early and Middle Archaic subsistence, site types, and tool assemblages (with the exception of projectile points) in northwestern Pennsylvania (Abel and Fuerst, 1999:13; Funk, 1993:258-265; Stothers et al., 2001:236). The Haviland site, located in a relic meander of Cobleskill Creek in Schoharie County, New York is a rare example of an excavated Early Archaic lithic workshop in the Northeast (Ferguson, 1995). Artifacts from the site include Kanawha bifurcate-base projectile points, thin bifacial ovate knives, thin unifacial tools, cores, hammerstones, debitage, abraders, anvils, choppers, and pitted stones. Middle Archaic tool kits are more extensive than those from the Early Archaic and include pecked and ground stone items (axes, adzes, gouges, celts, mortars, pestles, plummets, and netsinkers), polished tools, such as bannerstones, and bone artifacts (awls, barbed harpoon tips, gorges, and fishhooks) (Stothers et al., 2001:237-238).

Late Archaic

The Late Archaic Period in Ohio is most typically defined as the time between the stabilization of post-glacial forest systems to roughly modern states (deciduous forests in the Lake Plain region of northwestern Pennsylvania and Hemlock-Pine-Hardwoods forests to the south (Tuck, 1978:29; Wright, 2006:103-104) and the appearance of ceramic vessels. Conventional dates for the period are 6,000 B.P. to 3,000 B.P. The Late Archaic contrasts sharply with the Early and Middle Archaic in terms of volume of data; far more Late Archaic sites are known than for the other parts of the Archaic (Funk, 1983:320; Prufer, 2001:188).

As is the case for earlier times, the majority of temporally diagnostic/representative Late Archaic artifacts are projectile points, but more is known about their accompanying tool kits (Funk, 1983:320). Projectile points from the first millennium of the Late Archaic include large broad side-notched styles that have square tangs and indented or straight bases, designated Otter Creek throughout the Northeast (Funk, 1983:320; Justice, 1995:61-62; Stothers et al., 2001:237). Otter Creek points have been found with bifacial knives, unifacial side and end scrapers, anvilstones, and hammerstones (Funk, 1983:321; cf. Ritchie 1979).

For the part of the Late Archaic beginning ca. 5,200 B.P., Ritchie and others have defined several large-scale archaeological 'traditions' that extend across parts of the Northeast, including the Laurentian/Lake Forest, and Narrow-Stemmed/Piedmont Traditions (Funk, 1983:321-329; Ritchie, 1944:234-253; 1980:79-125; Ritchie and Funk, 1973:338-341; Stothers et al., 2001:238; Tuck 1978:29-32). Northwestern Pennsylvania is near the southern edge of The Laurentian/Lake Forest Tradition, which also includes much of New York State and extends across southeastern Ontario into eastern Michigan and extreme northwestern Ohio (Dragoo, 1971; Prufer 2001:188-189; Stothers et al. 2001:238; Tuck 1978:29). Sites generally date between 5,200 B.P. and 4,000 B.P. Associated projectile point types include: examples of the Brewerton point series (Brewerton Corner-Notched, Brewerton Eared-Notched, Brewerton Eared Triangle, and Brewerton Side-Notched); Vosburg; Genesee; and Snook Kill (Funk, 1983:321; Justice, 1995:115-118, 120-124; Ritchie, 1971; Stothers and Abel, 1993:31; Stothers et al., 2001:238).

In addition to the chipped stone projectiles points, Laurentian Tradition assemblages typically include: end and side scrapers; knives; drills; bannerstones; ground stone axes, adzes, celts, and

gouges; plummets; hammerstones; anvilstones; and bone awls, gorges, and leister points (Funk, 1983:323; Prufer, 2001:190-193). In parts of Ohio just west of northwestern Pennsylvania, cores are rare and tool-making debitage tends to be scarce and small-sized; sources for lithic materials there are primarily local (Prufer, 2001:193-195). Example Laurentian Tradition sites include: Ringler and Lukens Hill in northeastern Ohio (Prufer, 2001:190-195; Stothers and Abel, 1993:29).

Narrow Stemmed/Piedmont Tradition assemblages date to ca. 4,500 to 3,500 B.P. (Funk, 1983:324; Stothers et al., 2001:238). Although they tend to be found south of Laurentian sites, there is a great deal of overlap between the traditions, and they are occasionally found in the same contexts (Funk, 1983:329; Ritchie, 1944:260-273, 292-310; 1945; 1980:36-79; Tuck, 1978:29). The defining characteristic of the Narrow Point is a series of narrow-stemmed and narrow side-notched projectile points, including types such as Lamoka (Justice, 1995:124-130; Ritchie, 1971:29; Stothers et al., 2001:238). The only other common element of Narrow Point Tradition assemblages appears to be a “general scarcity of uniface tools” (Funk, 1983:324). Sites in the Lamoka phase of the tradition also sometimes yield distinct ground stone ‘beveled adzes,’ along with ornaments and tools made from antler and bone. The Lamoka Lake site in western New York is the largest, most productive, and perhaps best-known of the Narrow Stemmed Tradition sites in the study area (Funk, 1983:327).

Transitional/Terminal Archaic

In the Northeast, the Transitional/Terminal Archaic is defined as the time before the adoption of clay vessel technology during which people were making stone containers, which were primarily made from soft soapstone/steatite (Ritchie, 1980:150; Ritchie and Funk, 1973:71; Tuck, 1978:37). Obviously the timing of these developments varied from one part of the study area to another, but typically-used dates fall in the range of ca. 3,700 B.P. to 2,700 B.P. The definitional basis for this time period is highly problematic since recent research has demonstrated that contexts with early ceramic vessels temporally overlap with those that have steatite containers entirely (Hoffman, 1998; see Ritchie, 1980:157).

Besides the soapstone containers, the Transitional Archaic in northwestern Pennsylvania is associated with a series of Susquehanna tradition broad-headed stone spear points (Funk, 1983:331; Trubowitz and Snethkamp, 1975:19; Witthoft, 1971); some researchers associate Genesee and Snook Kill points with the broad point tradition (Funk, 1983:331; 1993:224; Stothers et al., 2001:238). Examples of these projectile points in the study area include: Susquehanna Broad, Perkiomen Broad, and ‘Turkey-tail’ blades/points (Justice, 1995:167-170; Ritchie, 1971; Stothers et al., 2001:238). Besides projectile points and steatite vessels, other typical Transitional Archaic artifacts include: chipped stone scrapers, drills, and gravers (many of which have bases similar to Susquehanna tradition projectile points, suggesting expedient reuse); possible ‘strike-a-lights’; netsinkers manufactured from pebbles; hammerstones; rectangular shale gorgets; ‘cupstones’; adzes; and anvils (Ritchie, 1980:151, 159).

Transitional Archaic sites tend to “occupy a riverine setting, never far from the main stream” and are typically small or “occur as superimposed components marking a succession of temporary sojourning places by the same group” (Ritchie, 1980:157; see also Tuck, 1978:37). The presence of netsinkers on some sites suggests that fishing was a prominent element of subsistence (Ritchie, 1980:151, 157-159; Ritchie and Funk, 1973:72). Transitional Archaic sites in New

York just north of the Pennsylvania portion of the study area have been found in a variety of ecological settings, including glacial uplands, terraces, and river floodplains (Trubowitz and Snethkamp, 1975:20). Example sites in the study area include O'Neil and Hickory Hill Marsh in New York (Ritchie, 1980:156-164; Ritchie and Funk, 1973:71-95).

Woodland

The Woodland Period is defined as the time during which people adopted and used ceramic vessel technology (Feder, 1984:101-102; Sears, 1948; see also Willey, 1966:267-268; discussion in Snow, 1980:262). Although the timing of the adoption of clay container technology varied across the region, 3,000 B.P. is generally used as a convention for the beginning of the Woodland (Funk, 1983:306-307; 1993:Figure 40; Kent et al., 1971:195-196; Ritchie, 1980:179; see also Snow, 1980:262; Stoltman, 1978). The period extended to historic times (ca. 1600 A.D./350 B.P.). General developments during the Woodland in the Northeast include increases in population, the adoption of horticulture and domestication of plants such as maize, beans, and squash, nucleation of settlement patterns in some areas, and an elaboration, intensification, and expansion of the burial practices and long distance interaction presaged by the Glacial Kame phenomenon (a set of burial practices from areas north of Pennsylvania that included burials in glacial kames that were accompanied by exotic grave goods).

Early Woodland

Besides the initial appearance of pottery, the Early Woodland period in northwestern Pennsylvania is associated with an elaborate suite of mortuary practices collectively known as Adena (Stothers and Abel, 2008:79). Just outside the study area in southern Ohio and southwestern Pennsylvania, Adena burials are in man-made mounds (Coe et al., 1986:51; Dragoo, 1963:134). While such tumuli are rare in the study area, Adena grave goods have been found with burials across northwestern Pennsylvania (Dragoo, 1963:177). Items associated with Adena-like burials include: stone (sometimes clay) block-end tubes; lanceolate and leaf-shaped bifaces; trianguloid and ovoid cache blades; stemmed or side-notched projectile points, frequently falling in the range of the 'Adena' type (Justice, 1995:191-192, 196; Ritchie, 1971:12-13); bar amulets; copper awls and celts; gorgets; birdstones; cylindrical copper beads; and shell beads (Dragoo, 1963:176-188; Ritchie and Funk, 1973:97). Graves were frequently accompanied by red ocher (Ritchie and Funk, 1973:97). Some Adena burials and cemeteries are on natural knolls and many items are made from exotic raw materials. Examples of nearby Early Woodland Adena-like cemeteries and burial sites include Green Creek, Marblehead, and Hickory Island No. 2 in northern Ohio (Stothers and Abel, 2008:81, 98-99) and Vine Valley, Morrow, and Palatine Bridge in New York (Funk, 1983:312-313, 335; Granger, 1978a:100). Burial sites tend to be on "terraces of major streams or near large deep water lakes in the Erie-Ontario Lowland Zone" (Granger, 1978a:100; see also Ritchie and Funk, 1973:348).

Less is known about Early Woodland settlement and subsistence patterns in the northwestern Pennsylvania area than burial practices (Funk, 1973:336; Granger, 1978a:96). At least two archaeological cultures, typically designated as the Meadowood and Middlesex phases (Ritchie, 1980; Meyer-Oakes, 1955:58), were closely associated with elements of Adena in New York and Pennsylvania (Granger, 1978a). Middlesex refers to contexts with Adena-like burials and assemblages from non-burial contexts that include Adena artifacts (Funk, 1983:335). Meadowood phase sites have yielded more data concerning settlement and subsistence than those

from the Middlesex. Meadowood sites are primarily clustered in central and western New York and are generally found adjacent to major streams and lakes, although some are known from areas near wetlands and smaller water bodies. Typical artifact assemblages include: early pottery (examples of which have thick walls, are conoidal-based, straight-sided, “unornamented,” and are cord-roughened on the entirety of their interiors and exteriors (Ritchie and MacNeish, 1949:100; Stothers and Abel, 1993:44); diagnostic Meadowood-style projectile points (Justice, 1995:170-172; Ritchie, 1971:35-36); other tools such as drills and scrapers with bases suggesting they are re-worked projectile points; anvilstones; abrading stones; hammerstones; cigar/tube-shaped smoking pipes; birdstones; and gorgets (Funk, 1983:335; Ritchie, 1980:191-196). Some New York and Ohio sites have produced data suggesting oblong house forms measuring about 4 m by 5 m (12 ft by 16 ft) (Ritchie and Funk, 1973:107; Stothers and Abel, 1993:33, 62-63). Fragments of basketry and fish nets have also been found (Ritchie, 1980:194-195). Burials with Adena-like qualities are also sometimes present. Nearby example sites include: Riverhaven No. 2, Vinette, Scaccia, and Sinking Ponds in New York (Funk, 1983:335; Granger, 1978b; Ritchie, 1980:190-191; Ritchie and Funk, 1973:96); and Weilnau and Seeman’s Fort in north-central Ohio (Stothers and Abel, 1993:194-195).

Middle Woodland

In northwestern Pennsylvania, the appearance of several types of decorated ‘post-Vinette I’ ceramic vessels around 2,000 B.P. marks the beginning of the Middle Woodland (Kostiw, 1995). In areas to the west and southwest, the period is associated with the appearance of the ‘Hopewell Interaction Sphere,’ a phenomenon largely defined by the presence of earthworks and burial mounds sometimes including lavish quantities of exotic grave goods. Hopewell-like mounds and artifacts are found in northwestern Pennsylvania, but they did not appear there until several centuries after their beginnings in Ohio. In northwestern Pennsylvania the Middle Woodland extends to 1,000 B.P.

Hopewell-like burial mounds in northern Ohio, northwestern Pennsylvania, and western and central New York are up to 50 ft in diameter and 9 ft in height. Burials were inside stone slab cists and were typically extended; cremated remains of other individuals are occasionally found in the mounds outside the cists (Ritchie, 1980:227). Among the elaborate grave goods found in the mounds are: platform pipes (made from both ‘Ohio fireclay’ and local materials), some with animal effigies; slate pendants; red and yellow ocher; two-holed gorgets; copper beads, ear spools, breast ornaments, celts, and awls; copper or silver panpipe covers; stone celts and adzes; prismatic flake knives; and projectile points (some of which are large examples of the Snyders type manufactured from high-quality stone from Ohio) (Coe et al., 1986:50-55; Funk, 1983:340; Justice, 1995:201-204; Ritchie, 1938; 1980:227). One example of Middle Woodland burial mounds in northwest Pennsylvania is the Irvine Mound (Carpenter, 1956). Mounds tend to be near major rivers or large bodies of water, such as the Genesee, Finger Lakes, and Lake Ontario. They also are frequently not near habitation sites (Kostiw, 1995:41).

Relative to burial practices, little is known about Middle Woodland subsistence, settlement, and other aspects of culture throughout the Northeast (Bowen, 1992:63; Funk, 1983:339; 1993:200; Ritchie, 1980:226). However, the period is known to have witnessed numerous cultural innovations, including the adoption of the bow-and-arrow (Kostiw, 1995:38) and maize agriculture (Hart and Brumbach, 2003; Hart et al., 2007). Northwest Pennsylvania Middle Woodland habitation sites are typically grouped into the Scioto/Watson Tradition (Brose,

2000:99). Typical ceramic vessels from nearby northeastern Ohio were “unimaginative plain or cordmarked...ceramics with slightly curved rims” (Brose, 2000:99). Other Middle Woodland artifacts include small projectile points (such as the Levanna, Jack’s Reef and Raccoon Notched types), bone awls and barbed points, bifacial knives, scrapers, drills, netsinkers, celts, adzes, copper fishhooks and gorges, antler points, bone daggers, and compound bone fishhooks (Funk, 1983:337-343; Justice, 1995:215-220, 228). Later Middle Woodland sites in New York and Ohio have post mold patterns suggesting round houses (Brose, 2000:99; Funk, 1983:340). Several types of sites are known, including large semi-permanent recurrently-occupied camps, small seasonal recurrently occupied camps, workshops, and small temporary camps (Brose, 2000:99; Ritchie and Funk, 1973:349-354). In New York, sites typically occur on rivers, lakes, and in areas near marshes, bogs, and springs; in northern Ohio they are on bluffs overlooking major rivers (Bowen, 1992:63; Brose, 2000:99; Ritchie and Funk, 1973:349-354).

Late Woodland

In northwestern Pennsylvania, the Late Woodland spans the years between 1,000 B.P. and the Protohistoric period – the time when European goods were reaching Native American groups, but before the point when there was direct contact between Indians and Europeans (generally around 1525 A.D.-1550 A.D./425 B.P.-400 B.P. in New York, Pennsylvania, and Ohio (Bradley, 2005; Engelbrecht, 2003:133-137; Snow, 2000:77-78; Stothers, 2000:52-53]). Developments during the Late Woodland include the adoption of horticulture based on maize, squash, and beans, increasingly sedentary settlement patterns, the nucleation of groups into historically-known population centers, and the appearance of pallisaded villages with longhouses. In northwestern Pennsylvania, the time period is primarily represented by the Eastwall/McFate Tradition, which is distinguished from surrounding traditions largely on the basis of pottery attributes (Johnson, 1976). People throughout the area were manufactured diagnostic small triangular (Madison-type) projectile points (Justice, 1995:224-227). Late Woodland inhabitants of northwestern Pennsylvania were probably Iroquoian speakers (Johnson, 1976).

Early Late Woodland (pre-700 B.P.) settlements in northwestern Pennsylvania had oval houses, while later ones had rectanguloid structures and were concentrated on high river bluffs. After ca. 500 B.P., villages were “on high dissected plateaus, overlooking sheltered arable flood plains” (Brose, 2000:106-107). Their occupants also employed smaller camps along upland rivers, in rockshelters, and along lakeshores for hunting and fishing (Brose, 2000:107). McFate is an important site in northwestern Pennsylvania (Johnson, 1976).

Protohistoric and Historic Periods

Items of European manufacture appear on Native American archaeological sites throughout the study area in New York, Ohio and Pennsylvania beginning in the first half of the sixteenth century A.D. (ca. 450 B.P.-400 B.P.). Such artifacts were quickly integrated into the material culture inventories of native groups and included: sheet brass, copper and iron kettles; items derived from sheet metal kettles, including tinkling cones, projectile points, and other tools and ornamental items; colorful glass trade beads; and iron axe blades (Bradley, 2005:69-80). 'True' Wampum - small white and purple beads made from marine shells drilled with metal tools - also dates to the Protohistoric (Ceci, 1989:72-73; Tooker, 1978:422). Site locations were generally similar to those during the Late Woodland. There is some evidence that Iroquoian-speaking people in northwestern Pennsylvania and extreme northeastern (possibly Neutral) Ohio

(represented by the Eastwall Complex) expanded their territory further to the west after about 1550 A.D.

Early historical events involving Indian groups living in New York, Pennsylvania, and Ohio were heavily influenced by the European fur trade and the roles the Five Nations Iroquois played in it. The French established a trading outpost at Tadoussac on the St. Lawrence River about 1600 A.D. and the Dutch settled around Albany by ca. 1620 A.D. The Dutch were later forced out of their land holdings in the Northeast by the British in the 1660s. The Five Nations benefited from trade with the French, Dutch, and British which, among other items brought them European weapons. The European hunger for beaver pelts also drove Five Nations expansion to areas to the west, and by the middle of the 1600s, they had largely dispersed/destroyed many of their neighbors, including the Neutral and Erie in western New York (and probably northwestern Pennsylvania) and the Algonquian groups living in northern Ohio (Engelbrecht, 2003:142-144; Trigger, 1978; White, 1991). Thereafter, northwestern Pennsylvania, along with much of northern Ohio, was essentially devoid of Native American habitation.

1.1.3.3 State of Ohio

Early and Middle Archaic

In Ohio, the Early and Middle Archaic (ca. 10,000 B.P.-8,000 B.P. and ca. 8,000 B.P.-6,000 B.P., respectively) have come to be primarily defined in terms of climatic/environmental transition. During these times, the ecological setting in the Northeast transformed from immediate post-glacial tundra and spruce-park forests through denser spruce-fir, pine-oak, and deciduous oak-hemlock forests to an essentially modern oak-hickory forest system (Funk, 1983:304-305; Lepper and Funk, 2006:171-172). As is the case for the Paleo-Indian period, archaeological sites from the Early and Middle Archaic in Ohio have been mostly identified by the presence of diagnostic projectile points, including Hi-Lo, Kanawha Stemmed, Kirk, LeCroy Bifurcated Stem, MacCorkle, Palmer, Raddatz Side-Notched, St. Albans Side-Notched, Thebes, St. Charles, Decatur, and Lake Erie Bifurcated Base points (Abel and Fuerst, 1999:12-13; Calkin and Miller, 1977:309; Justice, 1995:44-46, 54-58, 67-69, 71-79, 81-85, 86-96; Stothers, 1996:179-181; Stothers et al., 2001:235). Many of these point types have characteristic bifurcated bases.

Relatively few Early and Middle Archaic sites have been found in northern Ohio (Funk, 1978:20; Prufer, 2001:187-188). The low frequency of sites probably correlates with small populations, even relative to earlier Paleo-Indian levels (Fitting, 1978a:14; Funk, 1983:316-319; Griffin, 1983:248; Lepper and Funk, 2006:193). These low population levels may be related to a minimally-productive environment; for example “coniferous forests with their low carrying capacity for deer and other game constituted an unfavorable environment for hunters and gatherers” (Funk, 1978:23; Calkin and Miller, 1977:309; cf. Nicholas, 1987:100-105). However, many sites probably remain to be found in less-studied areas, since the post-glacial environment in the Northeast was not uniformly desolate and included highly productive diverse environments like “lakes, ponds, extensive wetlands, and emergent riverine systems” that formed in the basins of former glacial lakes (Lepper and Funk, 2006:193; Nicholas, 1987:105-106).

Early and Middle Archaic sites in the Northeast typically cluster on former glacial lakes (Nicholas, 1987:106). In the Susquehanna Valley in New York (just outside the study area),

Early Archaic projectile point forms have been found in both uplands and valley floors (Funk, 1993:317). The Zawatski Site, an Early Archaic site in western New York, was situated on the flood plain of the Allegheny River in Cattaraugus County (Calkin and Miller, 1977:310-312), suggesting an Early Archaic preference towards occupation on valley floors was not confined to the Susquehanna (cf. Lepper and Funk, 2006:193). Contrary to areas to the east, Early Archaic sites in Northwestern Ohio tend to be in more upland settings. For instance, nearly 93 percent of Early Archaic sites found in that area during a 1990s cultural resource management survey for Ohio SR 30 were in uplands; the remaining 7 percent were evenly distributed among glacial lake margins, ridges, and valley floors (Keener et al., 2008:37-38). This contrast with areas to the east may indicate the Early Archaic inhabitants of northwest Ohio (and probably elsewhere) employed subsistence strategies distinct from those of people in other parts of the Northeast.

In general, there is meager direct evidence concerning Early and Middle Archaic subsistence, site types, and tool assemblages (with the exception of projectile points) in Ohio (Abel and Fuerst, 1999:13; Funk 1993:258-265; Stothers et al., 2001:236). The Haviland site, located in a relic meander of Cobleskill Creek in Schoharie County, New York is a rare example of an excavated Early Archaic lithic workshop (Ferguson, 1995). Artifacts from the site include Kanawha bifurcate-base projectile points, thin bifacial ovate knives, thin unifacial tools, cores, hammerstones, debitage, abraders, anvils, choppers, and pitted stones. Middle Archaic tool kits are more extensive than those from the Early Archaic and include pecked and ground stone items (axes, adzes, gouges, celts, mortars, pestles, plummets, and netsinkers), polished tools, such as bannerstones, and bone artifacts (awls, barbed harpoon tips, gorges, and fishhooks) (Stothers et al., 2001:237-238). Most Archaic sites in Ohio have been disturbed by deep plowing and very little is known about their internal structures; the Erskine site in Mahoning County, which has not been plowed, represents an Early Archaic exception to this pattern (Prufer, 2001:189-190). Another unusual occupation site is the Early Archaic Weillnau site in north-central Ohio, which yielded possible evidence of a structure (Stothers et al., 2001:241). Besides open air sites, there are indications that Early and Middle Archaic individuals visited rockshelters; The Krill Cave site in the northeastern part of the state, which includes an Early Archaic component, is one example in the study area (Prufer, 2001:189).

Late Archaic

The Late Archaic Period in Ohio is most typically defined as the time between the stabilization of post-glacial forest systems to roughly modern states (i.e., the deciduous forests that cover much of Ohio) and the appearance of ceramic vessels. Conventional dates for the period are ca. 6,000 B.P. to 3,000 B.P. The Late Archaic contrasts sharply with the Early and Middle Archaic in terms of volume of data; far more Late Archaic sites are known than for the other parts of the Archaic (Funk, 1983:320; Prufer, 2001:188).

As is the case for earlier times, the majority of temporally diagnostic/representative Late Archaic artifacts are projectile points, although more is known about their accompanying tool kits (Funk, 1983:320). Projectile points from the first millennium of the Late Archaic include large broad side-notched styles that have square tangs and indented or straight bases, known throughout the Northeast as Otter Creek (Funk, 1983:320; Justice, 1995:61-62; Stothers et al., 2001:237) and Matanzas points in central Ohio and areas to the west (Justice, 1995:119-122; Stothers et al., 2001:237). Otter Creek points have been found with bifacial knives, unifacial side and end scrapers, anvilstones, and hammerstones (Funk, 1983:321; cf. Ritchie, 1979).

For the part of the Late Archaic beginning ca. 5,200 B.P., Ritchie and others have defined several large-scale archaeological ‘traditions,’ including the Laurentian/Lake Forest, and Narrow-Stemmed/Piedmont Traditions (Funk, 1983:321-329; Ritchie, 1944:234-253; 1980:79-125; Ritchie and Funk, 1973:338-341; Stothers et al., 2001:238; Tuck, 1978:29-32). The Laurentian/Lake Forest Tradition includes northwestern Pennsylvania and much of New York State and extends across southeastern Ontario into eastern Michigan and extreme northwestern Ohio (Dragoo, 1971; Prufer, 2001:188-189; Stothers et al., 2001:238; Tuck, 1978:29). Sites generally date between 5,200 B.P. and 4,000 B.P. Associated projectile point types in Ohio include: the Brewerton point series (Brewerton Corner-Notched, Brewerton Eared-Notched, Brewerton Eared Triangle, and Brewerton Side-Notched); Vosburg; Genesee; Snook Kill; and Feeheley (the last of which is found mostly in southwestern Michigan and northwestern Ohio) (Funk, 1983:321; Justice, 1995:115-118, 120-124; Ritchie, 1971; Stothers and Abel, 1993:31; Stothers et al., 2001:238). Brewerton series projectile points tend to be slightly earlier in Ohio than in areas further to the northeast; they have even been found there in Middle Archaic contexts (Stothers et al., 2001:237).

In addition to the chipped stone projectile points, Laurentian Tradition assemblages from Ohio typically include: end and side scrapers; knives; drills; bannerstones; ground stone axes, adzes, celts, and gouges; plummets; hammerstones; anvilstones; and bone awls, gorges, and leister points (Funk, 1983:323; Prufer, 2001:190-193). In the northeastern part of the state, cores are rare and tool-making debitage tends to be scarce and small-sized; sources for lithic materials there are primarily local (Prufer, 2001:193-195). Example Laurentian Tradition sites include: Kirian-Treglia in the northwestern Ohio (Stothers and Abel, 1993:29); and Ringler and Lukens Hill in the northeastern part of the state (Prufer, 2001:190-195; Stothers and Abel, 1993:29).

Narrow Stemmed/Piedmont Tradition assemblages date to ca. 4,500 B.P. to 3,500 B.P. (Funk, 1983:324; Stothers et al., 2001:238). Although they tend to be found south of Laurentian sites, including in northern Ohio, there is a great deal of overlap between the traditions, and they are occasionally found in the same contexts (Funk, 1983:329; Ritchie, 1944:260-273, 292-310; 1945; 1980:36-79; Tuck, 1978:29). The defining characteristic of the Narrow Point is a series of narrow-stemmed and narrow side-notched projectile points, including types from Ohio such as Lamoka, highly similar Durst Stemmed and Dustin points, and Bottleneck Stemmed points (Justice, 1995:124-130; Ritchie, 1971:29; Stothers et al., 2001:238). The only other common element of Narrow Point Tradition assemblages appears to be a “general scarcity of uniface tools” (Funk, 1983:324). Sites in the Lamoka phase of the tradition also sometimes yield distinct ground stone ‘beveled adzes,’ along with ornaments and tools made from antler and bone. The Lamoka Lake site in western New York is the largest, most productive, and perhaps best-known of the Narrow Stemmed Tradition sites in the study area (Funk, 1983:327).

In northwestern Ohio, Late Archaic sites can be divided into four general classes: small open camps, large camp sites, quarries/workshops, and rockshelters/caves (Ritchie and Funk, 1973: 337-338; Stothers and Abel, 1993; Stothers et al., 2001:242-246). Small open camps are typically located “inland from large waterways, frequently on small streams, on marshes, or near copious springs” while the larger camps are “on major bodies of water, near good fishing grounds” (Ritchie and Funk, 1973:337-338; also see Funk, 1983:327). Quarries and workshops are located near raw material sources. In northeastern Ohio, open (i.e., non-cave) Archaic-period sites are primarily camps, some of which were occupied on numerous occasions. They are

typically located on high terrain near major rivers and streams and on knolls near ponds, wetlands, and lakes (Prufer, 2001:188-189). The oldest known burial/mortuary sites in Ohio date to the Late Archaic and include Missionary Island in the northwest part of the state (Stothers et al., 2001:244, 264-265).

Transitional / Terminal Archaic

In the Northeast, the Transitional/Terminal Archaic is defined as the time before the adoption of clay vessel technology during which people were making stone containers, which were primarily made from soft soapstone/steatite (Ritchie, 1980:150; Ritchie and Funk, 1973:71; Tuck, 1978:37). Obviously the timing of these developments varied from one part of the study area to another, but typically-used dates fall in the range of ca. 3,700 B.P. to 2,700 B.P. The definitional basis for this time period is highly problematic since recent research has demonstrated that contexts with early ceramic vessels temporally overlap with those that have steatite containers entirely (Hoffman, 1998; see Ritchie, 1980:157). In much of northern Ohio, the time period is usually integrated into the Late Archaic (Prufer, 2001; Stothers et al., 2001).

Besides the soapstone containers, the Transitional Archaic in Ohio is associated with a series of Susquehanna tradition broad-headed stone spear points (Funk, 1983:331; Trubowitz and Snethkamp, 1975:19; Witthoft, 1971; some researchers associate Genesee and Snook Kill points with the broad point tradition (Funk, 1983:331; 1993:224; Stothers et al., 2001:238). Examples of these projectile points in northern Ohio include: Susquehanna Broad, Perkiomen Broad; Ashtabula; ‘Turkey-tail’; and Adder Orchard points (Justice, 1995:167-170; Ritchie, 1971; Stothers et al., 2001:238). In the northwestern part of the state, broad-headed points were succeeded by a series of small projectile points (the Late Archaic Small Point Horizon) in the latter years of the Late (Terminal) Archaic that include types such as Innes, Crawford Knoll, Trimble Side-Notched, and Merom Expanding-Stem (Stothers et al., 2001:238; Justice, 1995:130-132). Besides projectile points, other typical Transitional Archaic artifacts include: chipped stone scrapers, drills, and gravers (many of which have bases similar to Susquehanna tradition projectile points, suggesting expedient reuse); possible ‘strike-a-lights’; netsinkers manufactured from pebbles; hammerstones; rectangular shale gorgets; ‘cupstones’; adzes; and anvils (Ritchie, 1980:151, 159).

In parts of the Northeast, Transitional Archaic sites typically “occupy a riverine setting, never far from the main stream” and are typically small or “occur as superimposed components marking a succession of temporary sojourning places by the same group” (Ritchie, 1980:157; see also Tuck, 1978:37). The presence of netsinkers on some sites suggests that fishing was a prominent element of subsistence (Ritchie, 1980:151, 157-159; Ritchie and Funk, 1973:72). Transitional Archaic sites in western New York have been found in a variety of ecological settings, including glacial uplands, terraces, and river floodplains (Trubowitz and Snethkamp, 1975:20).

People inhabiting Ohio in the final years of the Archaic were participating in the earliest known of a series of practices relating to elaborate burial treatment of the deceased that included interments in mounds and the presence of exotic grave goods, the “Glacial Kame culture” (Abel and Fuerst, 1999:16; Tuck, 1978:39). As the name suggests these burials were placed in natural gravel knolls. They include items such as distinctive “sandal sole shell gorgets,” rectangular shell gorgets, rolled copper beads, shell beads, copper adzes, projectile points, leather fragments, and pieces of galena (Funk, 1983:334; Griffin, 1983:253; Ritchie, 1980:133-134). Some of these

items imply the existence of long-distance trade routes, including copper which came from the upper Great Lakes and the shell, which originated along the eastern North American coast. Burials were also occasionally accompanied by red ocher (Ritchie, 1980:133). A pair of closely related Terminal Archaic Period burial sites in northwestern Ohio (the Williams cemetery and Sidecut crematory/cache site) are representative of another type of burial in which individuals were interred in non-mound contexts, but still with exotic grave goods that included marine shell beads and lithic artifacts made from cherts from eastern Ohio and the Niagara Peninsula (Abel et al., 2001). Both sites are on the floodplain of the Maumee River.

Woodland

The Woodland Period is defined as the time during which people adopted and used ceramic vessel technology (Feder, 1984:101-102; Sears, 1948; see also Willey, 1966:267-268; discussion in Snow, 1980:262). Although the timing of the adoption of clay container technology varied across the region, 3,000 B.P. is generally used as a convention for the beginning of the Woodland (Funk, 1983:306-307; 1993:Figure 40; Kent et al., 1971:195-196; Ritchie, 1980:179; see also Snow, 1980:262; Stoltman, 1978). The period extended to historic times (ca. A.D. 1600/350 B.P.). General developments during the Woodland include increases in population, the adoption of horticulture and domestication of plants such as maize, beans, and squash, nucleation of settlement patterns in some areas, and an elaboration and intensification of the burial practices and long distance interaction presaged by the Glacial Kame phenomenon.

Early Woodland

Besides the initial appearance of pottery, the Early Woodland period in Ohio is associated with an elaborate suite of mortuary practices collectively known as Adena (Stothers and Abel, 2008:79). Just outside the study area in southern Ohio and southwestern Pennsylvania, Adena burials are in man-made mounds (Coe et al., 1986:51; Dragoo, 1963:134). While such tumuli are relatively rare in the northern part of the state, Adena grave goods have been found with burials across New York, northwestern Pennsylvania, and northern Ohio (Dragoo, 1963:177). Items associated with Adena-like burials include: stone (sometimes clay) block-end tubes; lanceolate and leaf-shaped bifaces; trianguloid and ovoid cache blades; stemmed or side-notched projectile points, frequently falling in the range of the 'Adena' type (Justice, 1995:191-192, 196; Ritchie, 1971:12-13); bar amulets; copper awls and celts; gorgets; birdstones; cylindrical copper beads; and shell beads (Dragoo, 1963:176-188; Ritchie and Funk, 1973:97). Graves were frequently accompanied by red ocher (Ritchie and Funk, 1973:97). Examples of Early Woodland Adena-like cemeteries and burial sites include Green Creek, Marblehead, and Hickory Island No. 2 in northern Ohio (Stothers and Abel, 2008:81, 98-99). Most of these burial sites tend to be on "terraces of major streams or near large deep water lakes in the Erie-Ontario Lowland Zone" (Granger, 1978a:100; see also Ritchie and Funk, 1973:348).

Less is known about Early Woodland settlement and subsistence patterns in Ohio than burial practices (Funk, 1973:336; Granger, 1978a:96). Habitation sites are generally found adjacent to major streams and lakes, although some are known from areas near wetlands and smaller water bodies. Typical artifact assemblages include: early pottery (generally thick-walled forms with conoidal, straight-walled forms such as the Leimbach Thick and Fayette Thick types (Stothers and Abel, 1993:44); diagnostic Meadowood-style projectile points (Justice, 1995:170-172; Ritchie, 1971:35-36); other tools such as drills and scrapers with bases suggesting they are re-

worked projectile points; anvilstones; abrading stones; hammerstones; cigar/tube-shaped smoking pipes; birdstones; and gorgets (Funk, 1983:335; Ritchie, 1980:191-196). Some New York and Ohio sites have produced data suggesting oblong house forms measuring about 4 m by 5 m (12 ft by 16 ft) (Ritchie and Funk, 1973:107; Stothers and Abel, 1993:33, 62-63). Burials with Adena-like qualities are also sometimes present. Example sites include Weilnau and Seeman's Fort in north-central Ohio (Stothers and Abel, 1993:194-195). In the northwestern part of the state, sites around the Maumee River (including the later components of the Williams and Sidecut cemeteries) suggest a subsistence strategy heavily oriented towards fishing. This area was possibly also a center for regional interaction (Stothers and Abel, 2008:113-114). In other parts of northern Ohio, subsistence strategies were apparently less focused on fishing.

Middle Woodland

In Ohio, the Middle Woodland Period is associated with the appearance of the so-called 'Hopewell Interaction Sphere,' a phenomenon largely defined by the presence of earthworks and burial mounds sometimes including lavish quantities of exotic grave goods (ca. 2,300 B.P. to 1,600 B.P.) (Funk, 1983:337-338; Griffin, 1983:260-267). In the northeastern part of the state, the Middle Woodland extends to 1,000 B.P., while it ends earlier in the remainder of the northern portion of Ohio, at about the time of the disappearance of Hopewell around 1,600 B.P. to 1,500 B.P. (Abel et al., 2000; Brose, 2000; Stothers and Betchel, 2000).

Hopewell-like burial mounds in northern Ohio are up to 50 ft in diameter and 9 ft in height. Burials were inside stone slab cists and were typically extended; cremated remains of other individuals are occasionally found in the mounds outside the cists (Ritchie, 1980:227). Among the elaborate grave goods found in the mounds are: platform pipes (made from both 'Ohio fireclay' and local materials), some with animal effigies; slate pendants; red and yellow ocher; two-holed gorgets; copper beads, ear spools, breast ornaments, celts, and awls; copper or silver panpipe covers; stone celts and adzes; prismatic flake knives; and projectile points (some of which are large examples of the Snyders type manufactured from high-quality stone from Ohio) (Coe et al., 1986:50-55; Funk, 1983:340; Justice, 1995:201-204; Ritchie, 1938; 1980:227). The Esch site is one example of a Middle Woodland burial mound site in northern Ohio (Stothers et al., 1979). Mounds tend to be near major rivers or large bodies of water, including Lake Erie. They also are frequently not near habitation sites (Kostiw, 1995:41).

Relative to burial practices, little is known about Middle Woodland subsistence, settlement, and other aspects of culture throughout the Northeast (Bowen, 1992:63; Funk, 1983:339; 1993:200; Ritchie, 1980:226). However, the period is known to have witnessed numerous cultural innovations, including the adoption of the bow-and-arrow (Kostiw, 1995:38) and maize agriculture (Hart and Brumbach, 2003; Hart et al., 2007). Northwest Ohio Middle Woodland habitation sites are typically grouped into the Point Peninsula Tradition, while those in the northeastern part of the state are part of the Scioto/Watson Tradition and those along the north-central Lake Erie shore are elements of the Esch Phase (Brose, 2000:99; Funk, 1983:338; Ritchie and Funk, 1973:118-119; Stothers and Abel, 1993:31; 2008:96). Typical ceramic vessels in and northwestern Ohio from the early parts of the Middle Woodland were small (one to four quart capacities) and conoidal-based, while later pottery was larger and had increasingly globular bodies (Hart and Brumbach, 2009; Ritchie and Funk, 1973:117; Ritchie and MacNeish, 1949). Vessels from northeastern Ohio were "unimaginative plain or cordmarked...ceramics with slightly curved rims" (Brose, 2000:99). Other artifacts include small projectile points (such as

the Levanna, Jack's Reef and Raccoon Notched types), bone awls and barbed points, bifacial knives, scrapers, drills, netsinkers, celts, adzes, copper fishhooks and gorges, antler points, bone daggers, and compound bone fishhooks (Funk, 1983:337-343; Justice, 1995:215-220, 228). Later Middle Woodland sites in Ohio have post mold patterns suggesting round houses (Brose, 2000:99; Funk, 1983:340). Several types of sites are known, including large semi-permanent recurrently-occupied camps, small seasonal recurrently occupied camps, workshops, and small temporary camps (Brose, 2000:99; Ritchie and Funk, 1973:349-354). Sites are usually on bluffs overlooking major rivers (Bowen, 1992:63; Brose, 2000:99; Ritchie and Funk, 1973:349-354). Examples include: and Esch, Heckelman, and 33Wo89 (Bowen, 1992; Ritchie and Funk, 1973).

Late Woodland

In northeastern Ohio, the Late Woodland spans the years between ca. 1,000 B.P. and the Protohistoric period – the time when European goods were reaching Native American groups, but before the point when there was direct contact between Indians and Europeans (generally around 525 A.D.-1550 A.D./425 B.P.-400 B.P. in New York, Pennsylvania, and Ohio (Bradley, 2005; Engelbrecht, 2003:133-137; Snow, 2000:77-78; Stothers, 2000:52-53). In the northwestern part of the state, the time period extends from the end of Hopewell (ca. 1,600 B.P.-1,500 B.P.) to the Protohistoric. Developments during the Late Woodland include the adoption of horticulture based on maize, squash, and beans, increasingly sedentary settlement patterns, and the appearance of pallsided villages, some with longhouses. Late Woodland archaeological traditions in the northern part of the state, distinguishable by differences in artifact assemblages (primarily ceramics and smoking pipes) and settlement patterns, include the Western Basin, Sandusky, and Whittlesey and Eastwall Complexes. People throughout the area were manufactured diagnostic small triangular (Madison-type) projectile points (Justice, 1995:224-227). Late Woodland inhabitants of northwestern and north-central Ohio were probably Algonquian speakers, while those living in the extreme northeastern part of the state were likely Iroquoian.

In northwestern and north-central Ohio early Late Woodland (pre-1,000 B.P.) habitation sites typically had circular houses built on river bluffs, islands, sand spits, and inland relic beach ridges (Brose, 2000:99). Later settlement systems in the area were increasingly focused in river valleys, each of which was apparently dominated by single villages. There were fewer settlements in upper portions of river drainages (Bowen, 1992; Brose, 1999:100, 103-405). After ca. 500 B.P. villages were pallsided and at least some houses were plastered (Brose, 1999:104). In far northeastern Ohio early Late Woodland (pre-700 B.P.) settlements had oval houses, while later ones had rectanguloid structures and were concentrated on high river bluffs. After ca. 500 B.P., villages were “on high dissected plateaus, overlooking sheltered arable flood plains” (Brose, 2000:106-107). Their occupants also employed smaller camps along upland rivers, in rockshelters, and along lakeshores for hunting and fishing (Brose, 2000:107). Attributes of Late Woodland northern Ohio ceramics were highly variable; at the most general level, pots had conoidal to globular bodies (sometimes elongated) with moderately restricted necks and some had collars. Occasionally, pots had appliqué decoration (such as the elaborate Parker Festooned type) or stirrup handles (Brose, 2000; Stothers and Betchel, 2000). Sites with early Late Woodland components include Libben and Baker II in the northwestern part of the state; among later sites are Eiden and South Park in north-central Ohio (Brose 2000; Stothers and Betchel, 2000). In general, little is known of the ethnicity of the Late Woodland inhabitants of northern Ohio, although it is likely that those living in the north-central part of the state (archaeologically

represented as the late prehistoric Indian Hills Phase of the Sandusky Tradition) were ancestors of the Mascouten (Abel et al., 2000:385; Brose, 2000:110; Stothers, 2000).

Protohistoric and Historic Periods

Items of European manufacture appear on Native American archaeological sites throughout northern Ohio beginning in the first half of the sixteenth century A.D. (ca. 450 B.P.-400 B.P.). Such artifacts were quickly integrated into the material culture inventories of native groups and included: sheet brass, copper and iron kettles; items derived from sheet metal kettles, including tinkling cones, projectile points, and other tools and ornamental items; colorful glass trade beads; and iron axe blades (Bradley, 2005:69-80). 'True' Wampum - small white and purple beads made from marine shells drilled with metal tools - also dates to the Protohistoric (Ceci, 1989:72-73; Tooker, 1978:422). Site locations were generally similar to those during the Late Woodland (Bradley, 2005:49-50; Engelbrecht, 2003:133). There is some evidence that Iroquoian-speaking people in extreme northeastern (possibly Neutral) Ohio (represented by the Eastwall Complex) expanded their territory further to the west after about 1550 A.D., displacing groups represented by the Whittlesey Complex (Brose, 2000; Redmond, 2000). Ohio example sites include Muddy Creek, Petersen, and Indian Hills.

Early historical events involving Indian groups living in New York, Pennsylvania, and Ohio were heavily influenced by the European fur trade and the roles the Five Nations Iroquois played in it. The French established a trading outpost at Tadoussac on the St. Lawrence River about 1600 A.D. and the Dutch settled around Albany by ca. 1620 A.D. The Dutch were later forced out of their land holdings in the Northeast by the British in the 1660s. The Five Nations benefited from trade with the French, Dutch, and British which, among other items brought them European weapons. The European hunger for beaver pelts also drove Five Nations expansion to areas to the west, and by the middle of the 1600s, they had largely dispersed/destroyed many of their neighbors, including the Neutral and Erie in western New York (and probably northwestern Pennsylvania) and the Algonquian groups living in northern Ohio (Engelbrecht, 2003:142-144; Trigger, 1978; White, 1991). After this time, northern Ohio was largely devoid of Native American habitation.

1.1.3.4 State of Michigan (Lower Peninsula)

Early and Middle Archaic Periods

The Early and Middle Archaic periods take place during a time of rapid environmental change and fluctuations in the levels of the Great Lakes. Pine forest replaced the spruce parkland by about 10,000 B.P., followed by a mixed coniferous-deciduous forest by about 8,000 B.C., and finally essentially modern forest distributions between about 7,500 B.P. and 7,000 B.P. (Kapp, 1999). These periods corresponded to significantly lower levels in the Great Lakes basins that began around 10,000 B.P. (Monaghan and Lovis, 2005). Beginning around 7,500 B.P. lake levels slowly began to recover, culminating in much higher than modern lake levels known as the Nipissing and Algoma levels between about 5,500 B.P. and 3,500 B.P. when essentially modern levels were achieved (Larsen, 1985a; Larsen, 1985b; Larsen, 1999; Monaghan and Lovis, 2005).

Evidence for the Early Archaic (ca. 9,500 B.P. to 8,000 B.P.) is limited but is marked by an increase in projectile point styles. A variety of large notched and stemmed forms, some with

bifurcated bases, come into use, along with a variety of groundstone implements (axes, adzes, gouges, and grinding equipment), choppers, knives, and scrapers. This diversity is thought to reflect an increasingly regionally based population and changes in the subsistence economy (Cleland, 1992; Fitting, 1975; Lovis, 2009; Mason, 1981). In the southern part of the Lower Peninsula, it has been suggested that Early Archaic foragers organized into small, seasonally mobile bands that exploited a wide area and used a variety of resources (Arnold, 1977). Evidence for the Early Archaic in the northeastern Lower Peninsula is virtually absent, although it is believed that despite low population densities these people followed a pattern similar to those farther to the south.

The Middle Archaic period (ca. 8,000 B.P.-5,000 B.P.) is similarly poorly documented and understood across Michigan's Lower Peninsula, although it does appear that there is a decrease in the population density during this period. Large side-notched projectile points are characteristic of this period; other point styles, while present, are only poorly known (Lovis and Robertson, 1989). Among the few excavated Middle Archaic sites are the Weber I (Lovis, 1989) and Bear Creek (Branstner and Hambacher, 1994) sites in the Saginaw River valley. The former, which was occupied during the late summer or fall, is indicative of continued high residential mobility (Lovis, 1999; Robertson, 1987). Food remains indicate exploitation of a variety of large and small mammals, fish, birds, reptiles, and a range of nuts, berries, and wild seeds (Egan, 1988; Smith and Egan, 1990). In contrast, the Bear Creek site appears to represent a short-term cold season camp where hunting was one of the primary activities. These sites suggest that people focused on a range of seasonally available resources and moved from one resource patch to another over the course of the year. Evidence for Middle Archaic occupation in the area north of the Saginaw River valley is extremely limited, consisting of only a small number of poorly documented isolated projectile point finds.

Late Archaic Period

The Late Archaic period is relatively well known. Most of this research has taken place in the Saginaw River valley (Fitting, 1975; Robertson et al., 1999); although much of what is known can be extended across the southeastern Lower Peninsula. Very little Archaic period research has been conducted in the northeastern Lower Peninsula, so this period is only rudimentarily understood in that portion of the state.

The Late Archaic is marked by continued development of a seasonally based diffuse subsistence and settlement lifestyle evinced by an increase in the number of sites and the development of larger, more varied toolkits. A proliferation of medium- and small-sized notched and stemmed projectile points differentiate this period from earlier periods. Larger corner-notched points are replaced by a small point phase consisting of highly variable small notched, expanding stemmed, and narrow point styles that are superseded by broad-bladed projectile points at the end of the Late Archaic.

A pattern of seasonal mobility appears to persist during the Late Archaic; however, repeated use of sites in economically important areas suggests that populations followed more regularized scheduled movement within geographically constrained regions, such as the Saginaw River valley (Robertson, 1987). Many of these larger multicomponent sites are located in the lower reaches of rivers draining the Saginaw basin and surrounding the Shiawassee Embayment (an extensive swamp and marsh system). Smaller special purpose camps and cold season

encampments occurred in the morainal highlands surrounding the valley. Ceremonial burial complexes (Glacial Kame, Red Ocher, and Old Copper) developed during this time and are characterized by the use of cemeteries and exotic grave goods (Turkey-tail points, red ocher, copper and shell artifacts, and elaborate groundstone tools).

Cleland (1974) suggests that Late Archaic peoples in the northern Lower Peninsula focused on the exploitation of inland resources along major rivers and streams. The settlement system comprised a series of small, seasonally occupied residential camps that would have allowed groups to easily move from one area to another as resources became available. Evidence in support of this model has been recovered from the Screaming Loon site, located in the Inland Waterway area of eastern Emmitt County (Lovis, 1990). A wide range of activities were carried out at the site. Remains at the site indicate that a range of terrestrial animal and plant resources were used, including riverine resources such as fish.

Woodland Period

The onset of the Woodland period in Michigan's Lower Peninsula is distinguished by the appearance of pottery, the use of burial mounds, new artifact types, and stylistic changes (Fitting, 1975; Mason, 1981). During the Early Woodland period (ca. 600 B.C.-200 B.C.) south of the Saginaw River valley, pottery appeared around 600 B.C. and consists of thick, crudely made interior and exterior cord-marked vessels (Fischer, 1972; Garland, 1986; Garland and Beld, 1999). This period also saw shifts in the lithic technology. Projectile points are mostly stemmed forms characterized by straight stems and weak shoulders. Pottery did not occur in the northeastern Lower Peninsula during this time, but the distinctive stemmed points are present. A style of side-notched points known as Meadowood, present across the southern Lower Peninsula, indicates cultural ties with southern Ontario and western New York.

Interpretation of Early Woodland settlement and subsistence patterns is limited by the small number of well-documented sites. In general, however, the diffuse Late Archaic hunting and gathering adaptation persisted, and small amounts of cultigens (squash and sunflower) appear to have been added to the diet in some southern areas (Garland, 1986; Ozker, 1982). Elaborate burial ceremonialism continued. The period is also marked by evidence for widespread inter-regional trade that would have organized what was becoming an efficient procurement system within the broader context of the diffuse subsistence economy (Fitting, 1975; Garland and Beld, 1999; Mason, 1981; Prah et al., 1981).

The broad-scale cultural differentiation between areas north of the Saginaw River valley and those from the Saginaw River valley southward also becomes more evident during the Middle Woodland period (ca. 200 B.C.-600 A.D.). In the southern parts, this period is often marked by discernable influences of Hopewell cultural groups. Interestingly, although no clear Hopewellian sites have been identified in the southeastern Lower Peninsula (Halsey, 2010), Middle Woodland sites in the Saginaw River valley show such influences, particularly in regards to pottery decoration and projectile point styles. Middle Woodland pottery features dentate and rocker stamping, incising, trailing, punctating, and zonation (Fischer, 1972; Fitting, 1975; Kingsley, 1999; Mason, 1981). Also associated with this period are a variety of expanding stemmed and corner-notched point types, exotic grave goods, copper tools, marine shell artifacts, and specialized tools made from non-local cherts. Subsistence information from the Saginaw River

valley suggests an increasing reliance on wetland and aquatic resources and continued use of native cultigens (Egan, 1993; Kingsley, 1999; Lovis et al., 2001).

Middle Woodland cultures in the northeastern Lower Peninsula appear to be more closely aligned with Lake Forest (Fitting, 1975) or Northern Tier (Mason, 1981) Middle Woodland cultures that predominate across the Upper Peninsula, although influences from the Saginaw River valley northward are also seen (Brose and Hambacher, 1999). This is most clearly evident in the ceramic decoration, which is similar to that on Laurel and other related northern Middle Woodland ceramics. The economy of these groups may have emphasized the importance of fishing, particularly shallow-water spring spawning species. Larger warm season villages where multiple family groups congregated were supplemented by smaller, special purpose satellite camps and small, cold season camps located away from the coast where hunting was the key economic activity.

The Late Woodland period (ca. 600 A.D.-1600 A.D.) is characterized by continued increases in population, an increase in the size and number of sites, a trend toward greater regional diversity, and changes in technology and subsistence patterns (Cleland, 1992; Holman and Brashler, 1999; Martin, 1999; Krakker, 1999). Generally, both the north and south subsistence economies appear to be keyed to seasonally dense plant and animal resources and an increased reliance on agriculture, especially in the southeastern Lower Peninsula. Although maize horticulture appears to be a feature of northern Late Woodland groups, its exact role and importance is less clear. Technological changes include use of the bow and arrow, as evidenced by the small triangular, notched, and flake points, and the use of deep-water gill nets in the northeastern Lower Peninsula (Cleland, 1982; Fitting, 1975; Martin, 1989; Mason, 1981).

In the Saginaw River valley and southeastern Michigan, the early Late Woodland period is represented by the Wayne Tradition (Fitting, 1965; Fitting, 1975; Halsey, 1976), characterized by globular vessels with cord-marked exteriors and simple decoration made with impressions by corded wrapped objects and tool punctates. Close similarity between Wayne wares and other regional wares from across the southern part of the state are thought to reflect a high degree of interaction among the regional populations (Brashler, 1981). This period also sees the end of the Wayne Mortuary tradition, which features both open cemeteries and mounds and exotic grave goods (Halsey, 1976).

After ca. 1000 A.D., Younger tradition ceramics begin to replace the Wayne tradition. Younger pottery consists of large globular to elongated vessels that are usually collared—often castellated—and exhibit complex rim and shoulder decoration made with plain tools (Fitting, 1965; Murphy and Ferris, 1990; Stothers 1999). These ceramics are related to those from the Western Basin tradition from southwestern Ontario and northwestern Ohio. Even with an increased reliance on maize horticulture as a foundation of the economy, scheduled movements to take advantage of seasonally available resources were still taking place. Thus, while villages were located along floodplains and the Great Lakes shorelines for access to easily tillable soils, riverine resources, and transportations, smaller seasonal camps also occurred in upland and headwater settings (Krakker, 1999; Stamps and Zurel, 1980)

In the northeastern Lower Peninsula, Late Woodland groups appear to have the closest cultural ties with groups in the Straits of Mackinac regions; however, the co-occurrence of more

northerly ceramics with ceramics more typical of the Saginaw River valley region suggests that there was close interaction between these populations, as well as periodic use of some of the same environments (Holman and Kingsley, 1996). During the early Late Woodland period, Mackinac wares, with their globular bodies and everted rims, cord-marked exteriors, and typically simple geometric decorations made with a variety of corded tools predominated across this area. After about 1100 A.D., Mackinac wares were replaced by Juntunen wares, which are generally larger with less sharply everted collared—frequently castellated—rims, have smoothed exteriors, and are decorated with a variety of linear motifs made with plain tool punctations, incising, and the stab-drag technique (McPherron, 1967).

The settlement and subsistence economy of the Late Woodland groups in the northeastern Lower Peninsula were keyed around the development of the Inland Shore Fishery and deep-water fall spawning fish (Cleland, 1982; Martin, 1989). The Inland Shore Fishery allowed the formation of larger villages situated along the Great Lakes coast and higher population densities; however, the seasonal nature of the resource base still required groups to follow a pattern of seasonal mobility with warm season villages dividing into smaller family-based groups that appear to have moved into the interior for cold season hunting.

Native Americans in the Historic Period

The patterns of Native American settlement and subsistence across the eastern Lower Peninsula at the time of historic contact with the Europeans largely mirror the patterns seen toward the end of the Late Woodland period. The location and distribution of the traditional territories associated with the various Native American groups is not as clear, however, as it is in other parts of the Great Lakes region. This is in part a result of the fact that the earliest contact took place in the more eastern and northern parts of the Great Lakes region and a significant European presence was not established in the Lower Peninsula until after some of the major disruptions in Native American societies (Iroquois wars and European diseases) (Cleland, 1992; Cleland, 1999; Tanner, 1987). Historically, the Ojibwa appear to have been the predominant group in the northern Lower Peninsula, while members of the Fire Nation, including groups such as the Sauk and Fox, most likely predominated in the more southern parts of the region (Cleland, 1992; Cleland, 1999).

Following the seventeenth-century diaspora of indigenous tribes, the Ottawa and Ojibwa began to fill the geographic void across the eastern Lower Peninsula and had become well established in these areas by the middle of the eighteenth century (Cleland, 1992; Tanner, 1987). Following the American Revolution, a series of treaties beginning with the Treaty of Greenville in 1795 and culminating with the 1836 Treaty of Washington, passed control of the Lower Peninsula from Native American hands (Cleland, 1992).

1.1.3.5 States of Michigan (Upper Peninsula) and Wisconsin

Early and Middle Archaic Periods

The Early Archaic period begins about 10,000 B.P. and takes place during a time of continued environmental change as the landscape recovered from the after-effects of glaciation. The pine forests that dominated the region earlier were replaced by a mixed deciduous-coniferous forest by about 8,000 B.P. and then by essentially modern forests by about 7,500 B.P. (Davis, 1983; Webb et al., 1983). Fluctuations in the levels of the Great Lakes also continued. During this

period the historic low lake levels in the Lake Huron and Michigan basins were replaced by a gradual rising of the lakes until they reached a higher than modern level around 5,500 B.P. known as the Nipissing stage (Anderton, 1993; Larsen, 1985a; Larsen, 1985b). The large migratory game that the earlier Paleo-Indians had relied on and organized their economy around disappeared and were replaced with a wider array of large-, medium-, and small-sized game and a broad variety of plant resources.

As part of the response to these changing conditions, the tool kit used by Early and Middle Archaic populations in the region expanded to include a number of new tool forms designed for efficient exploitation of the new suite of resources that were emerging. Lanceolate points were replaced by a variety of notched and barbed projectile points, a wider variety of scrapers, bifaces and other tools, the beginning of the use of copper, and a variety of groundstone tools such as axes, adzes, and gouges were added to the repertoire. Early and Middle Archaic sites are virtually unknown in Michigan's Upper Peninsula and northern Wisconsin. A number of factors have been invoked to explain this lack of sites including a decline in population due to unfavorable environmental conditions (Fitting, 1975), inundation of many of the sites as lake levels recovered from the historic lows, and/or the inability to adequately identify and differentiate the sites due to the lack of diagnostic artifacts and associated radiocarbon dates (Stoltman, 1986:213). Based on information from more southern parts of the Great Lakes, however, it is believed that Early Archaic peoples continued a highly mobile lifestyle and possessed an economy that emphasized hunting and also incorporated a broader array of wild plant resources.

The Middle Archaic period (ca. 5,000 B.P.-3,200 B.P.) is distinguished by the manufacture of large side-notched projectile points, a marked increase in the use of copper for making tools and ornaments, and continued use of groundstone tools. The Old Copper culture (primarily a burial complex) developed during this period (Mason, 1981; Ritzenthaler, 1957; Stoltman, 1986; Stoltman, 1997). Some of the Middle Archaic sites excavated in the region are associated with the Old Copper culture and have produced a wide variety of tools and ornaments and possible evidence for the use of cemeteries. If sites like Riverside, Reigh, and Oconto did serve as burial grounds, it suggests that the people were beginning to better define territories and were less mobile than previous periods. While a mobile lifestyle following seasonally available resources probably typified this period, we know from the manufacture of copper fishing gear that fish were added to the economy and became an important part of it. The occurrence of the few major sites that are known in major river valleys also points to an increase in the importance of riverine and wetland resources.

Late Archaic Period

Across the northern Great Lakes, the Late Archaic period (ca. 3,200 B.P./1200 B.C.-1 A.D.) is better represented and understood than the preceding periods, although the number of excavated sites remains small (Fitting, 1975; Lovis, 2009; Mason, 1981; Robertson et al., 1999). Late Archaic cultures are differentiated from the earlier Archaic cultures primarily by changes in projectile point styles in which there is a proliferation of small and medium-sized notched, expanding stemmed, and stemmed types (Robertson et al., 1999). There is little evidence for the importation of goods from other areas aside from small quantities of high quality cherts and orthoquartzites; however, native copper continued in use and was probably traded outside the region. Late Archaic sites have been identified at a number of locales both across Michigan's Upper Peninsula (Anderton, 1993; Benchley et al., 1988; Conway, 1980; Dunham and Anderton,

1999; Fitting, 1974; Franzen, 1987; Wright, 1972) and in northern Wisconsin (Bruhy et al., 1999; Salzer, 1969; 1974; Stoltman, 1986; Stoltman, 1997).

In general, Late Archaic lifeways have been characterized as a diffuse adaptation based on scheduled use of a variety of plant and animal resources; fish were an abundant, highly productive and reliable resource (Cleland, 1976; Cleland, 1982). Available information indicates that the annual economic round focused on hunting with population movement to the coastal areas during the spring and summer where spearing shallow-water spawning fish, hunting waterfowl and mammals in adjacent wetlands, and collecting wild plant foods took place. In the winter, groups probably split into smaller family-sized units and moved into interior lake and other near-wetland settings where hunting was a primary activity (Dunham and Anderton, 1999). Evidence for a small oval or round house floor defined by a wall trench was identified at the Butternut Lake Inlet site in northeastern Wisconsin (Bruhy et al., 1999). The occurrence of acorns indicate these nuts were being processed at the site and recovered bone shows evidence of large game hunting and suggests that the site was occupied in the fall and possibly the winter. It has also been suggested that many of the small lithic scatters that lack pottery found on relict shorelines associated with earlier stages of the Great Lakes date to the Late Archaic period (Anderton, 1993; Conway, 1980; Franzen, 1987).

Woodland Period

The Woodland period is distinguished from the Archaic by more numerous sites that become larger through time and a number of technological innovations, such as the introduction of ceramics and new tools for fishing. Like the Archaic period, the Woodland period has been subdivided into Early, Middle, and Late subperiods (Halsey, 1999; Stevenson et al., 1997). Knowledge about the nature of the lifestyles practiced during each of these periods is uneven, at best.

Early Woodland occupations are poorly known in both the Upper Peninsula and northern Wisconsin. Aside from the possible introduction of pottery from the south, what little is known suggests that it represents a continuation of Late Archaic lifestyles; Early Woodland populations appear to have pursued a broad spectrum economy with aquatic resources playing an increasingly important role in the subsistence economy (Cleland, 1982). Pottery decorated with incised designs over cordmarked surfaces, known as Dane Incised, is associated with the later portions of the Early Woodland in southern and western Wisconsin (Howell, 2001). It also co-occurs with later Middle Woodland ceramics, suggesting that it may be a later arrival in the northern woods and is not associated with Early Woodland occupations.

The Middle Woodland or Initial Woodland (ca. A.D. 1-500 A.D.) period represents the first widespread introduction of pottery in the region. In general, these groups represent a Lake Forest (Fitting, 1975) or Northern Tier (Mason, 1966; Mason, 1981) adaptation that shares cultural traits with Laurel tradition sites to the north and west (Brose and Hambacher, 1999; Janzen, 1968). Pottery consists of vessels with wide mouths and conoidal (pointed) bases decorated with large plats of vertical and oblique stamped and impressed designs. Large corner-notched projectile points, small "thumbnail" end scrapers, and fishing equipment made from bone, antler, and copper are also elements of the Initial Woodland artifact assemblage. This is also the first period when regional differentiation of groups across the broader region becomes evident in the material culture (Brose and Hambacher, 1999).

Settlement and subsistence patterns indicate a reliance on seasonal fishing, collecting, and hunting with a continued increase in the emphasis on exploitation of aquatic resources. Sites like Summer Island (Brose, 1970), Winter (Richner, 1973), and Naomikong Point (Janzen, 1968) represent large warm season, coastal or near-coastal villages where people congregated to exploit spring spawning fish. Some dispersal into smaller summer fishing camps is also indicated. By the end of the Initial Woodland period there is also evidence that sites were more consistently located to take advantage of deep water-spawning fall fish. During the winter, groups appear to have dispersed into interior wetland and lake settings for hunting and fishing. Small aceramic lithic scatters located on relict beach ridges and interior wetland settings suggest that these resources were exploited year-round. In northern Wisconsin there is also an adaptation focused around the interior lake system known as the Nokomis phase (Salzer, 1969; Salzer, 1974; Salzer, 1986; Stevenson et al. 1996).

The Late Woodland period (ca. A.D. 500-1600 A.D.) is the best documented prehistoric cultural period in the northern Great Lakes. During this period a number of regionally distinct Late Woodland groups are evident across the region along with sites that are more closely affiliated with the Oneota tradition. Broad-scale changes in the technology and subsistence economies are present in the region beginning as early as 600 A.D. (Buckmaster, 1979; Clark, 1991; Cleland, 1982; Martin, 1989; Stevenson et al., 1997). The subsistence economies appear to be organized around the use of seasonally dense, abundant plant and animal resources such as spring and fall spawning fish, seasonal fruits and berries, acorns, and wild rice (Cleland, 1976; Dunham, 2010; Stevenson et al., 1997). Technological changes include the widespread adoption of the bow and arrow, the use of small triangular, notched, and flake projectile points, and the use of deep-water gill nets (Clark, 1991; Cleland, 1976; Cleland, 1982; Martin, 1989).

Pottery made in the eastern Upper Peninsula, the Straits of Mackinac, and northern Lower Michigan during the Late Woodland period, as epitomized by the sequence from the stratified Juntunen site (McPherron, 1967) documents a shift from a more western Blackduck affiliation during the early part of the period to an eastern Iroquoian influence after about 100 A.D. The early pottery is characterized by cordmarked surfaces, moderately to sharply out-flaring rims, and both simple and complex geometric decoration made with corded tools. In the late Late Woodland these ceramics are replaced by larger vessels with smooth surfaces, collars and castellations, and less everted rims decorated with a variety of linear designs made by stab-drag techniques and punctations. Serving as a fall fishing village, the Juntunen site also produced evidence for the use of corn, although it is unclear whether it was grown or traded into the area.

Similar, but regionally distinctive cordmarked early Late Woodland ceramics are seen in the Keweenaw Bay area (Sand Point ware), the Door Peninsula (Heins Creek ware), and the interior of northern Wisconsin (Lakes Phase). The economy of the makers of Heins Creek pottery appears to be oriented around the use of coastal resources, while the Lakes Phase people are focused on the interior lake systems. In addition to larger warm season coastal or lakeside villages and smaller interior winter hunting camps, Lakes Phase peoples are known to use both open cemeteries and burial mounds, which are often situated in headwater locations (Salzer, 1969; Salzer, 1974). The nature of the relationships between these different regional expressions of Late Woodland culture, however, remains poorly understood.

Beginning as early as the tenth century A.D., Oneota peoples related to the Mero Complex on the Door Peninsula begin appearing in northern Wisconsin (Bruhy, 2002; Mason, 1990; Overstreet, 2000) and spread across parts of the Upper Peninsula, most likely sometime around 1200 A.D. (Halsey, 1999). Oneota pottery consists of infrequently decorated grit- and/or shell-tempered globular vessels with sharply everted rims. Some exhibit occasional lip modifications and simple trailed designs. The presence of garden beds bespeak the use of maize horticulture by these peoples (Buckmaster, 2004), although they also appear to have incorporated locally available starchy-seeded annuals, like chenopodium, knotweed, little barley, and wild rice along with fruits and berries into their diet (Bruhy, 2002; Bruhy et al., 1999). Mounds and clusters of storage pits have been identified in proximity to a number of Oneota village sites in northern Wisconsin.

Native Americans in the Historic Period

It is clear that the historic Native American groups encountered across the region by the early French explorers had cultural ties with the preceding late Late Woodland period. Much of the Upper Peninsula was historically used by the Ojibwa and Ottawa; the Ojibwa also lived across northern Wisconsin. Other groups had traditional territories in the region, such as the Menominee in the Menominee River valley area, the Winnebago (Ho Chunk) in the Door Peninsula area, and Siouian speakers, primarily the Dakota and Assiniboine, farther to the west along the western shores of Lake Superior (Tanner, 1987; Trigger, 1976). Native American cultures were dramatically affected by European influences, land use, and political control by the mid-seventeenth century. French explorers, traders, and Jesuit missionaries begin making contact with Native American groups in the upper Great Lakes by this time (Cleland, 1992; Stone and Chaput, 1976; Tanner, 1987). It was also during this period that a number of groups were pushed west by the outbreak of hostilities with the Iroquois, setting off a series of movements that disrupted traditional distribution of Native peoples. Refugee Huron and Ottawa groups arrived in the Chequamegon Bay region around 1650, although they eventually relocated to the Straits of Mackinac region around 1670. As political control of this region passed from French (pre-1760), to British (post-1760), and finally American jurisdiction (1796-present), Native American societies changed in many respects as they became increasingly dependent on Euroamerican technologies and became intermeshed with the now-dominant society. Many aspects of the traditional cultures and beliefs have survived and area enjoying a resurgence in modern times.

1.1.4 EAST OF THE ROCKIES (EOR) REGION

1.1.4.1 State of Minnesota

Northern Minnesota extends across parts of the Central Lowlands and the Superior Upland physiographic provinces (Fenneman and Johnson, 1946). The Central Lowlands region of the state includes the Eastern Lake, Western Lake, and Dissected Till Plains sub-provinces.

Minnesota is mostly in the Northeastern Plains cultural region of the Great Plains, with a small portion of the northeast part of the state extending into the Northeast cultural region (DeMallie, 2001a; DeMallie, 2001b; Trigger, 1978). The prehistory of the state is outlined in a number of monographs and edited volumes (e.g., DeMallie, 2001a; DeMallie, 2001b; Frison, 2001; Harrison, 1985; Fitting, 1978a; Fitting, 1978b; Tuck, 1978).

A Cultural context for the prehistoric period in Minnesota and the larger area of the plains was developed in the early and mid-twentieth century by Kroeber (1936), and was elaborated by others in later years (Wilford, 1955; Quimby, 1960; Wedel, 1961; Bamforth, 1988; Johnson,

2004; Fitting, 1978a; Fitting, 1978b; Tuck, 1978; Gibbon et al, 2000). However, detailed cultural chronologies for the portion of Minnesota within 100 miles of the Canadian border are largely nonexistent, although chronologies have been developed for other parts of the state (Harrison, 1985).

The Minnesota State Historic Preservation Office (SHPO) has developed a historic preservation plan titled *Gaining Ground: A Preservation Plan for Minnesota's Historic Properties 2006-2010* (2006) that includes cultural contexts for both the prehistoric and historic periods. The foundation for the current plan was created in 1995, in a document titled *Preserving Minnesota: a Plan for Historic Properties in the New Century* (MN SHPO, 1995). The prehistoric cultural chronology for Minnesota divides the approximately 11,500-year continuum into five main phases or cultural traditions (MN SHPO, 2010). From earliest to latest, the defined traditions are:

- Paleo-Indian Period (see Section 1.1.1)
- Archaic Period
- Woodland Period
- Plains Village Tradition
- Mississippian Tradition

The prehistoric context is available at http://www.mnhs.org/shpo/survey/docs_pdfs/HistoryArchitectureSurveyManualOctober2010.pdf

Archaic Period

During the Archaic Period (ca. 8,000 B.P. –2,500 B.P.), the subsistence practices focused on hunting and gathering as suggested by the presence of flaked stone spear and dart points, bifaces, scrapers, and knives. Groundstone and copper tools also appear during this time period. Typical sites include stone quarries and resource procurement areas, tool production sites, hunting and game processing sites, and camps.

Woodland Period

The Woodland Period (ca. 500 B.C. (2,500 B.P.) – 900 A.D., and 1650 A.D. in some areas) witnessed a transition from a somewhat mobile settlement system to a more sedentary lifeway with semi-permanent villages. The development and use of pottery and more elaborate human burials are key elements of the period. Artifact assemblages typically include bone artifacts, bone and shell beads and ornaments, ground stone implements, and small projectile points. Sites include resource procurement sites, villages, camps, hunting and processing sites, and burial mounds.

Plains Village Tradition

The Plains Village Tradition (ca. A.D. 900–1300 A.D.) is characterized by the development of villages focused on cultivation of crops along river banks and major drainages. Structures include lodges and stockaded village compounds. The range of artifact types produced during the Plains Village Tradition far exceeded the variability in earlier assemblages. Among the items

they comprised were copper implements, bone and stone tools, small stone arrow points, and elaborately decorated ceramics. Typical sites include those related to resource procurement, villages, camps, hunting and processing sites, and burials.

Mississippian Tradition

The Mississippian Tradition (ca. 900 A.D.–1650 A.D.) in Minnesota was primarily confined to the southern parts of the state, but some of its elements (particularly those related to ideology) probably extended further to the north. The Mississippian had its origins in the southern United States and is partially characterized by cultural influences from Mexico. Its defining qualities include an intensification of agriculture, along with increases in the size and complexity of communities and cultural systems. While unquestionably influenced by Mississippian Tradition developments to the south, sites in Minnesota display a variation of those lifeways to life in forest and prairie environments. Cultivation relied heavily on corn, beans, squash, sunflowers, and tobacco. Hunting and fishing were also important. Small side-notched arrow points are typical of this period, as are groundstone tools (e.g., axes, hammerstones, mauls, and grinding stones), bone and antler tools, shell, bone and copper beads and ornaments, and incised pottery. Typical sites of the Mississippian Tradition period include large villages, agricultural fields, tool production loci, hunting and processing sites, and burials.

1.1.4.2 State of North Dakota

Northern North Dakota extends across parts of the Great Plains and Central Lowlands physiographic provinces (Fenneman and Johnson, 1946). The area in the Great Plains province includes both the glaciated and unglaciated Missouri Plateau sub-provinces. The Central Lowlands province includes the Western Lake sub-province.

Northern North Dakota is in the Northern Plains cultural area (Wood, 1998:11). The prehistory of the state has been summarized in several monographs and edited volumes, including Wood (1998:1-15; 2001:186-195); Kay(1998:16-49); DeMallie (2001b); Frison (1998:140-172; 2001: 131-145); and Johnson (1998:159-172). The Great Plains cultural area extends from central Canada to southern Texas.

A Cultural context for the prehistoric period in North Dakota and the larger area of the Great Plains was developed in the early and mid-twentieth century by Kroeber (1939), and was elaborated by others in later years (Wedel, 1961; Bamforth, 1988; Frison 1991, Gregg, et al., 2008; Kornfeld et al 2010). Detailed cultural chronologies for the northern portion of North Dakota are largely nonexistent, although chronologies have been developed for other parts of the state (Gregg, 1984; see ND SHPO, 2009; Gregg et al, 2008). The North Dakota State Historic Preservation Office (ND SHPO) has developed a historic preservation plan titled *Historic Preservation in North Dakota, 2010-2015: A Statewide Comprehensive Plan* (2009) that includes cultural contexts for both the prehistoric and historic periods. Its prehistoric cultural chronology is illustrated in Figure H-1.

In common usage, the prehistoric cultural chronology for North Dakota includes five archaeological traditions: Paleo-Indian, Plains Archaic, Plains Woodland, Plains Village, and Equestrian Nomadic. The time periods for each vary across space.

Figure H-1. Prehistoric/Precontact Cultural Chronology for North Dakota

Cultural Periods	Years AD - BC	Cultural Traditions	Cultural Complex
Equestrian/Fur Trade 1780 - 1880	1780	Equestrian Nomadic	One Gun Knife River Heart River Painted Woods Middle Missouri Shea Northeastern Plains Devils Lake/Sourisford
Plains Village AD 1200 - 1780	1500 1250	Plains Village	
Late Plains Woodland AD 600 - 1200	1000 750	Plains Woodland	Charred Body Sandy Lake Blackduck Kathio Arvilla
Middle Plains Woodland 100 BC – AD 600	500 250 0		Avonlea Laurel Besant Sonota
Early Plains Woodland 400 – 100 BC	250		
Late Plains Archaic 1000 – 400 BC	500 750	Plains Archaic	Unnamed Early Woodland Pelican Lake Yonkee
Middle Plains Archaic 2800 – 1000 BC	1000 2000		Hanna Duncan McKean Lanceolate
Early Plains Archaic 5500 – 2800 BC	3000 4000 5000		Oxbow Hawken Logan Creek
Paleo-Indian 9500 – 5500 BC	6000 7000 8000 9000	Paleo-Indian	Caribou Lake Pryor Stemmed Parallel-Oblique Flaked Cody Hell Gap Agate Basin Folsom Goshen Clovis

Source: (Gregg et al., 2008).

Plains Archaic Tradition

The Plains Archaic (ca. 7,500 B.P.–2,400 B.P.) is divided into Early (ca. 7,500 B.P.–4,800 B.P.), Middle (ca. 4,800 B.P.–3,000 B.P.), and Late (ca. 3,000 B.P.–2,400 B.P.) periods (e.g. Dyck and Morlan 2001; Wedel 1983). Plains Archaic complexes are primarily represented in the North Dakota archaeological record by distinct types of projectile points, including: Logan Creek, Hawken, Oxbow, McKean Lanceolate, Duncan, Hanna, Pelican Lake, and Yonkee. Throughout the Plains Archaic, people were inhabiting and continually adapting to environments that were changing from a periglacial habitat to those with essentially modern characteristics. Much of this climatic and environmental change occurred during the first few millennia of the time period, ca. 7,500 B.P. to 4,000 B.P., a time represented archaeologically by the ‘Mummy Cave’ series of sites. In general, the evidence from these sites indicates people were surviving as

“mobile bands using large territories within a thinly populated region” (Dyck and Morlan, 2001:115). Mummy Cave artifacts primarily comprise stone tools, among which are notched projectile points such as the Blackwater and Hawkins types, as well as a geographically-widespread series of simple implements manufactured from chert pebbles that were used as scrapers and wedges. Although far fewer in number, sites also have yielded bone implements, such as needles, knives, hooks, flaking tools, and awls. The atl-atl (or ‘spearthrower’ is probably also developed during the first few millennia of the Plains Archaic). The evidence indicates people were primarily relying on bison for food, although remains from other animal species are also found at archaeological sites, such as those of ground squirrels, canines, and small mammals. Although there is very little direct evidence for plant use, it is highly likely that people were gathering floral material for use as food and for implement manufacture (e.g., baskets). Sites are typically found along large rivers and include camps and animal kill sites.

The part of the Plains Archaic that extends after ca. 4,000 B.P. includes archaeological assemblages from the Pelican Lake and Besant series of sites, which are distinguished primarily on the basis of their distinct projectile points. Both relied heavily on the Bison and lived in tepee-like structures. Their sites tend to be along rivers and include habitations and burial and kill sites; some burials are covered with rock cairns (Dyck and Morlan 2001:121-125).

Plains Woodland Tradition

The Plains Woodland tradition (ca. 2,400 B.P.–1200 A.D.) is divided into Early (ca. 400 B.C.-100 B.C.), Middle (ca. 100 B.C.- 600 A.D.), and Late (ca. 600 A.D.-1200 A.D.) periods. In general, Plains Woodland people continued a strategy of subsistence based on hunting and gathering, but also began to inter their dead in mounds with increasingly elaborate grave goods. They also developed ceramic vessel technology and intensified their use of indigenous seedy plants and grasses for food. The bow and arrow technology and point types generally replaced the atlatl around 600 A.D. Plains Woodland complexes are identified in the archaeological record in North Dakota through the presence of distinct types of projectile points, such as the Sonota/Besant, Laurel, Avonlea, Arvilla, Kathio, Blackduck, Charred Body, and Sandy Lake types. Sites tend to be clustered along rivers and include burial mounds and other burial sites, occupations, quarries, lithic procurement areas, and bison kill loci.

Plains Village Tradition

People of the Plains Village tradition (ca. 1200 A.D.–1780 A.D.) were horticulturists, hunters, and gatherers. They lived in the North Dakota area from as early as ca. 1200 A.D. until ca. 1780 A.D., after which their populations were decimated by plagues of European diseases and the migration of Euro-American settlers into their territory. It is generally believed that the key element in Plains Village adaptive strategies was the production of a dependable, storable, surplus food supply, primarily in the form of dried corn. Stored surpluses of food facilitated the formation of larger, more permanent settlements based around earth lodges.

Typical Plains Village sites types include semi-permanent occupations (among which are fortified and unfortified earth lodge villages, and winter villages and some of which included conical timber lodges), hunting camps, flint quarries, eagle trapping sites, burial sites, lithic workshops, bison kill sites, and rock art sites.

Equestrian Nomadic Tradition

The Equestrian Nomadic tradition (ca. A.D. 1780–1880 A.D.) describes lifeways that were dependent upon horses and that developed during protohistoric and early historic times in the Northern Plains. The use of horses resulted in significant changes in subsistence economies, demographics, social organization, and settlement patterns. Known site types include camps, battle sites, and animal kill sites.

1.1.4.3 State of Montana

The project area that encompasses northern Montana spans two major physiographic provinces, as defined by Nevin Fenneman and D.W. Johnson (1946). The eastern portion of the northern border is situated in the glaciated area of the Missouri Plateau section, within the Great Plains province, in the Interior Plains division. The smaller, western most portion of the northern border falls within the Northern Rocky Mountains province of the Rocky Mountain System division.

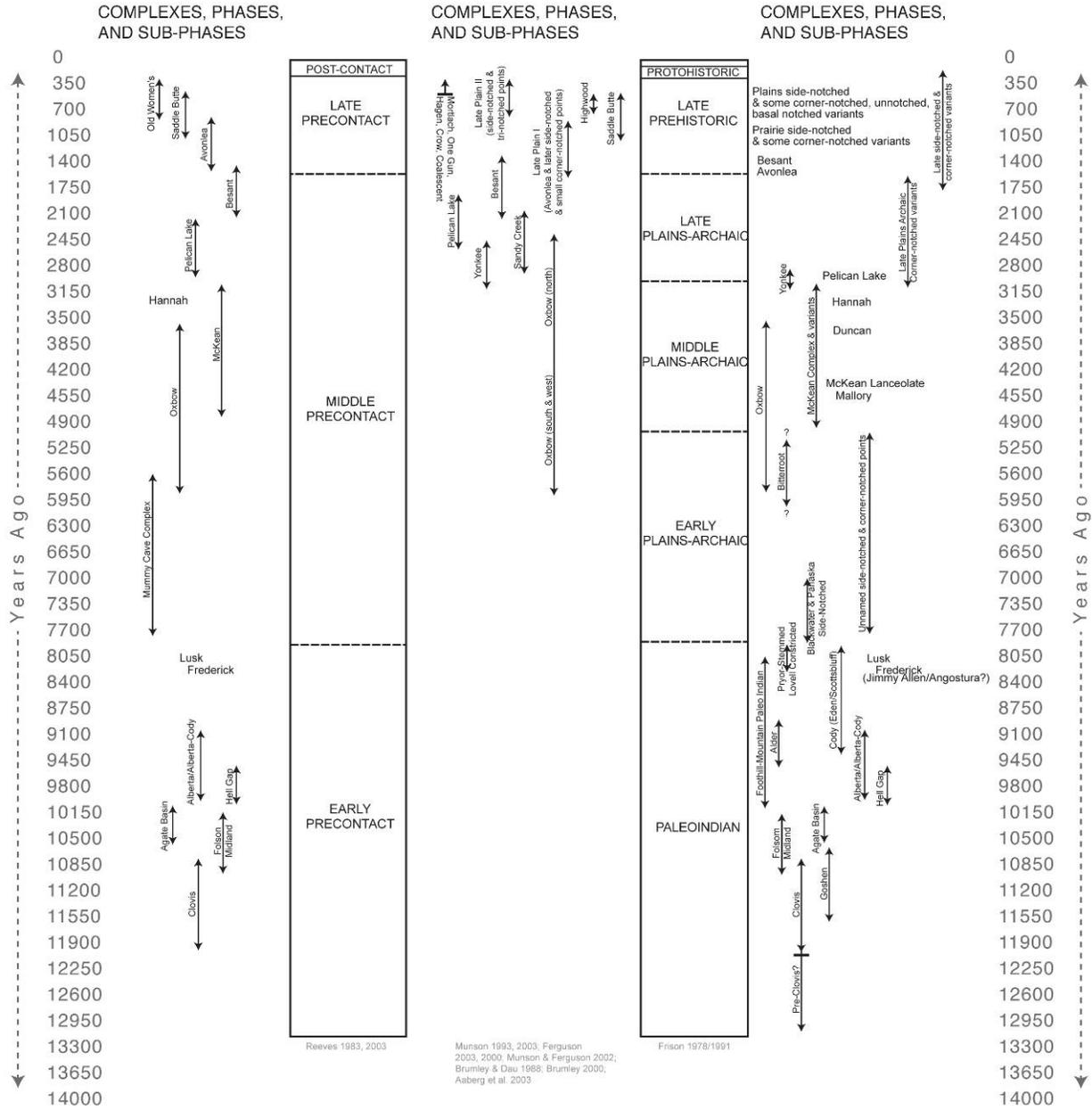
Various attempts have been made to link precontact (prehistoric) culture areas with natural physiographic areas of the region, and the western United States (Mulloy, 1958; Wedel, 1961; Frison, 1991).

Cultural contexts for the precontact period in Montana were first developed in the 1950s (Mulloy 1958), and were revised by others in later years (Reeves, 1970, 1983; Frison, 1991; DeMallie, 2001b; Kornfeld et al, 2010). Regional chronologies and precontact contexts have been developed for specific areas within the state. Although some revisions continue, the basic cultural chronologies remain unchanged. Aaberg (2006) synthesizes a regional context for precontact archaeological sites in eastern Montana. Similar contexts have been devised from data originating from specific areas of the northwestern plains and northern Rocky Mountains, but have resulted in chronologies that are generally applicable throughout northern Montana (Greiser, 1984; Frison, 1991, 2001; Davis et al, 1995). These chronologies, describing the precontact context of the project area, are summarized below.

Due to the lack of a single cultural context for the precontact period in Montana, this brief summary utilizes the synthesized cultural context developed by Aaberg (2006), which is a compilation of several sources (Figure H-2).

The precontact cultural chronology for Montana separates the approximately 13,000-year continuum into four main phases, descending through time from the Post-Contact or Protohistoric, at the recent end of the timeline, to the Late Precontact or Late Prehistoric, to the Middle Precontact or Plains-Archaic, and beginning with Early Precontact or Paleo-Indian.

Figure H-2. Prehistoric/Precontact Cultural Chronologies for Montana and Surrounding Areas of the Northern Great Plains



Source: (Adapted from Aaberg et al., 2006.)

Notes: Frison’s (1991) chronology further separates the Plains-Archaic period into three sub-periods of Late, Middle, and Early.

Middle Precontact (early portion)/Early Plains Archaic Period

Frison (1991) separates the Archaic Period (ca. 7,800 B.P.–5,000 B.P.) into three subdivisions, the Early-, Middle-, and Late-Archaic. Reeves (1970, 1983) does not indicate separate subdivisions for his defined Middle Precontact Period, which is conterminous with the Archaic. The archaeological record shows a reliance on bison hunting, with some locations of mass killing. Frison (1991) notes an increase in the frequency of ground stone tools throughout the archaeological record for this

period, possibly related to a corresponding increase in the procurement and processing of plant food products.

The major change observed in the material culture of the Middle Precontact Period is evidenced by the disappearance of lanceolate and large stemmed projectile points, typical of the Early Precontact/Paleo-Indian Period. The tool collection is exemplified by side-notched and corner-notched point types. Throughout the area, the characteristic site types include lithic scatters and tool production sites, camp sites, game drives and processing sites, and related occupation and use areas.

Middle Precontact (middle portion)/Middle Plains Archaic Period

The middle portion of the Middle Precontact Period (ca. 5,000 B.P.–3,000 B.P.), discussed by Reeves (1970, 1983), corresponds to Frison's (1991) definition of the Middle Plains Archaic Period. This differentiated period appears to be one of transition in climatic conditions, availability of natural resources, and corresponding changes in human cultural attributes and artifact assemblages.

Although there are possibly older examples within the area of Montana, stone tipi rings are represented in the archaeological record by 4,000 years B.P. (Brumley and Dickerson, 2000).

Diagnostic stone tools, in the form of projectile points and other biface tools, identified in the archaeological record during this time interval, show a continuation of the side-notched and corner-notched forms of the previous sub-period.

Other stone tools include oval bifaces, lanceolate-shaped bifaces, knives, small end scrapers, unifacial knives and side-scrapers, small pebble hammerstones, chopping tools, irregular polyhedral cores, perforators, and flake tools (Melton, 1988; Aaberg et al, 2003). Site types range the full spectrum, from lithic scatters and tool production sites, quarry sites, and habitation sites with tipi rings, to camp sites, game drives and processing sites, and related occupation and use areas.

Middle Precontact (late portion)/Late Plains Archaic Period

This sub-period (ca. 3,000 B.P.–1,500 B.P.) is characterized by a continuation of big game hunting, with emphasis on bison in the plains and lower mountain valley regions of Montana. Strong evidence for large-scale, communal bison kills date to this time (Aaberg et al, 2006:177). Acquisition of bison during this period is documented from drives, cliff jumps, traps, and impoundments.

Increased use of the tipi as a habitation structure is noted during this period. Ceramics first appear at cultural sites on the plains of eastern Montana at the end of this time period (Kornfeld et al, 2010:432-440). Continued use of ground stone implements is also seen in the archaeological record, along with use of the atlatl for throwing hafted projectile points.

The dominant tool kit of the late portion of the Middle Precontact/Late Plains Archaic Period includes predominantly corner-notch projectile points and lithic tools, flake tools, drills, scrapers, bifacial cores, beveled edge bifacial knives, and ground stone tools (Ferguson, 2003; Frison, 1991; Kornfeld et al, 2010).

Site types range across the full spectrum, from lithic scatters and tool production sites, quarry sites, and habitation sites with tipi rings, to field-camp sites, game drives, kill sites and processing areas, rock cairns, and related occupation and use areas.

Late Precontact/Late Prehistoric Period

The major shift in technology that occurred at the beginning of the Late Precontact/Late Prehistoric Period (ca. 1,500 B.P.–200 B.P.) throughout Montana is the introduction of the bow and arrow (Frison, 1991; Kornfeld et al., 2010). Large game hunting, with a focus on bison procurement, including communal kills and hunting, is seen as the primary subsistence adaptation of the time (Aaberg, 2006:185). Many other species of game and smaller animals were also acquired, often throughout a broader seasonal schedule.

Other cultural attributes of the period within Montana include relatively large quantities of projectile points and point preforms, large numbers and types of bone and sandstone tools, as well as faunal remains from rodents and large ungulates (Fredlund 1988). Ceramics also have been identified at sites in the northern extent of the Plains (Johnson, 1988; Quigg, 1988). As is the case with the earlier period, site types during this time range across the full spectrum, from lithic scatters and tool production sites, quarry sites, and habitation sites with tipi rings, to field-camp sites, game drives, kill sites and processing areas, rock cairns, trails, and related occupation, ceremonial sites, and use areas.

Postcontact/Protohistoric Period

The beginning of the Postcontact/Protohistoric Period (ca. 250 B.P.–100 B.P.) is generally defined as the time during which the horse and European trade goods were introduced to native cultures. The acquisition of the horse, guns, metal knives, and other goods from the eastern United States caused a dramatic change in the established but dynamic cultures of the Native American's residing in the Northern Rocky Mountains and Northwestern Plains. As a result, hunting and subsistence strategies began to change at this time as well.

The Post contact Period resulted in a blending of cultural artifacts, tools, and cultural activities – a combining of traditional technologies and items with newly acquired trade items. The traditional tool kit was supplemented by factory made fabrics, European-style clothing and ornaments, trade beads, guns, and ammunition, as well as metal objects, including tools, cookware, knives, arrow points, axes, and lances.

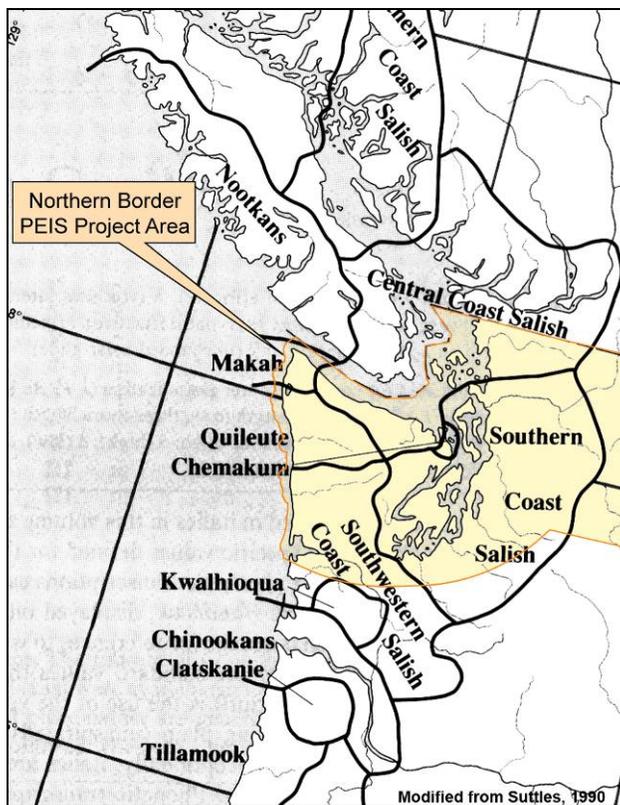
1.1.5 WEST OF THE ROCKIES (WOR) REGION

1.1.5.1 States of Washington and Idaho

Two Native American Culture Areas, defined over the past century by anthropologists and archaeologists, provide a useful characterization of the pre-contact archaeology and ethnography of Washington and Idaho within the Northern Border Programmatic Environmental Impact Statement (PEIS) project area. The Northwest Coast Culture Area (Figure H-3) is comprised of linguistic groups that inhabited the Pacific Coast of the United States and Canada, from northern California to the Alaskan Panhandle and extending inland one hundred miles or more into the Cascade and Coastal mountain ranges. The Plateau and Northern Rocky Mountain Culture Area (Figure H-4) is comprised of linguistic groups inhabiting intermontane western North America

between the Coast and Cascade Mountains and the northern Rocky Mountains. Only a narrow portion within each Culture Area may be affected by the actions considered in this PEIS.

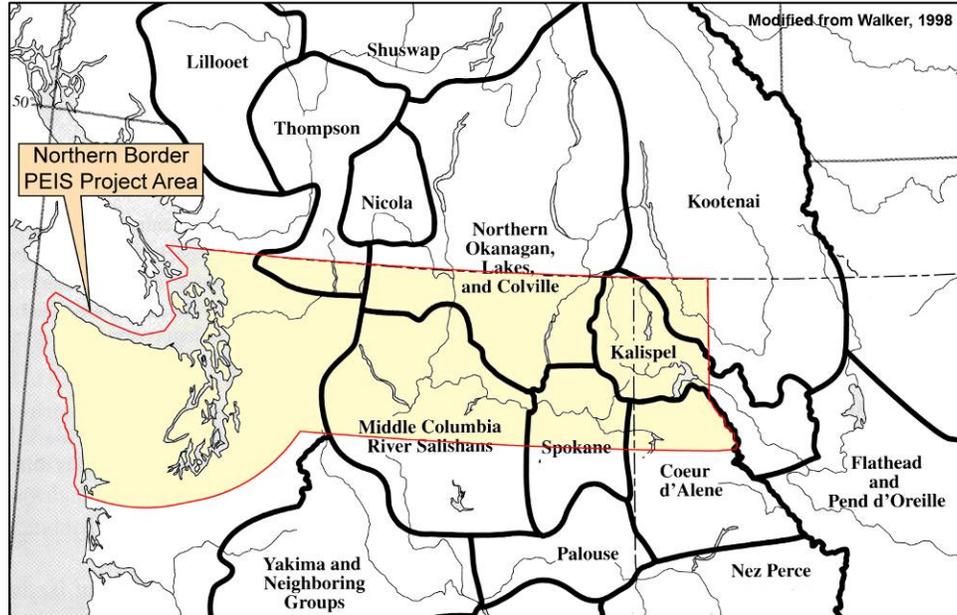
Figure H-3. Northwest Coast Culture Area



1.1.6 Northwest Coast Culture Area

The traditional territory of Southern and Central Coast Salish groups corresponds with the Puget Sound and Strait of Juan de Fuca region. In addition to these groups, the Makah, Quileute, and Southwestern Coast Salish traditionally inhabited the outer Pacific Coast and Olympic Peninsula (Suttles, 1990). Several broad environments within this Northwest Coast Culture Area are bisected by the PEIS zone and are relevant when considering Native American settlement patterns and the potential for impact to archaeological resources. The Olympic Peninsula is characterized by high-energy coastlines on its western and northern shores, a deep but protected fjord on its eastern shore, and inland topography dominated by steep-walled river valleys radiating outward from the Olympic Mountains. The remainder of the PEIS zone within the Northwest Coast Culture Area corresponds with the Puget Lowlands and the western flanks of the Cascade Mountains. The lowlands are characterized by a broad glacial drift plain and relatively low-energy marine embayments and islands in the Puget Sound and Strait of Georgia, all of which were created by advance and retreat of the Puget Lobe of the Cordilleran ice sheet at the end of the Pleistocene. The drift plain is dissected by river systems originating in the Cascade Mountains, which attain elevations exceeding 10,000 feet (3,048 meters) above sea level at the summits of several stratovolcanoes.

Figure H-4. Plateau and Northern Rocky Mountain Culture Area



Land Use

Native American subsistence and settlement in this portion of the Northwest Coast Culture Area witnessed a continuity of economic focus that included hunting, fishing, and gathering since the end of the Pleistocene epoch (Ames and Maschner, 1999). The allocation of these pursuits changed, however, as the environment of Western Washington was altered by geological and climatic processes. With these changes, the human population grew and suitable locations for hunting, fishing, gathering, and settlement shifted as well. The archaeological record suggests the earliest human occupants of Western Washington lived in small, highly mobile groups that pursued a variety of game, including now-extinct large terrestrial mammals, across a landscape that was quickly changing in terms of post-Pleistocene marine shoreline configuration and plant and animal communities. Relative sea level was in the process of stabilizing during the early Holocene epoch, and the archaeological record reflects a terrestrial economic focus ranging from the crest of the Cascade Mountains down to what was during that period a marine shoreline gradually being inundated. Archaeological evidence of fishing along major river systems during the early Holocene exists, but the importance of salmon fishing during this time relative to other subsistence pursuits is much more equivocal than later in the Holocene. The past 5,000 years is a period when sea level and river valley systems stabilized, allowing salmon and shellfish habitats to establish themselves and growing Native American communities to adjust to their location and abundance for subsistence. Vegetation throughout the lowlands and uplands also approximated its modern character by the mid-Holocene. Seasonal berry-picking in the uplands became another cornerstone of Native American land use, which archaeologists hypothesize has intensified over the past several thousand years. Native American land use shifted dramatically as a result of initial Euroamerican contact at the end of the eighteenth century, when disease epidemics decimated communities (Boyd, 1999).

Site Types

Broad-scale changes in Native American land use from the end of the Pleistocene to first encounters with Euroamerican explorers in the late 1700s are manifested in the archaeological record by a variety of artifacts and features. Archaeologists have classified this material into assemblages to infer chronological sequences and past lifeways. This brief overview describes the kinds of pre-contact Native American archaeological deposits found in Western Washington and the patterns in their distribution that have been formally studied since the mid-twentieth century. Artifacts and assemblages characteristic of particular chronological periods are further described in the subsequent section.

Archaeological sites clearly associated with any kind of residence are quite rare in Western Washington. These sites contain hearths, cooking and food processing features, post-molds and other structural remnants indicative of both domestic and economic activities. The ethnographically derived categories of *village* and *camp* are often used to differentiate particular residential sites in the prehistoric archaeological record of the Northwest Coast. In the logistically-organized settlement patterns that characterized much of the Northwest Coast around the time of contact, villages were the central residential unit of a particular community for at least a portion of its seasonal economic round. Archaeological remains consist of either multiple residential structures or a single very large house, a diverse artifact assemblage reflecting a wide variety of economic and social activities, and the remains of subsistence resources harvested across several seasons. In the same kind of settlement pattern, camps are more seasonally limited residences of families and task groups and are situated at or near important resources. They are usually manifested by features of a single dwelling, artifacts reflecting only a single or a few economic pursuits, and deposits that are less extensive and lack the stratigraphic complexity of village sites. Overall mobility of Native American communities was greater prior to the village-oriented settlement pattern hypothesized for most of the central Northwest Coast over the past few thousand years. Instead of a single village, community residences were centered on several base camps throughout the annual economic cycle, and smaller camps were used for specific tasks. Most residential sites that have been identified in this region are situated in places that allow easy access to subsistence resources, fresh water, and transportation corridors such as marine shorelines, river valleys, and mountain ridge lines and passes.

Much more common than residential sites along the central Northwest Coast are the archaeological remains of harvesting and processing activities and lithic tool manufacture and maintenance. Such deposits are also found as part of residential sites, but are more frequently identified without additional evidence of dwellings. Examples of these kinds of sites include most *shell middens*, comprised of shellfish and other faunal remains discarded during their processing and consumption. Their size, thickness, extent of stratigraphic complexity, and contents vary widely. All provide at least some information regarding past subsistence, and often datable organic material as well. The soil chemistry of shell middens allows preservation of bone, including human remains. Shell middens are usually situated along the shoreline at the time of deposition, but subsequent tectonic activity and sea level change have resulted in the discovery of middens today in both intertidal environments and inland along former beach landforms. Other *resource processing features* such as camas ovens and storage and roasting pits are found in a wider variety of settings, from huckleberry grounds in montane environments to wetlands and prairies in both the coastal and interior lowlands. They are manifested by concentrations of fire-modified rock, charcoal, and burned sediment, and sometimes the remains

of processed resources such as charred plant material, seeds, or calcined bone and shell. Where the landscape has undergone the most intensive historic and modern development, most notably in urban and suburban areas and tilled agricultural land, all that may be left of these sites are dispersed loci of fire-modified rock and little else to indicate their age or function.

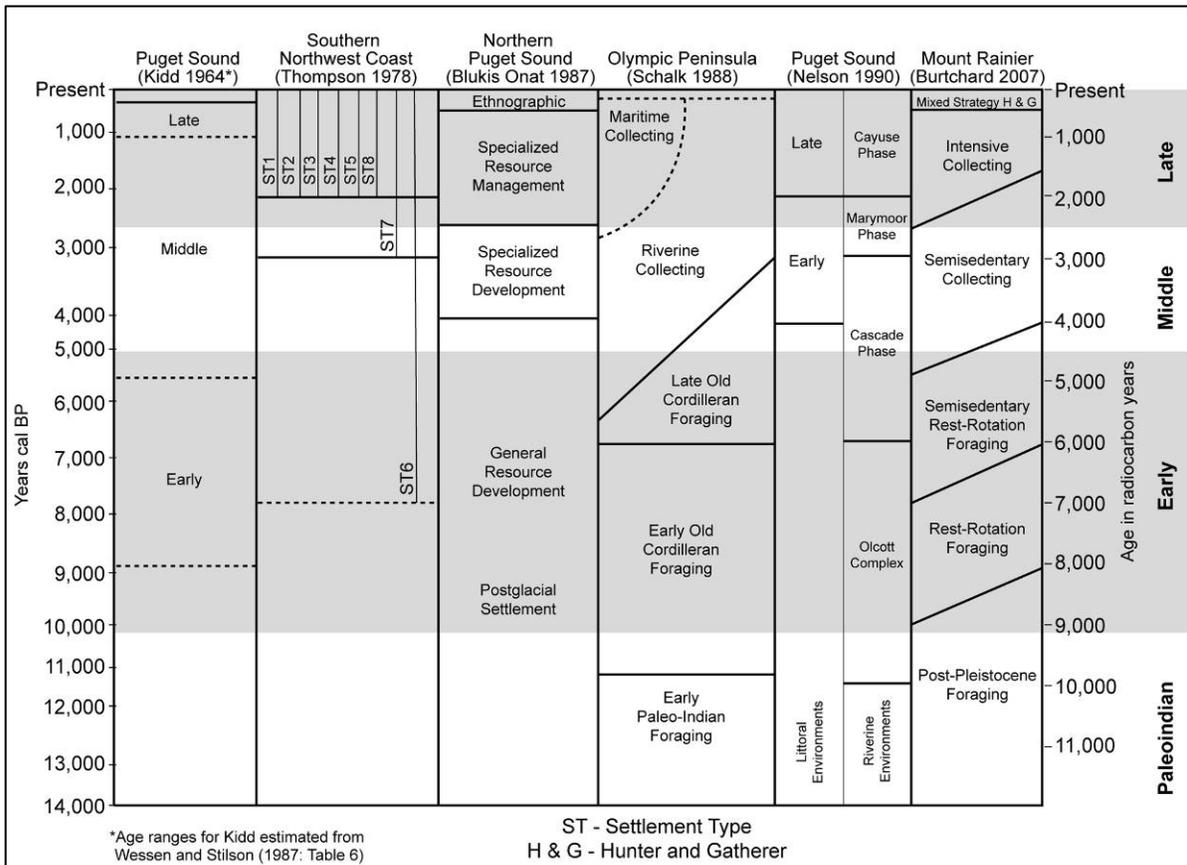
Lithic tools and tool-making debris are often found unassociated with features or cultural stratigraphy that would otherwise provide ages or contexts to interpret their functions or places in a particular land use pattern. Such sites are usually referred to as *lithic scatters* or *lithic material sites*. *Quarry sites* are distinctive lithic material sites in that they have been identified at natural outcrops of toolstone and consist of dense concentrations of cores and debitage with few if any finished stone tools. Estimating the age of lithic material sites is also difficult if they lack temporally diagnostic artifacts such as projectile points. These sites are found on almost every part of the landscape of Western Washington, from high elevation toolstone outcrops and ideal vantage points for hunting to the broad lowlands and coast.

Prehistoric Chronological Sequence

Several published culture-historical sequences are important to the identification and interpretation of the Western Washington archaeological record. All focus on sub-areas within this portion of the PEIS zone or neighboring regions of British Columbia. The more recently derived sequences often build on the work of early researchers and share similar age divisions and characteristics of periods, phases, and other culture-historical units. The designations of chronological periods, their characteristics, and their implications for the archaeological record in the PEIS zone are summarized in a very general fashion in this section. The periods used here include the *Paleo-Indian*, *Early*, *Middle*, and *Late* Periods. This terminology is similar to some of the specific sequences cited below; however the divisions between them as conceptualized in this document follow major environmental changes as well as patterns of human land use: the end of the Pleistocene epoch and the early Holocene (ca. 10,000 B.P.-5,000 B.P.), middle-late Holocene (ca. 5,000 B.P.-2,500 B.P.) and late Holocene before Euroamerican contact (ca. 2,500 B.P.-200 B.P.).

The summary below is derived from sequences developed for the Strait of Georgia and San Juan Islands area (King, 1950); the Fraser Delta area (Borden, 1970); the Skagit River delta (Thompson, 1978); central and northern Puget Sound (Blukis Onat, 1987; Kidd, 1964; Nelson, 1990); the Cascade Mountains (Burtchard, 2007); and the Olympic Peninsula (Schalk, 1988; Wessen, 1990). The northern lowlands portion of the PEIS zone centered on the San Juan Islands and Strait of Georgia has a more fully developed culture historical sequence and formalized phase system, which is a product of the earliest intensive excavation in the central Northwest Coast occurring here (Borden, 1950; Carlson, 1960; King, 1950; Stein, 2000). A comparative schematic of some of these sequences is shown in Figure H-5, which demonstrates the variability of temporal divisions between culture historical sequences of particular sub-regions environmental zones. More general overviews of Northwest Coast prehistory contain useful summaries of the prehistoric cultural sequences in other areas, broader patterns across the region, and persistent research questions that have guided research in this region (Ames and Maschner, 1999; Matson and Coupland, 1995).

Figure H-5. Western Washington Chronological Sequence



Early Period

During the early Holocene (ca. 10,000 B.P.-5,000 B.P.), the region experienced a relatively stable environment compared with the dynamic changes that occurred at the end of the Pleistocene, albeit one warmer and drier than today’s climate. Relative sea level fluctuation was the most significant long-term environmental perturbation; rising global sea level during this time submerged the marine shorelines that may have been occupied during earlier times. Brush fires and forest fires were common during periods of summer drought and caused short-term, localized environmental changes in the forest parkland habitats. By the end of this period, the post-glacial parkland/forest mosaic across much of Western Washington evolved into a closed canopy forest. The distribution of important subsistence resources such as deer and elk changed, and human land use patterns changed as well. Prior to the mid-Holocene closing of the forest canopy, terrestrial mammals were a subsistence resource widely available throughout the glacial drift plains. The first well-dated evidence of generalized, marine littoral subsistence first appears in the archaeological record of the Gulf of Georgia region during this period as well.

Humans accommodated environmental changes during the Early Period by utilizing a wider range of subsistence resources. Increasingly complex patterns of land use resulted in additional archaeological site types, more elaborate toolkits, and more intensive use of the marine shoreline and anadromous fish runs that grew more productive as the pace of rising sea level slowed. The archaeological record of residential camps is still very sparse during this period, probably due in

large part to poor preservation of landforms of suitable age that would host such sites. Specific activity sites that first appear during this period include high-elevation lithic quarries in the North Cascade Mountains, stone tool manufacturing sites on older river terraces in the foothills and glacial drift plain lowlands, and isolated finds of large lanceolate projectile points often made of volcanic rock that are usually attributed to early Holocene-aged manufacture.

Middle Period

The period between 5,000 (B.P.) and 2,500 (B.P.) years ago was pivotal for changing human land use in Western Washington. This period encompasses the shift from relatively high residential mobility to a pattern of logistical mobility. The archaeological record shows this change as an increasingly diverse range of site types and a greater proportion of non-residential sites associated with resource procurement and processing in a variety of settings. Development of a closed canopy forest and coeval reduction in the density and distribution of ungulates was probably an important factor in this diversification. A relatively stabilized sea level by the mid-Holocene promoted development of shellfish beds along the marine littoral, and the growing human population utilized this labor-intensive but seasonally profitable resource; the majority of shell middens in Western Washington postdate ca. 5,000 B.P.

The archaeological record of Western Washington grows substantially during this period in terms of dated site components. Artifact assemblages from the period demonstrate more elaborate technologies to access an increasingly diverse range of new resources and to better utilize old ones. Along with widespread distribution of shell middens along the marine shoreline, artifacts and features associated with fish processing and hunting along the lower and middle reaches of rivers have been found. The period is characterized by a growing human population, increasing diversity of utilized habitats facilitated by changing technology, and a much greater proportion of landforms that survive today than from previous time periods. The broad corridor of the PEIS zone contains landforms that are archaeologically sensitive for this period and that transect the Olympic Peninsula, the Puget Sound lowlands, the San Juan Islands, and the foothills and mountains of the Cascade Range.

Late Period

The diversity of site types, physical characteristics of deposits, and distribution of archaeological sites across multiple microenvironments over the past 2,500 years (Late Period, ca. 2,500 B.P.-200 B.P.) reflect a well-established seasonal round in Western Washington largely analogous to ethnographically described land use patterns. The seasonal round of land use that centered on winter villages was established in the region by this time. Many landforms in Western Washington have the potential to retain intact archaeological material dating to the period between 2,500 and 200 years ago; areas with the highest probabilities include the marine littoral, intact levees and terraces on alluvial floodplains, the shores of mountain lakes, mountain ridge complexes, and prairies.

Along with a greater diversity of site types, feature classes, and artifact forms, there is increasing evidence in the archaeological record of social stratification, long-distance trade, and intensified use of subsistence resources such as shellfish, salmon, and plants that are most useful when a sufficient labor pool and appropriate technology are brought to bear. Most of these characteristics make their first appearances in the archaeological record prior to this time,

including the presence of exotic lithic raw material such as obsidian as early as the Paleo-Indian Period, limited use of fish, shellfish, and plants from the Early Period, and material culture indicative of warfare and social stratification from the Middle Period. It is the abundance of these archaeological correlates dating to the Late Period coupled with similar patterns seen across much of the Northwest Coast culture area at the same time, however, that distinguish this time period from earlier ones.

Plateau and Northern Rocky Mountain Culture Area

The traditional territory of Salish-speaking groups and the Kootenai in the PEIS zone corresponds with the Columbia Plateau and northern Rocky Mountains of eastern Washington and Idaho (Walker, 1998). Similar to Western Washington, the PEIS zone bisects several distinct environmental zones that are relevant when considering prehistoric land use and potential to impact archaeological resources. This portion of the PEIS zone is mountainous with the exception of the northern edge of the central Columbia River basin, which comprises the only extensive level landform within the area of consideration. The headwaters of all the major river systems that drain this area (including, from west to east, the Okanogan, Sanpoil, Columbia, Pend Oreille, and Kootenay Rivers) reside to the north in British Columbia and their north-south trending valleys were carved by continental glaciation during the Pleistocene. The mountain-valley systems and Columbia Basin that comprise this portion of the Northern Border PEIS project area today represent a more arid environment with greater seasonal temperature extremes than that of Western Washington. The extent and magnitude of this seasonality, however, have fluctuated since the end of the Pleistocene and shaped changes in human land use over time.

Land Use

Settlement and subsistence in the region over the past several millennia centered around several seasonally restricted but often abundant resources (Chatters and Pokotylo, 1998; Pokotylo and Mitchell, 1998; Ames et al., 1998). Salmon, edible roots, and ungulates were staple subsistence resources for much of the Holocene. The distribution of subsistence resources and basic environmental constraints such as availability of water throughout this landscape helped shape seasonal land use patterns, and broad-scale changes in their availability over time coincide with changes in the archaeological record of northeastern Washington and northern Idaho. Runs of spawning salmon are impeded past Kettle Falls and Metaline Falls, and were therefore not a directly accessible resource to Native American communities living in the Pend Oreille and Kootenay River basins. Ethnographically, these groups relied more heavily on edible roots, most notably camas in the Calispell Valley. They led a much more mobile lifestyle than the salmon-dependent communities of the Plateau to the west, and their patterns involved trade for salmon with those Plateau groups and seasonal pursuit of bison in the Great Plains to the east (cf. Anastasio, 1985).

Similar to many other parts of North America at the end of the Pleistocene, the earliest human populations in this region were small, highly mobile groups that frequently moved hunting camps across a landscape that was recently deglaciated and, across the Columbia Basin, repeatedly scoured by massive floods as glacial lakes to the southeast periodically released meltwater. There is limited archaeological evidence of salmon fishing and plant processing elsewhere in the Plateau dating back to the beginning of the Holocene. The focus of these early groups however, especially within the PEIS zone, appears to have been on large ungulates. The

climate, which was at a peak of warmth and aridity in the millennia following retreat of continental glaciations, continued to be warmer than today.

By about 8,000 years ago, however, a trend towards cooler and wetter conditions in the northern Plateau allowed an expansion of mountain forests into lower elevations and shrub-steppe vegetation to replace the grasslands that covered the Columbia Basin. The relatively cooler and wetter seasonal conditions that intensified into the mid-Holocene expanded ungulate habitat and promoted growth of root plants that soon became economically important. Salmon habitat improved as well once the water temperature of the Columbia and Fraser River systems cooled and sediment load from channel down-cutting decreased. Campsites situated near these resources and the tools for efficient harvest and processing appear in the archaeological record during this time.

The late Holocene saw further changes in land use patterns and greater dependence upon particular subsistence resources and food storage strategies. In general, the climate shifted towards the same cooler, wetter Neoglacial regime seen across much of northwestern North America; brief periods within the latter half of the Holocene, however, brought occasions of drought, flooding, and warming. Parallel to these changes were shifts from settlements with fewer but larger semi-subterranean houses to village sites with numerous but smaller pithouses in some regions, and an opposite pattern in others. One broad-scale trend during this period was a growing dependence upon storage as a mechanism to offset fluctuations in seasonal resource availability and inter-annual productivity. Increasingly intensified use of salmon occurred along the Columbia River and its tributaries below Kettle Falls as ungulate habitat shrank during the late Holocene. Labor-intensive resources such as freshwater mussels and edible roots increase in importance as well, especially in places within this region that did not provide access to salmon. Similar to the rest of North America, land use patterns dramatically shifted as a result of initial Euroamerican contact and disease epidemics at the end of the eighteenth century. Like those epidemics, the adoption of horses as a means of transport and trade in the interior Northwest preceded actual contact with Euroamericans by several years and had profound implications on Native American land use.

Site Types

The archaeological record of the Plateau region along the U.S.-Canada border is characterized by a variety of artifacts and features that reflect broad-scale changes in Native American land use from the end of the Pleistocene to first encounters with Euroamerican explorers in the late 1700s. These materials and deposits are classified into assemblages to infer chronological sequences and past lifeways. This brief overview describes the kinds of pre-contact Native American archaeological deposits found in Eastern Washington and Idaho within the PEIS zone. Artifacts and assemblages characteristic of particular chronological periods are further described in the subsequent section.

Residential sites, often in the form of one or more semi-subterranean house pits, are more common in the archaeological record of the Eastern Washington Plateau than that of Western Washington. Sites pre-dating the mid-Holocene are inferred to be habitations based on the composition of their lithic and faunal assemblages and presence of fire-modified and occasional features (Chatters and Pokotylo, 1998). The first house pit sites to appear across the region by about 5,000 years ago were near the ecotones between steppe and forests and contained house

pits in small numbers, usually one to three of various sizes and shapes containing diverse tool assemblages. Occasionally houses contain storage pit features and abundant hopper-mortar bases, suggesting a level of sedentism where resources were abundant yet entailed substantial processing. During the later Holocene pit houses often increased in diameter and depth, and the complexity of housefloor and associated midden stratigraphy grew. Large villages of numerous house pits along the lower reaches of larger rivers characterize the archaeological record of the past 2,000 years, although the numbers of pits within villages (and inferred human population) decrease during the roughly 1,200 years prior to Euroamerican contact. Post-depositional processes are the most critical factor in preservation and visibility of archaeological pithouse remains. Housepit sites may be visible on the ground surface of stable landforms that have been relatively unaffected by erosion or deposition over the past several millennia, such as older river terraces. Infilling of house pits after abandonment, especially of those along rivers depositing large volumes of sediment along their banks, in areas exposed to sustained aeolian sedimentation, and places within volcanic ashfall zones that accumulate tephra deposits, may deeply bury the remains of housepits.

Other kinds of prehistoric archaeological sites that occur within the PEIS zone in this region include a variety of resource processing features and lithic reduction sites. Artifacts and features associated with plant and fish processing are often found within and around the remains of houses; however, such materials are also identified unassociated with the remains of dwellings in places of high resource abundance. Pit features containing calcined salmon bones found along rivers are often associated with fishing gear such as netweights and processing tools such as ground stone knives. Freshwater mussel shell middens are often exposed along eroding riverbanks. Camas ovens are a notable archaeological feature of the Calispell Valley, comprised of dense buried deposits of fire-modified cobbles, charcoal-rich sediments, and often the charred remains of camas bulbs (Thoms, 1989). Other archaeological features indicative of Native American activity that may be found in isolation include rock cairns along ridgelines and talus slope burials on the flanks of hills and mountains.

Several archaeological complexes have been identified that are defined by nearly continuous distributions of features, lithic artifacts, and house remains that, when interpreted as a whole, present a picture of long-term occupation of the landscape and abundant data on changing land use patterns. An Archaeological District on the Upper Pend Oreille River (Miss, 2004) in Idaho typifies this kind of site complex, as do districts in Washington that have undergone intensive archaeological investigation: Lake Roosevelt above the Grand Coulee Dam (Chatters, 1984), the Lake Pateros reservoir (Chatters, 1986), the Spokane River, the Kettle River in the vicinity of Kettle Falls (Chance and Chance, 1985), in the Calispell Valley (Thoms and Burtchard, 1986), and sites near Chief Joseph Dam and Rufus Woods Lake reservoir (Campbell, 1985).

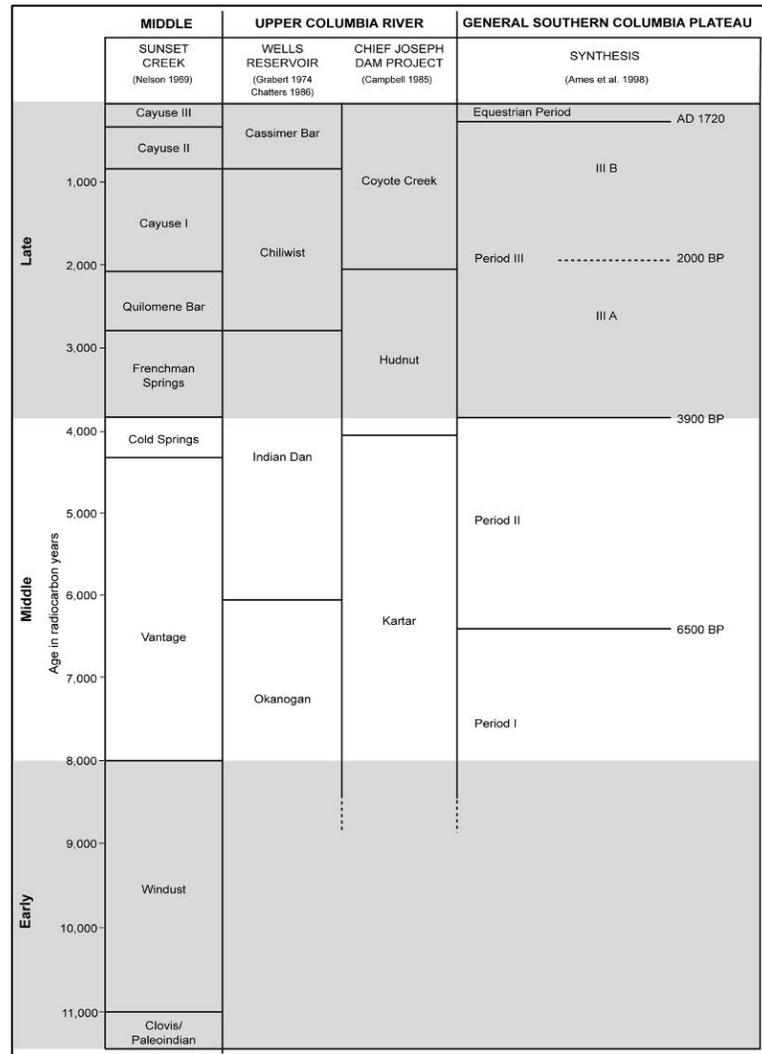
Prehistoric Chronological Sequence

Several published culture-historical sequences aid in the identification and interpretation of the archaeological record of the Plateau Culture Area within the PEIS zone. The designations of chronological periods, their characteristics, and their implications for the archaeological record in the PEIS zone are summarized in a very general fashion in this section. The periods used here include the Early, Middle, and Late Periods as generalized by Chatters and Pokotylo (1998). The divisions between the broad periods follow environmental changes as well as patterns of human land use: the end of the Pleistocene epoch and the early Holocene (ca. 12,000 B.P.-8,000 B.P.),

the early to middle Holocene (ca. 8,000 B.P.-4,000 B.P.) and late Holocene before Euroamerican contact (ca. 4,000 B.P.-300 B.P.). Subdivisions within their broad periods are not discussed in detail here.

The general sequence is derived from those developed for the Okanogan River Valley (Grabert, 1968; Grabert, 1974); the Kettle Falls vicinity (Chance, 1986; Chance and Chance, 1982); the Wells Reservoir and Lake Pateros (Chatters, 1986); the Lake Rufus Woods and Chief Joseph Dam region (Campbell, 1985); and the vicinity of the Pend Oreille and Kootenay Rivers (Thoms and Burtchard 1987). The work of Nelson (1969) and Leonhardy and Rice (1970) in the central Columbia and Lower Snake Basins to the south of the PEIS zone laid the foundation for much of these later syntheses. Several of the major sequences shown in Figure H-6 attest to the variability in temporal divisions of specific sequences. More general overviews of Plateau prehistory contain useful summaries of the prehistoric cultural sequences in other areas, broader patterns across the region, and persistent research questions that have guided research in this region (Walker, 1998 and references therein).

Figure H-6. Plateau Culture Area Chronology



Early Period

The Early Period (12,000 – 8,000 B.P.) spans the Late Pleistocene and Early Holocene, a time of initial human settlement when continental glaciers retreated north and climate remained warmer and drier than today. The Paleo-Indian archaeological components that date to this age are rare throughout the Plateau. The East Wenatchee Clovis Cache was discovered in Grant County just south of the PEIS zone and represents a notable, if atypical, assemblage of Clovis projectile points and other lithic and bone artifacts that date to this period. More widespread are components dated to the Early Period based on the presence of projectile points of the Western Stemmed Tradition, which may represent a separate influx of humans into the region around the time of the Pleistocene-Holocene transition (Beck and Jones, 2010).

Humans adapted to environmental changes during the Early Period by utilizing a wide range of subsistence resources and establishing short-term camps near those resources. The

archaeological record of residential camps is extremely sparse during this period, probably due to a combination of very low population densities and poor preservation of landforms of suitable age that would host such sites. Most sites consist of concentrations of lithic material on geologically older landforms. A variety of projectile points used to arm spears and darts are stylistically diagnostic to the Early Period and are frequently used to assign otherwise undated lithic assemblages to this time, including fluted and concave-based points of the Clovis and Folsom tradition and lanceolate stemmed points of the Windust tradition.

Middle Period

The Middle Period (ca. 8,000 B.P.–4,000 B.P.) spans the middle of the Holocene epoch, a time of shifting climatic regimes and concomitant changes in vegetation patterns and subsistence resource distribution. Human adaptations to these changes resulted in an archaeological record that highlights variability in residential site structure, subsistence economies, and other aspects of social structure such as mortuary practices between different regions within the Plateau Culture Area. Housepits make their first appearance in the archaeological record during this time, along with widespread direct evidence of root utilization.

Change in land use towards a greater reliance on riverine and plant resources is manifested in the archaeological record by sites located along salmon-bearing streams, near freshwater mussel habitat, and in areas where important edible roots thrived during mid-Holocene climatic amelioration. Faunal assemblages from riverine sites attest to the importance of fish and freshwater mussels, as do ground bone and stone fishing gear. Milling stones and hopper mortar bases at some sites reflect plant processing. The persistence of hunting as an important activity is, however, apparent in the record from campsites with hunting gear in a variety of environmental zones. Along with certain kinds of plant processing artifacts, projectile points diagnostic of this time period include willow leaf-shaped points of the Cascade/Old Cordilleran tradition and large side-notched points.

Late Period

The Late Period (ca. 4,000 B.P.–300 B.P.) encompasses a time in which the regional climate first cooled and then warmed, resulting in changes in human population, pithouse construction, resource availability and economic orientation, and social structure. The small numbers of house pits along major salmon-bearing rivers that characterize the initial Late Period become clustered in larger numbers and highly variable in size by the middle of the Late Period. Towards the end of the Late Period prior to Euro-American contact, many of the larger village sites were apparently abandoned as land use favored more upland areas for much of the annual round and pithouses were established upstream in protected valleys of smaller tributaries. Although there is some debate regarding human population levels in the Plateau towards the end of the Late Period, artifacts assemblages exhibit a growing diversity of tool types, raw materials suggesting long-distance trade networks stretching from the Great Plains to the Pacific Coast, and plant and animal remains indicative of expanding diet breadth. Projectile point styles are at their most complex during this time and include a variety of small arrowheads as well as points to arm larger projectiles.

1.2 HISTORIC CONTEXT

1.2.1 NEW ENGLAND REGION

1.2.1.1 State of Maine

The U.S. Customs and Border Protection (CBP) northern border project area – 100-mile jurisdiction – encompasses nearly the entire State of Maine except York County and the southern portion of Cumberland County in southern Maine. This area is referred to as the *study area* in this subsection.

- Contact Period/Exploration/Colonial Period

The history of European contact, exploration, and settlement in northern New England and the greater maritime peninsula (Quebec, New Brunswick, and Nova Scotia) of which Maine is a part, commences in the mid-sixteenth and early seventeenth centuries. The early colonial period in Maine is divided into three periods (Early Settlement, 1604-1675; Indian Wars, 1675-early eighteenth century; and the Resettlement Period, early-mid-eighteenth century) and is best represented in southern-most coastal Maine. The 1604 French colony at St. Croix in the northeast corner of the state signaled the arrival of a European power which was to compete with the English colonies to the south. Intermittent warfare characterized much of the period, 1604-1759. Territorial conflict arose initially with the displacement and widespread disruption of Native American culture and competition among European interests to control the fur trade. Specifically, the boundary of New France extended well into Maine and was marked by a series of seventeenth-century and early eighteenth-century French missions (Castine, Norridgewock, Canton, Fryeburg), which in effect curtailed English settlement throughout the northern border area of Maine until the end of the French and Indian Wars, ca. 1759.

With the British conquest of French Canada, ca. 1760, there emerged a period of rapid development in southern sections of the state accompanied by an increase in diversity of industry, transportation, commerce and trade, and agriculture. Variability among site types likewise increases throughout the later historic period with the introduction of technological innovations, division of labor, ethnic diversity, availability of a greater range of natural resources, and other factors.

- Frontier

Primarily, the early settlement period in Maine's interior occurred after the American Revolution, and constitutes a period of approximately 50 years from the first settlement of a given township/plantation. Priority resources, or those which were built within 50 years of the township/plantation's first settlement include, dwelling sites, farmsteads, and village centers/rural neighborhoods (containing, for example, water-powered saw and gristmills, tanneries, carding factories, blacksmith and carriage shops, stores, hotels, churches, schools, cemeteries) are site types that supply data regarding the adaptation of new populations to wilderness landscapes. There are numerous examples of these and related resources in all settled townships.

In northern Maine, the Madawaska settlements represent the oldest permanent settlement, and date to the ca. late 1780s. The St. John River, which now delineates the international border in this region, was part of a long distance water/overland route between Halifax/Saint John and Quebec, an important Native American travel corridor and prior to the Acadian settlements, a route utilized by French-speaking missionaries, couriers, traders, and the military. This extensive tract of land was populated largely by Acadians displaced by the formation of the British province of New Brunswick. Their source of livelihood was farming and settled among them were people from Quebec, Native Americans both local and from the lower St. John Valley and a number of Irish immigrants. Settlers from Maine's upper Kennebec Valley arrived in northern-most Maine in the early nineteenth century.

- War

As a border territory, Maine was a center of contention between the British and Americans during both the American Revolution and the War of 1812. During the Revolution, Portland was bombarded by a British fleet, and the British occupied a significant portion of the southern part of the state. In the War of 1812, the British again occupied parts of Maine.

After the wars with Great Britain, the upper St. John River area was claimed by both New Brunswick and the State of Maine. The dispute intensified principally within the context of logging and lumbering. The Houlton Barracks, Fort Kent, Fort Fairfield, the military road(s) and border outposts are historic resources associated with the Aroostook War, ca. 1839. The conflict was settled without armed warfare, by treaty in 1842.

Along the Atlantic Coast, excellent representations of early colonial period coastal sites in the study area include the fortified settlements of the Popham Colony (mouth of the Kennebec River), Fort Pemaquid (Muscongus Bay), and Fort Pentagoet (Penobscot Bay). Also, sunken vessels and earthworks of the Revolutionary War era have been identified in the archaeological record.

- Government

Maine became part of the Massachusetts Bay Colony in 1652, although the two were not physically attached. Maine seceded from Massachusetts in 1820 and became a state as part of the Missouri compromise. The northern U.S. border between Maine and New Brunswick remained disputed until the 1842 Webster-Ashburton Treaty, by which the boundary largely assumed its current configuration.

- Agriculture

Since many areas of Maine are distant from markets and the state typically has rocky soils and short growing seasons, agriculture as an industry there was generally not as successful as in other states. However, agriculture at the local level has remained important throughout Maine's history, largely due to the remoteness of many of its smaller settlements. Also, despite the limitations imposed by the state's geography, the growing of potatoes as a cash crop has been successful in some areas in the years following the installation of rail lines, most notably in Aroostook County.

- Commerce and Trade

Along the Atlantic Coast, seventeenth-century and early eighteenth-century French farmsteads and settlements are alluded to in the archival record. Extensive salt marsh diking is suggestive of Acadian farming practice. However, in the nineteenth century, the economy of the coastal region came to be dominated by shipbuilding and fishing; granite and slate quarrying and cotton textile production were also practiced. Nineteenth-century archaeological sites are represented by numerous site types, including farms, dwellings, tidal, water- and horse-powered mills, quarries, and many others.

Distant markets and poor roads discouraged rapid town development until the extension of rail transportation into the St. John Valley and other interior parts of the state. This resulted in the commercialization of potato growing which produced rail-side potato houses, starch factories, and increasingly larger farms. Outside the Aroostook County farming district, logging and lumbering retained prominence as northern Maine's most important industry.

Beginning in the 1820s, the logging industry grew to become a vital part of the economy across much of Maine. It has gone through three distinct phases, each phase representing more extensive harvest areas and more intensive means of mechanical production. Resources representing the earliest phase of logging and lumbering, the white pine-era, generally have greater historical significance than those representing the subsequent periods of spruce-logging and pulp and paper manufacturing. Nevertheless, logging camps, driving dams, company farms, and other resources from these latter phases also possess historical significance. Other inland rural industries in the state included maple syrup production along Maine's western border with Quebec, and quarrying, hide-tanning, and lime and charcoal production. Also, beginning in the early twentieth century, paper and wood pulp production supplemented the lumber industry.

In the remote townships of the interior parts of the state, where settlement was virtually non-existent, logging and lumbering, hemlock bark extraction and other forest-based industries provide site types of potential historical significance. Archaeological resources, such as logging camps, driving dams, company farms, supply depots, logging railroads, and sporting camps form a significant portion of the infrastructure of Maine's nineteenth century forested interior.

- Transportation

In Maine's Interior, the network of roads and waterways utilized for local and long distance transport make up a set of resources related to the patterns of early settlement and town development. Notable among the long distance overland routes are the Coos Trail/Magog Road leading from the head of navigation on the Kennebec River (Hallowell) to Montreal, and the Canada Road, linking the upper Kennebec River region with Quebec.

The first railroads were built in Maine in the 1830s. By 1853, the Grand Trunk Railroad connected Portland with Montreal and Portland became the *de facto* winter port for much of Canada. A large portion of Maine's historical railroads use an atypically narrow gauge of 2 feet.

A number of historic resources and contexts apply specifically to the Maine-Canadian border. These range from historic, cross-border familial and economic ties to smuggling, customs and law enforcement.

1.2.1.2 State of New Hampshire

- Contact Period/Exploration/Colonial Period

Northeastern New England of the seventeenth century presents a complex portrait of dispersed and shifting Native American settlement in response to contact with European traders. Intertribal warfare, catastrophic epidemics and chronic illnesses probably reduced Native American populations in New Hampshire by as much as 90 percent. Archaeological components and sites of the Early Contact period are underrepresented in New Hampshire, and notable New Hampshire Contact Period archaeological sites include Fort Hill site in Hinsdale, New Hampshire (Thomas, 1979), and the Connor Site in Shelburne, New Hampshire (Potter, 1998).

During this early period, Lake Champlain, the Connecticut River, and other major waterways functioned as transportation highways through heavily wooded, mountainous terrain, connecting many disparate settlements (Haviland and Power, 1994). Overland trails were also important Native American travel routes. Samuel de Champlain was the first European to visit Amoskeag Falls in June 1605. In 1609, Champlain journeyed south from Canada, by canoe, to the lake that bears his name.

Actual contact with Europeans occurred relatively late in the interior of New Hampshire because of the remote mountainous position of Western Abenaki country in an area heavily contested by the colonial powers. William Pynchon of Springfield, Massachusetts, first documented trade with a Sokoki in 1648. English trade was largely a commercial venture while French traders cooperated with Catholic missionaries. The English ban on weapon trade, and their alliance with the Haudenosaunee (Iroquois), traditional enemy of the Abenakis, aggravated relations between the Sokokis and the English (Haviland and Power, 1994).

Rivalry between the English and French saw the western Abenaki primarily as French allies during King William's War (1690-1700), and Queen Anne's War (1702-1713). These conflicts ultimately gave rise to military traffic and conflict along Lake Champlain waterways. New Hampshire became a separate province in 1680. The English established forts and garrisons along the northern frontier of Massachusetts and the Province of New Hampshire from which they maintained defenses, as well as sent scouting and raiding parties. By 1736, Massachusetts had established four towns along the New Hampshire side of the Connecticut River, numbered one through four (Bruce, 1990).

During the French and Indian War (1754-1763), increased pressure on the Indians led to revenge killings across northern New England (Corbett, 2002). Abenaki fought with the French at the battles of Monongahela, Oswego, Lake George, William Henry, Québec, and elsewhere, as well as conducted their own raids (Foster and Cowan, 1998:208). The British retaliated by developing strategically placed forts and a group of rangers, experienced in guerilla-style forest warfare. British control of the forts at Ticonderoga and Crown Point essentially pushed the frontier between the British and French north.

During the American Revolution, many Abenaki opted to remain neutral, others took sides with either the colonists or the British, and still others played both sides. Colonial militia manned forts in the Champlain Valley, New Hampshire's seacoast, and frontier borders to defend from

British incursion (Charlton, 1931; Churchill, 1967; Wheeler and Wheeler, 1968; Hance, 1991:384; Kingsley, 1997).

- Frontier

Most settlers in New Hampshire faced the problem of accessing their property via the network of footpaths, Indian trails, and military roads. Early settlement during times of peace spurred improvement to existing overland and waterborne transportation networks. Once settlers reached their lot, their first priority was to remove the forest, build a shelter, and clear an area to plant food (Garvin and Garvin, 1988).

Early Euro-American settlers in New Hampshire probably applied the Native American technique of burning forested land as a primary land-clearance tool (Day, 1953; Krech, 1999). Many found agricultural fields and old campsites already cleared and “abandoned” by Native Americans. Settlers also likely cleared land by axe. Early residential farmstead sites may include, but are not limited to, the following components: improved parcels of land, woodlot, temporary and permanent residential structures, outbuildings, water source, refuse area(s), animal pens, specialized activity areas, and occasionally a cemetery. General improvements include field clearings resulting in stone piles, stone walls, stone or wooden property boundary markers, landscaping through cut and fill areas, stone quarrying, orchards, pasture, cultivated and fallow fields, and gardens.

- Transportation

During the nineteenth century most primitive overland and waterborne transport came to an end (Wilgus, 1945). The next phase of transportation improvements, toll roads, shunpikes, stage roads, and post roads enhanced travel and provided new links to waterways and canals. At the same time, settlement declined across the narrow valleys of New Hampshire with rough terrain unadapted to labor-saving machinery and the availability of land in the West.

Commercialization of agriculture and development of small industries was aided by advances in transportation – such as toll roads and canals. Several turnpikes were established early in the nineteenth century to provide a straight and direct route for teamsters, travelers, and stagecoaches to connect from Massachusetts and the Connecticut River valley towns of southern New Hampshire and Vermont (Wood, 1997). With the success of the Erie Canal after 1825 drawing commerce to New York City, Boston merchants sought to access the commerce of the Great Lakes through a steam-powered railroad across New Hampshire and Vermont. Between 1840 and 1870 railroads had the single most important effect on New Hampshire (Goldthwait, 1927). With the introduction of the railroad, it was easy to import feed grains and other products from the Midwest. Establishment of railroads in the region provided better shipping facilities and expanded markets for the town’s farm produce and mineral resources, and simultaneously hastened westward migration. Granite was hauled to larger southern New England markets via railroads (Blaisdell, 1982), with tracks also following the rivers.

Improved automotive technology, coupled with State and Federal support of road construction and maintenance, made highway travel a viable alternative to railroads. Railroads continued to be consolidated and suffered from the introduction of fossil fuels.

- Agriculture

Mid-nineteenth- to early twentieth-century farmsteads featured structures and activity areas nearly identical to those of preceding generations and included a domestic structure or structures (tenant houses), numerous barns and other outbuildings, discrete dump areas, water systems, and special resource areas. However, mid-nineteenth- to early twentieth-century farmstead buildings were more permanent, larger and occasionally highly specialized (Milot, 1994).

Settlers essentially grew most of what they ate and made most of what they needed, if not by themselves, almost certainly within their community. The earliest crops grown by Euro-American settlers in this region included “Indian corn,” wheat, and potatoes (*cf.*, Stewart, 1817; Thompson, 1842; Dutcher, 1871:297). Wild game, fish, and fruits and nuts supplemented most diets (*cf.*, Dutcher, 1871:291). Farmsteads gradually diversified and became more economically viable. Technological innovations allowed farmers to till more land and harvest more effectively, with less help. More and more people followed other professions, such as shopkeepers, carpenters, foundry workers, etc., but maintained some land that they farmed. The need for greater purchasing power also required farmers to raise a greater quantity of cash crops (Donath, 1992:214). For example, raising hops began to assume commercial importance in New England during the last quarter of the eighteenth century and was focused in northern Middlesex County (Kelsey, 1980). By 1880, hop culture was introduced to nearby Bedford, New Hampshire and soon stretched across Hillsborough County. Other major cash crops were potash and pearl ash made by distilling wood ash accumulated after burning the trees cut while clearing the fields. Ash was also a valuable commodity locally and for international export (Miller, 1980; Meeks, 1986b).

Small farms disappeared in New Hampshire as the West opened up for settlement and industrialization took over. Farm towns became increasingly concentrated in one or more village centers, usually marked by a few stores, a district school, a church, an inn or hotel, and perhaps surrounded by a small number of dairy farms. Farmers in northern New England had to change and adapt their mode of agriculture to stay competitive (Donath, 1992:215). This included increasing the numbers of livestock, especially sheep that could graze steep, rocky, and hilly terrain. Patterns of early agriculture gave way to Spanish Merino and other sheep farming. Some of these changes began to obscure late eighteenth-century field patterns (McHenry, 1986) with later nineteenth-century developments, such as the addition, removal, or burial of stone walls to accommodate plows pulled by oxen, horses, and eventually tractors of growing size that could no longer negotiate the field corners in the manner that draught animals could.

In general, sheep and wool production era peaked in the late 1830s, and many farmers had turned to stock breeding for the western market (Donath, 1992:215-216). As the nineteenth century evolved, the cash crops changed to wheat, and then wool, and finally dairy products (Wilson, 1967:15-26; Sherman, 1999 [1872]).

By 1920 fluid milk was the major income source of most Northern New England farmers (Meeks, 1986b). However, population was generally in decline until 1920 and 1930, respectively. Old textile mills were proving to be as uncompetitive as the old hill farms. Farm abandonment climaxed by the mid-twentieth century (Donath, 1992:216).

- Industry and Manufacturing

The region's waterways and excellent mill privileges stimulated a strong industrial base in the region. Waterpower was first harnessed to run saw and gristmills. Later, waterpower supported the growth of the textile industry in early-nineteenth century. Industrial activity provided for other village, town, and national community needs. Early industries generally spanned in scope from small, self-sufficient operations to larger commercial enterprises. Local industry relied heavily on readily available natural resources such as timber, bedrock, minerals, surficial deposits, and water.

Primitive roads were built into once-inaccessible forests followed by logging railroads. Major rivers, smaller tributaries and the outlets of lakes and ponds across New Hampshire and Vermont provided waterpower for the vast majority of energy necessary to produce and/or refine these products. Logging camps predated construction of the Rutland & Burlington Railroad in the late 1840s. Industry was, and remains, a vital force of northern New England's economy. Many residential sites are closely associated with nearby industries, whether cottage enterprise or large commercial businesses. Location of former industrial complexes may, or may not, be evident on today's modern landscape.

Many of the remaining industries in nearby hamlets still relied heavily upon agricultural pursuits that were part of a diversified economy that was gradually becoming more specialized: cider mills, sawmills, gristmills, and cheese factories. Initially, any surplus milk was turned into cheese; however, as rail transportation to urban markets improved, butter and then cream became the premium products. The wood-products industry remained active in northern New England because the forests of New Hampshire had not yet been completely cleared as they had in other parts of New England.

- Commerce and Trade

Settlers made most of what they needed, if not by themselves, almost certainly within their community. Whatever skills were not locally available, like shoemaking, were generally provided by barter or purchase from neighbors or itinerant craftsmen. Many farmers undertook some type of specialized activity when not engaged in agricultural pursuits. These skills ranged from working as a homebuilder or mason, cooper, wheelwright, blacksmithing, ferrier, basket maker, potter, and so on. Clay was fashioned and fired into bricks and pottery. Settlers also prospected for stone to build foundations for homes, to mark lot boundaries, and to support early industries. Local bog iron or hematite ore was smelted into iron, supplying early blacksmiths and later industrial purposes.

Towns gradually became responsible for the maintenance of other local roads as soon as they were surveyed, laid out, and officially entered onto town records (Garvin and Garvin, 1988; Hance, 1991). Later, bridges were constructed to access other routes where perhaps only fords existed. Economic and regional growth patterns ultimately dictated the evolution of a growing road framework.

Near the end of the nineteenth century investors were building grand hotels along coastal areas, in the mountains and surrounding the lakes of New Hampshire to serve tourists from all over the

United States and Europe. Rustic camps and summer homes grew in popularity as well, and in no time, “summer people” began buying up old hill farms for summer homes.

- Government

New Hampshire was one of the original thirteen states that formed the United States of America and rebelled against Great Britain in 1776. New Hampshire was the ninth state to ratify the Constitution in June 1788.

- Domestic, Social, and Cultural

Family cemeteries often provided the nucleus of what would ultimately become a hamlet, village, town, or municipal cemetery. The progress toward establishing characteristic town features of a town plot or village common, meeting house and school varied, often they were not in place until the community was actually settled (Woodard, 1936).

A general downward population trend is attributed to the natural and social upheaval described and the attractiveness of less expensive and fertile land in western New York and Ohio. Large waves of people emigrated from Vermont and New Hampshire as land became less available and opened elsewhere. This process started early, but accelerated as better routes opened up to the west. Those who stayed behind continued to consolidate small farms, eventually developing into the rural agriculture familiar through town histories. Farmers in northern New England had to change and adapt their mode of agriculture to stay competitive (Donath, 1992:215).

After the Civil War, temporary jobs in New England’s textile mills, logging and mining camps, railroad construction, and agriculture offered economic opportunity to new groups of immigrants.

Manufacturing centers began to attract new industries such as clothing and electronics. Only in the last decades of the twentieth century has the population curve of New Hampshire rebounded. The prominence of the dairy industry in the early to mid-twentieth century and improved farming methods led to increased yields and decreased dairy product prices hastening the demise of the family farm. Presently, small family farms persist in New Hampshire and there is hope that specialty products will maintain agriculture and the wood products industry in this area for future generations.

1.2.1.3 State of Vermont

- Contact Period/Exploration/Colonial Period

Intertribal warfare, catastrophic epidemics and chronic illnesses probably reduced Native American populations in Vermont and New Hampshire by as much as 90 percent. Archaeological components and sites of the Early Contact period are underrepresented in Vermont. During this early period, Lake Champlain, the Connecticut River and other major waterways functioned as transportation highways through heavily wooded, mountainous terrain, connecting many disparate settlements (Haviland and Power, 1994). Overland trails were also important Native American travel routes. Samuel de Champlain was the first European to explore what is now Lake Champlain in July 1609 (Grant, 1907:161).

Actual contact with Europeans occurred relatively late in Vermont because of the remote mountainous location of Western Abenaki country. English trade was largely a commercial venture while French traders cooperated with Catholic missionaries. The English ban on weapon trade, and their alliance with the Iroquois, traditional enemy of the Abenakis, aggravated relations between the Sokokis and the English (Haviland and Power, 1994).

Rivalry between the English and French saw the western Abenaki primarily as French allies during King William's War (1690-1700), and Queen Anne's War (1702-1713). These conflicts ultimately gave rise to military traffic and conflict along Lake Champlain waterways. The British established forts and garrisons along the northern frontier of Massachusetts and the Province of New Hampshire from which they maintained defenses, as well as sent scouting and raiding parties. For example, the British soon built a short-lived fort and trading center at Chimney Point in 1690 during King William's War.

The first permanent British outposts in what is now Vermont were in the Connecticut River valley. By 1736, Massachusetts established four towns along the New Hampshire side of the Connecticut River, numbered one through four. Fort Dummer (Fort Number One) was erected in 1724, where Brattleboro, Vermont later grew up. In 1739, Josiah Sartwell built a fortified house in present day Vernon, Vermont (Bruce, 1990).

In about 1730, a few French-Canadians traveled south, up Lake Champlain and established a settlement at Chimney Point. This community consisted of a blockhouse enclosed by a wooden stockade on the east side of Lake Champlain north of what is now Crown Point, New York (Hall, 1868:2; Coolidge, 1938:233). Reconstruction of the bridge connecting Vermont and New York in 2010 uncovered evidence of this French fort at Chimney Point (Crock, 2010). In 1731, the French army built another wooden stockade, but this time, on Lake Champlain's western shore. This latter structure was enlarged over the next few years and eventually surpassed by a stone fortification at the same location called Fort St. Frédéric (Palmer, 1866; Lonergan, 1950). Fort St. Frédéric would protect French interests in the region and later favor the development of French seigniories along Lake Champlain (Coolidge, 1938:224). From this location, the French and their Indian allies would launch attacks on British settlements (Steele, 1990).

During the French and Indian War (1754-1763), increased pressure on the Indians led to revenge killings across northern New England (Corbett, 2002). Abenaki fought with the French at the battles of Monongahela, Oswego, Lake George, William Henry, Québec, and elsewhere, as well as conducted their own raids (Foster and Cowan, 1998:208). The English retaliated by developing strategically placed forts and a group of rangers, experienced in guerilla-style forest warfare. British control of the forts at Ticonderoga and Crown Point essentially pushed the frontier between the British and French north.

British governors of both New York and New Hampshire now claimed territory between Lake Champlain and the Connecticut River. Anglo-Americans, looking to move into Vermont, considered settling the land in the north. With British victory over the French and lessening in the fear of Indian reprisals, waves of settlers started to pour into Vermont.

During the American Revolution, many Abenaki opted to remain neutral, others took sides with either the colonists or the British, and still others played both sides. Colonial militia manned

forts in the Champlain Valley, New Hampshire's seacoast, and frontier borders to defend from British incursion (Charlton, 1931; Churchill, 1967; Wheeler and Wheeler, 1968; Hance, 1991:384; Kingsley, 1997).

- Frontier

From the conclusion of the French and Indian War to about the 1780s, Vermont provided one of the only frontier outlets to southern New England's sons and daughters. French and Indian War service, particularly among those who helped build the Crown Point Road, introduced many soldiers to the Vermont's advantageous land and resources. Two separate streams of emigrants, one from eastern Connecticut or Massachusetts and the other from western parts of those states, helped shaped the distinctive ethnic character of Yankee Vermont (Meeks, 1986b; Hubka, 1984). Those settling along the Crown Point Road brought with them characteristic patterns of community development, architecture, types of government, and religion. At the beginning of the Revolution, Vermont declared itself an independent nation. The formation of this republic led to the issuance of new land grants and the reallocation of residual lands. The intervening disputed land years led to numerous hostilities between the territorial rights of New York and New Hampshire proprietors. Jurisdictional dispute between French, English and Vermont land grants was not formally settled until 1791 when the Republic of Vermont became a state (Nye, 1947:272-275).

Most settlers in Vermont faced the problem of accessing their property via the network of footpaths, Indian trails, and military roads. Early settlement during times of peace spurred improvement to existing overland and waterborne transportation networks. Once settlers reached their lot, their first priority was to remove the forest, build a shelter, and clear an area to plant food (Garvin and Garvin, 1988).

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accommodate plows pulled by oxen, horses, and eventually tractors of growing size that could no longer negotiate the field corners in the manner that draught animals could.

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- Government

Administratively part of New York after 1766, Vermont became an independent republic in 1777 during the Revolutionary War. In 1791, Vermont ratified the U.S. Constitution, becoming the fourteenth state of the union. Vermont has 14 counties.

- Domestic, Social, and Cultural

Family cemeteries often provided the nucleus of what would ultimately become a hamlet, village, town, or municipal cemetery. The progress toward establishing characteristic town features of a town plot or village common, meeting house and school varied, often they were not in place until the community was actually settled (Woodard, 1936).

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1.2.2 GREAT LAKES REGION

1.2.2.1 State of New York

- Contact Period/Exploration/Colonial Period

The French and Dutch initiated exploration of New York in 1609. The French in the north identified Lake Champlain and explored areas along Lake Ontario and Lake Erie. The Dutch settled Manhattan and areas along Atlantic Ocean, exploring the Hudson Valley. Jesuit missionaries under French authority periodically visited the northern and western New York (into western Pennsylvania and the western Great Lakes). Despite a troublesome relationship with the Haudenosaunee (Iroquois) nations, the French established trading posts at Youngstown (New York) and near Rochester by early eighteenth century. By the middle of the eighteenth century, the French had established fortifications in the Champlain Valley, Lake George, northern New York (Ogdensburg), and western New York (Brasser, 1978; Ellis et al., 1967).

In 1664, the English supplanted the Dutch in southern New York and became patrons of the Haudenosaunee. Gradually filtering west along Mohawk River and over the Catskills and Helderbergs into central New York, the British erected fortifications in the Mohawk Valley and established their primary western outpost at Oswego by the middle of the eighteenth century. The ancient rivalry between these two European monarchies intensified during the period, reaching a crescendo in the 1750s, when warfare flared anew. Despite gaining total control over Lake Ontario during the early stages of the conflict, the French ultimately lost the French and Indian War and all of their North American colonies to the British with the Treaty of Paris in 1763 (Aldenderfer et al., 1982:III-30; Hale, 1972). Central New York, the Champlain Valley, and the Lake George area were predominant theaters in the conflict as dramatized by the book *Last of the Mohicans*.

During the American Revolution, New York was again major theater during the early stages of the conflict, as Great Britain launched attacks on the colony from Canada and their outpost at Oswego. Lake Champlain is reputed to be the scene of the first naval battle fought by the United States Navy. On October 11, 1776, the engagement occurred in a strait between the mainland near Plattsburgh and Valcour Island. Patriot ships under the direction of Brigadier General Benedict Arnold were largely destroyed by a superior British force, but the battle postponed the British campaign to separate New England from the rest of the rebelling colonies. A second British attempt at splitting the colonies occurred the following year under the command of General John Burgoyne. Settlers in the Champlain Valley were driven out when the British invaded (Ellis et al., 1967; Hurd, 1880).

Burgoyne implemented his second attempt to conquer New York in 1777. While he replicated his advance down the Champlain valley, forces from New York City and Oswego would join him at Albany, thus splitting New England from the rest of the colonies. However, the important Battle of Oriskany, just east of Rome, New York, stopped the advance of British forces from Oswego, and left the undermanned British vulnerable to defeat at the significant Battle of Saratoga. Aside from pitched battles, both the British and Americans enlisted the aid of individual Haudenosaunee nations in their skirmishes in the frontier, as several of the nations allied with Great Britain and several with the Americans. British and Haudenosaunee conducted devastating raids on isolated farming communities in the Mohawk and Cherry valleys. As a

result, in 1779 Major General John Sullivan led a punitive assault into the heart of Haudenosaunee country in an effort to halt these incursions against the settlers. Sullivan's Continentals engaged in "scorched earth" tactics, destroying settlements, cornfields, and orchards throughout the Finger Lakes region. Seeking refuge in the Niagara River valley, many Haudenosaunee suffered through a difficult winter of hardship and hunger. Fort Niagara remained a British outpost during the war (Aldrich, 1893:199; Abler and Tooker, 1978:507-508; Ellis et al., 1967:115-117; Tooker, 1978:435; Peirce, 1879:13-19).

The British and their Loyalist allies were expelled from the new United States after the Treaty of Paris (1783) ended the Revolutionary War, although the British did not vacate forts along Lake Ontario or farther west until 1796 (Jay's Treaty). The Haudenosaunee, abandoned in the United States by the British, were forced to make peace as separate nations with the Americans. In 1794, the United States and the Six Nations signed a treaty at Canandaigua which defined the boundaries of the Haudenosaunee nations in New York State (Abler and Tooker, 1978:508). Several treaties between speculators and the Haudenosaunee extinguished their title to most of the land in New York by the early nineteenth century, except for small reservations (Abler and Tooker, 1978:509, 512).

- Frontier

The International Border did not exist until 1783 when the United States won its independence. Even during the nineteenth century it remained a light presence on border communities in Northern New York, which was an unbroken wilderness in 1783 except for a few settlements fringing Lake Champlain. In fact, most of the region lying between Lake Champlain on the east, Lake Ontario on the west, the St. Lawrence River on the north, and the southern slopes of the Adirondacks remained wilderness until late in the nineteenth century (Ellis et al., 1967:156).

With the return of peace after the Revolution, settlers and land speculators again began to trickle westward and northward, exerting pressure to open up land formerly occupied by the Haudenosaunee. After machinations over the settlement of Canadian refugees, the extent of colonial charters, back pay owed to soldiers, and squatters occupying unsettled lands, most of the newly opened frontier areas in the state were patented in large tracts of land to speculators, who had their parcels surveyed and sold off to settlers, or tried to. Areas in northern and central New York were surveyed by the state and reserved for former Continental soldiers, however most of this land reverted to the speculators (Ellis et al., 1967:152-156; Schein, 1993:5-8; Abler and Tooker, 1978:507-509).

By 1812, areas in northern and western New York had been settled and rural industries and local commerce were in development. As a result of their location along the International Border, western New York and Lake Erie, and northern New York and Lake Ontario were theaters in the War of 1812 between the United States and Great Britain. Shore areas along Lakes Erie and Ontario were marauded by British soldiers and the United States launched invasions of Canada from Northern New York and from Buffalo and Lewiston. These areas were also invaded by British forces from Canada. Buffalo, Youngstown, Lewiston, and what is now Niagara Falls were all burned to the ground by the British at the end of 1813 (Hurd, 1880; Smith, 1884; Hickey, 1989). Governor Daniel Tompkins remarked, "The whole frontier from Lake Ontario to Lake Erie is depopulated & the buildings & improvements, with a few exceptions, destroyed" (Hurd, 1880; Smith, 1884; Hickey, 1989:143).

- Transportation

Overland roads were generally poor; however, rivers provided essential inland transportation as well as power for early saw and gristmills. Because of their proximity and lack of inland roads, early settlements in northern New York were more closely tied to British settlements in Canada through the navigable Champlain Valley than to American settlements in the Mohawk Valley. As a result of this proximity, violation of the embargo of British goods was an open secret and smuggling was rampant during the run up to the War of 1812 (Ellis et al., 1967:156; Meinig, 1966:144-145, 153).

Despite the improvements in roads and development of mills and other processing facilities during the early nineteenth century, economic growth still lagged. A problem facing many rural farming communities was ensuring that their products could reach markets. Logging, lumbering, and timber-related products were the initial commodities of many counties during the early years of settlement. Once the initial round of tree clearing had been completed, the pioneers worked the land sowing crops and grazing animals (Seaver, 1918; Hough, 1853; Hurd, 1880; Sullivan and Martin, 1979).

To combat the general lack of transportation, improvements of the state's natural waterways began as early as 1791, but the events of the War of 1812 suspended these undertakings. Begun at Rome in 1817, the Erie Canal linked Buffalo on Lake Erie with the Hudson River and New York City upon its completion in 1825. The nearly simultaneous construction of the Champlain Canal extended transportation capabilities from the Hudson River to Lake Champlain. The success of the Erie Canal inspired numerous other efforts of canal construction in the state. Localities near the canals prospered, and those at some distance from them saw their economic livelihood undermined by the cheap transportation (Shaw, 1990).

The arrival of the railroads during the mid-nineteenth century fostered the continued economic diversification the state and the emergence of more densely populated, more heavily industrialized areas. As railroad crossed the state, the New York Central Railroad was formed in 1853, merging in 1869 with Cornelius Vanderbilt's Hudson River Railroad, as a result of the consolidation of numerous smaller local lines. Other major railroad routes included the Lehigh Valley, the Erie, the Northern, and the Delaware, Lackawanna & Western, among many other smaller local lines. During the twentieth century, the number of lines has consolidated (Dunn, 2000).

By the middle of the nineteenth century, efforts were made to construct bridges over the Niagara River to connect Canada and the United States. What is now the City of Niagara Falls was the site of the first international railway suspension bridge over the river in 1848 (Anonymous, 1878:319-320; Pool, 1897:192; Williams, 1921:407-408, 520-521). John A. Roebling directed the construction of a second suspension bridge between 1852 and 1855, when the first locomotive made the crossing. Other bridges followed in the twentieth century and included the Lewiston-Queenston Bridge, the Whirlpool Bridge, the Rainbow Bridge, and the Peace Bridge. An International Railroad Bridge was constructed from Buffalo to Canada in 1873.

- Agriculture

Once the pioneers cleared the abundant forest cover, they planted subsistence crops, the surplus of which was sold or traded. Agriculture formed the predominant economic activity outside the larger urban areas of the state until well into the twentieth century (Aldrich, 1893; McIntosh, 1876). During the nineteenth century, wheat was the great staple, but after the Civil War and the opening of the wheat fields of the Midwest, barley, corn, and oats became important crops. Farms also produced geographically specialized fruit crops, notably grapes, cherries, apples, peaches, pears, and raspberries. From the late nineteenth century into the twentieth century, dairying and stock-raising were predominant farm specialties, and expanded into more market-oriented enterprises with the aid of improved canal, railroad, and steamboat transportation.

By the mid-nineteenth century, tobacco was grown several southern counties, which supported local cigar manufacturers. In the years after the Civil War, grapes and winemaking became successfully cultivated products in the Finger Lakes region as well as along Lake Erie in Chautauqua County, although homemade wine could utilize grapes, strawberries, raspberries or other fruit. Today, many peach, cherry, apricot, and apple orchards remain.

- Industry and Manufacturing

The earliest industries focused on forest products and utilized the abundant water resources for power, and included asheries that burned timber into a white powder called pearl ash or potash, sawmills, gristmills, and tanneries. Industrial activity intensified in the years before the Civil War, and expanded greatly after the conflict. Urban areas attracted businesses, industrial organizations, transportation networks and people.

In 1877, the Niagara Falls Hydraulic Power and Manufacturing Company initiated the first large-scale attempt to provide hydroelectric power. Its success provided electricity for the lights of the Village of Niagara Falls by 1882. During the last quarter of the nineteenth century, the use of electricity began to replace steam as the source of power for all types of industrial operations (Pool, 1897:226-230; Williams, 1921:180, 190). In 1896, the Niagara Falls Power Company implemented a system for long-distance electricity distribution using alternating current (AC), transmitting power from Niagara Falls to the City of Buffalo. Major cities, Buffalo, Niagara Falls, Rochester, Oswego, Watertown, and Plattsburgh enhanced the economic role by using newly developed electric power to enhance their manufacturing and industrial bases. Niagara Falls, for example, became a center of electrochemistry, electrometallurgy, as well as the chemical industry (Dumych, 1996:7; Churchill, 1895).

In Northern New York, bark skidders harvesting for the tanning industry and charcoal makers for the iron industry had, by the time of the Civil War, reduced the primeval forest cover of the Adirondacks. In the late nineteenth century, lumbering operations entered the higher Adirondacks cutting trees for pulp and lumber. These companies purchased and cut large tracts of timber land, later forfeiting denuded acres to the State in lieu of taxes. During this time, the destruction of such large swaths of forest raised an outcry and resulted in the creation of the Adirondack Forest Preserve in 1885. The Adirondack Park was created in 1892 and contains six million acres of both State-owned and private land (Adirondack Park Agency, 2003; Haynes, 2001).

The commercial lumbering and pulp industry began a long decline in the early twentieth century before essentially dying out in the 1920s. During the early years of the twenty-first century,

several wind-energy projects and wind farms have been constructed or are in the process of being constructed in northern New York. Today, the area remains a rural mix of small farms, towns and forests. Tourism, timbering, dairying, and some farming are the dominant economic activities in the area, as has generally been the case for well over a century.

- Commerce and Trade

Commerce and trade were initially locally focused. As transportation improved with the advent of better roads, canals, and railroads, trade became more extended. Municipalities on Lake Ontario and Lake Erie, such as Buffalo, Oswego, and Rochester developed extensive port operations. Municipalities along the Erie Canal and the other canals also developed port facilities (Churchill, 1985; Smith, 1884).

The invention and proliferation of the grain elevator reinforces Buffalo's strategic location at the nexus of the Great Lakes/inland trade and the ocean trade associated with the Atlantic ports. Beginning in 1842, construction of numerous grain elevators would turn Buffalo into one of the leading grain shipping centers in North America (Goldman, 1983:58; Smith, 1884). By 1863, numerous grain elevators enshaded Buffalo's harbor and were part of an extensive transportation network and developing industrial economy. From the mid-nineteenth century to the mid-twentieth century, Buffalo's lake port was a center for an extensive inland trade in grain, lumber, livestock, iron, and limestone, which utilized canal boats and freight trains to transport goods east (Kowsky et al., 1981:248).

- Government

New York was one of the original thirteen states that formed the United States of America and rebelled against Great Britain in 1776. New York was the tenth state to ratify the Constitution on July 26, 1788. At present, New York State has 62 counties, 932 towns, and 62 cities. It also has nine Indian reservations. In total, the state has over 4,200 local governments (New York State Department of State, 2009).

- Domestic, Social, and Cultural

Settlement of New York began in the early seventeenth century, focused along the Atlantic Coast and Hudson River Valley. Gradually, settlers spread throughout the state. Early settlers erected log cabins and cleared fields of trees in order to farm their land. As houses became more elaborate, they were made of frame construction, and later from a variety of building materials, such as stone and brick. In larger urban environments, residences rose to multi-story dimensions in a variety of styles.

The economic prosperity resulting from the Erie Canal swelled the population in centers along its route. Hundreds of thousands of settlers arrived at Buffalo as they journeyed west as "more immigrants passed through these streets [surrounding the Erie Canal] during the height of the canal era (1830-1865) than passed through Ellis Island" (Rapp, 1993). Population also clustered at railroad nodes.

In July 1885, the New York State Niagara Reservation Park was officially opened by New York State. The lengthy campaign to build support from political and business leaders for a park to preserve the falls was underpinned by the persistence and organizational skills of Frederick Law

Olmsted. In addition to building the consensus for the park, he and his associate Calvert Vaux were commissioned to prepare the layout and planting plan for the reservation (Hall, 1995:179-185; Williams, 1972:16-17).

The Adirondack Forest Preserve was created in 1885, and the Adirondack Park was established in 1892 and contains six million acres of both State-owned and private land. The Forest Preserve was made “forever wild” in 1895. In the twenty-first century, the Forest Preserve covers approximately 2.5 million acres (Adirondack Park Agency, 2003; Haynes, 2001).

1.2.2.2 Commonwealth of Pennsylvania

- Contact Period/Exploration/Colonial Period

While Dutch and Swedish traders explored and settled portions of eastern Pennsylvania as early as the 1620s, Catholic missionaries and French explorers would not enter the valleys and waterways of western Pennsylvania until the 1660s. As the fur trade became more established during the seventeenth and eighteenth centuries, the European powers erected fortified trading posts in the frontier. However, it would not be until the eighteenth century that the inland areas of western Pennsylvania saw fortifications. By the 1700s, Haudenosaunee (Iroquois) incursions into the area pushed local Delaware and Shawnee populations as far west as what is now Illinois. As a result, northwestern Pennsylvania and northeastern Ohio became a sparsely settled hinterland of the Seneca, subject to hunting and resource procurement (Hunter, 1978:590).

By 1669, the French portaged from Lake Erie to Chautauqua Lake (in western New York) and then via waterways through western Pennsylvania to the Mississippi River. This route was traversed in 1739 by forces under the command of Charles Le Moyne de Longueuil as part of an indecisive effort to reinforce French forces in what is now northern Mississippi (Stevens and Kent, 2000 [1941]; Figure H-7). A similar route was followed by a French expedition under the direction of Captain Pierre-Joseph Céloron de Blainville in 1749 in the run-up to the French and Indian War. By the middle of the eighteenth century, the French had created a string of military and trading installations extending from Fort Niagara at Lake Ontario along the southern shore of Lake Erie to Presqu’isle (present-day Erie, Pennsylvania) into the Ohio valley (see Figure H-7). In the late 1740s, both French traders and British settlers had expanded their activities west of the Appalachian Mountains to engage native nations in the Ohio Country. As a result, each kingdom intensified their efforts to deny the other access to the area (Abler and Tooker, 1978:506-507; Tooker, 1978:431-432; Smith 2008).

Great Britain and France engaged in another round of their incessant colonial war in the 1750s. While much of the action of the conflict occurred elsewhere, what is now western Pennsylvania saw the erection of several French fortifications, including Fort de la Presqu’isle (1753); Fort de la Riviere au Boeuf (Fort Le Boeuf) on French Creek (1753, near Waterford); and Fort Machault at the confluence of French Creek and the Allegheny River (1753-1757, present-day Franklin) (see Figure H-7). An important supply route extended from Presqu’isle to the junction of the Allegheny and Monongahela rivers which forms the Ohio River, where the French erected Fort Duquesne (present-day Pittsburgh). The British would make extensive use of this route after the construction of Fort Pitt. Later, the British would construct Fort Venago (1760) in proximity to the former location of Fort Machault, which the French burned upon their evacuation of the area

in 1759 (Waddell and Bomberger, 1996:1-9; Smith, 2008; Tooker, 1978:432-434; Davis, 1986:206).

- Frontier

The focus of attention of the French and Indian War was the Ohio Valley. While British land speculators were promoting the Ohio Valley, settlers in western Pennsylvania were subject to attacks from native allies of the French. In 1754, Major George Washington was sent to meet the French at Fort Le Boeuf to inform them of Virginia's interest in this land, and was rebuffed, resulting in an exchange of gunfire, and the erection of the short-lived Fort Necessity (Tindall, 1988:167-168). After a long march from Philadelphia, British troops under the command of General John Forbes frightened the French into deserting and burning Fort Duquesne. After a siege, British troops captured Fort Niagara in July 1759 and the French abandoned their outposts in western Pennsylvania. The British erected Fort Pitt on the ruins of Fort Duquesne (Tindall, 1988:172; Tooker, 1978:433; Department of General Services, 2009:1-13).

After the French defeat and their loss of North American colonies, some of the western Seneca, remaining loyal to the French, joined Pontiac's Rebellion (1763-1764), harrying English-American settlers in the upper Great Lakes and the Ohio Valley. Pontiac's forces attacked and took British-occupied Fort Venago, Fort Le Boeuf, and Fort Presqu'isle. In an attempt to quell the rebellion, King George III issued the Royal Proclamation of 1763 which created a line along the crest of the Appalachian Mountains beyond which settlement was forbidden (Waddell and Bomberger, 1996:57-60; Tindall, 1988:182-184). In the first Treaty of Stanwix in 1768, the Haudenosaunee relinquished their land in central Pennsylvania to the British.

Figure H-7. French Outposts in Western New York and Northwestern Pennsylvania During the Mid-Eighteenth Century



Source: (Severance 1917).

During the Revolutionary War, Major General John Sullivan campaign into New York's Haudenosaunee country had a Pennsylvania component. Colonel Daniel Broadhead, 8th Pennsylvania Regiment, led a complementary maneuver to drive British-allied nations from the Allegheny valley in western Pennsylvania. The Americans destroyed ten native villages during their march up the Allegheny River between Fort Pitt and Olean Point (New York). Provisioned and armed by the British, groups of Native Americans periodically harassed colonial settlements until the end of the war (Abler and Tooker, 1978:508; Department of General Services, 2009:1-16).

After the conclusion of the Revolution, the Haudenosaunee were forced to make peace as separate nations with the Americans. As a result, they relinquished all their land west of the Niagara River in the subsequent Second Fort Stanwix Treaty (1784). During these negotiations, the Haudenosaunee also sold the title to their land in Pennsylvania in a series of deeds. During the Fort McIntosh treaty negotiations (1785), the Delaware and Wyandot also released their claims to land in Pennsylvania to the Commonwealth ((Abler and Tooker, 1978:507-508; Ellis et al., 1967:115-117). Hunter, 1978:593; Davis, 1986:199; Pennsylvania Historical Museum Commission [PHMC], 2008).

European-American settlement of northwestern Pennsylvania dates from the end of the American Revolution as traders and settlers entered the upper Ohio Valley through the major river systems and Lake Erie. These water routes were interconnected within a complex system of inland Indian and military paths and served as channels of both commerce and communication. Pennsylvania purchased the Erie Triangle from the Federal Government in 1792 in hopes that the port located at Erie would attract the developing Great Lakes commercial traffic, where it would be conveyed through Pennsylvania to the busy Atlantic Ocean ports at Philadelphia. However, the construction of the Erie Canal in New York turned this dream to smoke (Tindall, 1988:266-268; Fletcher, 1971:6; Davis, 1986:199, 206).

During the closing years of the Revolutionary War, numerous states and the Federal Government attempted to compensate soldiers who fought against the British with grants of land. In 1780, the Pennsylvania General Assembly reserved land north and west of the Ohio and Allegheny rivers as "Donation Lands," to be distributed through a lottery to Pennsylvania veterans. Three years later, additional territory in this region was designated as "Depreciation Lands" to replace "certificates of depreciation" that had been given to Pennsylvania's veterans in compensation for the great depreciation in Continental currency. Settlement had to wait, however, until Native American title to these lands had been extinguished. As noted, title was secured by 1785 (Fletcher, 1971:10; Davis, 1986:199; Wallace, 1978:443-444).

After machinations over the extent of colonial charters, restitution to Revolutionary soldiers, attempted settlement of expatriate French nobility, and squatters occupying unsettled lands, most of the newly opened frontier areas in the state were patented in large tracts of land to speculators. The rugged western Pennsylvania countryside saw little actual settlement as the land was considered practically worthless (Fletcher, 1971:26, 30; Currin, 2001; Frederick, ca. 2000; Schadenberger and Wilson 2001 [1947]).

The rugged, heavily forested terrain and the distance from established settlements retarded the area's initial growth away from the lake shore. Migration from eastern New York and New

England into the northwestern counties became a torrent after 1810. These settlers erected log or frame homes and established a variety of rural industries, including taverns, small hotels, grist and sawmills, blacksmith shops, and distilleries (McKnight 1905:569; Frederick ca. 2000; Payne 1999-2009; Bates, 1884:855; Fletcher 1971:46).

During the late 1780s, the Commonwealth of Pennsylvania surveyed and explored the northwestern parts of the state in an effort to develop it. A group of speculators, the Pennsylvania Population Company (formed in 1792), purchased a large portion of the Erie Triangle to sell it off at a profit. A village at Presque Isle was formed by legislative act in 1792, and the Commonwealth established a military presence there in 1794. General Anthony Wayne's troops landed at Presque Isle in 1795 after the Battle of Fallen Timbers, and erected fortifications and a sawmill in the village. Surveyors arrived later that year, and settlement began in earnest.

- Transportation

The French had constructed a portage road from what is now Waterford to Presque Isle prior to the French and Indian War. In 1803, an Erie to Waterford turnpike was chartered to facilitate the transfer of the Great Lakes trade inland. With the excellent port at Erie, commerce from the lakes could be enhanced by a linkage from the port through Waterford on French Creek to Pittsburgh and beyond via the network of rivers that stretched all the way to the Mississippi and the Gulf of Mexico. The creation of additional turnpikes promoted the movement of both goods and people. The National Road was an important route for western migration prior to 1850 (Fletcher, 1971; Sanford, 1862, 1894; Department of General Services, 2009:1-19). In the mid-1840s, the Erie extension of the Pennsylvania Main Line Canal connected New Castle to Erie (Davis, 1986:207; Sanford, 1862:117-119) and augmented the commercial development of Erie, although the Erie Canal in New York State attracted a significant amount of Great Lakes shipping to Buffalo.

The railroad was the major infrastructure advance during the middle decades of the nineteenth century. Early railroad construction centered on the creation of short feeder routes that connected coal mines to the main Pennsylvania canal. Railroad building after 1850 marked the profitable end of canals and cattle driving. The Pennsylvania Railroad built a line between Harrisburg and Pittsburgh, as branches extended from the main line to Erie, Blairsville, and Uniontown. The route was completed to Pittsburgh in December 1852 (Department of General Services, 2009:1:20; Fletcher, 1955:318-320). The Philadelphia & Erie Railroad opened as far as Warren in 1859, and was extended to Sunbury in 1864 (Bates, 1884:855).

- Agriculture

In order to grow any type of crop in this heavily forested area, most of the settlers had to clear their lots of trees. As a result, lumbering and timber by-products—potash, pearl ash, and charcoal—were the region's first important industry. The sale of wood ashes was the only cash-producing crop for many early settlers during their first years in northwestern Pennsylvania. Other forest products included tanbark and lumber (Fletcher, 1971:329).

During the nineteenth century, wheat was the great staple, but after the Civil War and the opening of the wheat fields of the Midwest, barley, corn, and oats became important crops. In

the years after the Civil War, grapes and winemaking became successfully cultivated products along Lake Erie. Today, many peach, cherry, apricot, and apple orchards remain.

In addition to forest and agricultural products, cattle driving was a part of the pioneer economy until the railroads were built. Every year cattle were collected and driven over the Alleghenies in droves of 100 to counties in the vicinity of Philadelphia. Stock driving ceased about 1850 when railroads began to provide through transportation (Fletcher, 1971:180). Railroads arrived in the late 1860s to revive the lumber industry, coal mining, and tanning and wood chemical industries (e.g., turpentine, creosote) flourished while the forests lasted. From the mid-nineteenth century into the twentieth century, dairying and stock-raising were predominant farm specialties, and expanded into more market-oriented enterprises with the aid of improved transportation.

- Industry and Manufacturing

As lumbering operations increased, settlement expanded with each new cutting operation. For example, the City of Bradford developed from a lumbering camp (Fletcher, 1971:78-79). As railroads expanded into the rural parts of the state to transport timber, coal, and other products, the population of the region increased. Despite a negative prognosis regarding coal and a general lack of transportation, drilling in northwestern Pennsylvania initiated an oil boom beginning in 1871, which lasted to about the end of the 1880s. The industry was revived in the 1930s and 1940s by a water-injection method to recover the oil. In addition to oil, natural gas production remains an important component in the economy, especially since the emergence hydro-fracturing in the twenty-first century (Ross and Caplinger, 1994).

By the 1920s, through extensive clearing for the wood-chemical industry and technological developments such as the advent of steam power, the band saw, and the Shay locomotive, the forests of northwestern Pennsylvania were quite barren. Much like in New York's Adirondack Mountains, once the forests of Pennsylvania were cleared, timber companies vacated the deforested land in tax delinquency. As a result, Congress passed the Weeks Act in 1911 that allowed the Federal Government to purchase land in the east to establish national forests. The Allegheny National Forest was founded in 1923. The Civilian Conservation Corps erected recreational areas within the forest during the 1930s (USDA Forest Service, 2004).

The major industries of northwestern Pennsylvania during the twentieth century included coal, oil, and natural-gas production, and timbering. The lumber industry revived after World War II through managed forest systems in the National Forest. Other products include Zippo lighters, cutlery, motor oil, corrugated boxes, furniture, glass containers and construction blocks, and oil and gas pipes and equipment. The Allegheny National Forest encompasses portions of northwestern Pennsylvania (USDA Forest Service, 2007; PHMC, 2008).

- Commerce and Trade

Commerce and trade were initially locally focused. As transportation improved with the advent of better roads, canals, and railroads, trade became more extended. The City of Erie, on Lake Erie developed extensive port operations.

- Government

Pennsylvania was one of the original thirteen states that formed the United States of America and rebelled against Great Britain in 1776. Pennsylvania was the second state to ratify the Constitution on December 12, 1787. At present, Pennsylvania has 67 counties, 958 boroughs, 1,547 townships, and 56 cities (Department of General Services, 2009).

- Domestic, Social and Cultural

Settlement of Pennsylvania began in the mid-seventeenth century, focused along the Atlantic coast. Gradually, settlers spread throughout the state. Early settlers erected log cabins and cleared fields of trees in order to farm their land. As houses became more elaborate, they were made of frame construction, and later from a variety of building materials, such as stone and brick. In larger urban environments, residences rose to multi-story dimensions in a variety of styles. Migration from eastern New York, eastern Pennsylvania, and New England into the northwestern counties of the state became a torrent after 1820. These settlers erected log or frame homes and established a variety of rural industries, including taverns, small hotels, grist and sawmills, blacksmith shops, and distilleries (Frederick, ca. 2000; Payne, 1999-2009; Fletcher, 1971:46).

The Allegheny National Forest was founded in 1923. In 1965, the Allegheny Reservoir was created as a result of the construction of the Kinzua Dam (USDA Forest Service, 2004).

1.2.2.3 State of Ohio

- Contact Period/Exploration/Colonial Period

The French were the first Europeans to penetrate the interior of what is now the State of Ohio during the second half of the seventeenth century. During the late 1660s, René-Robert Cavelier, Sieur de La Salle and a small party explored Lake Erie and what would become the Ohio Country, the area between Lake Erie and the Ohio River on the north and south, and the Allegheny and Maumee rivers on the east and west. La Salle's foray were part of general reconnoitering and trade expeditions as the French sought to establish contacts with native groups and trading posts in the New World wilderness (Howe, 1852; Hurt, 1995; OHC, 2010; OHO, 2010).

The next prominent European visit occurred in 1739, when Charles Le Moyne de Longueil led an expedition from Lake Erie through western New York and Pennsylvania down the Ohio River to the Mississippi River, exploring the interior of the Ohio Country. His expedition provided the earliest firsthand information about the area. A similar route was followed by a French expedition under the direction of Captain Pierre-Joseph Céloron de Blainville in 1749 in the run-up to the French and Indian War (Scott, 1877; Graham, 1883; Smith, 2008; OHC, 2010).

During the first half of the eighteenth century, the French created a string of military and trading installations that stretched from Lake Ontario south to Presqu'isle (present-day Erie, Pennsylvania) into the Ohio Valley. During this time, forts on the Maumee River in northwest Ohio, as well as the Illinois and the Mississippi rivers were established. By 1750, a fort at the mouth of the Wabash River (in southwestern Indiana) opened a transportation route between that river and a fort on the Maumee River (Howe, 1852; Hurt, 1995; OHC, 2010; OHO, 2010).

Disagreements over this area erupted into violence as both Great Britain and France claimed the lands in the Ohio Country. While French efforts were focused on areas along Lake Erie, the British infiltrated the area from the south during the 1740s by building a trading post on the Great Miami and forming the Ohio Company to develop the Indian trade. By the 1750s, British trading posts began to emerge among several Indian nations in the Ohio valley, notably at Logs Town, a Seneca village west of Fort Duquesne, along the Miami River, near what is now Piqua, Ohio, and within a settlement of Miami Indians known as Pickawillanees (Howe, 1852; Hurt, 1995; OHC, 2010; OHO, 2010; Hunter, 1978:590). During this period, George Washington represented Virginia's interests in expanding into this area, and his efforts to survey the area sparked the French and Indian War.

The rivalry between the British and the French reached crescendo in 1754, when the two countries went to war. British losses early in the conflict allowed the Indians to reclaim some of their territory in the Ohio Country. Late in the war, however, Britain's fortunes reversed and the French were driven from the area. Skirmishing between Native Americans and the English continued throughout the remainder of the French and Indian War and extended into the early post-war period as British forces in the frontier confronted Indian attempts to drive them back over the mountains. Great Britain issued the Proclamation of 1763 in an attempt to slow immigration over the Alleghenies as an olive branch to the native nations. However, Pontiac marshaled the disparate tribes into a loose, short-lived confederation to attack British positions, and achieved some success in the Ohio Country (1763-1765) (Hunter, 1978).

- Frontier

The Ohio Country was an active war zone during the American Revolution, and during the post-war period. Various Ohio Indian nations allied themselves with the British during the American Revolution, and participated in raids on American settlements in western Virginia and Pennsylvania. From 1777 to 1794, numerous battles and strikes were fought by American and Indian forces in the Ohio Country. Sometimes the Americans claimed the field and sometimes the Indians did. Treaties at Fort Stanwix (1784) and Fort McIntosh (1785) marked the end of formal occupation of the Ohio Country by Native Americans. These treaties were reaffirmed by the Treaty of Fort Harmar (1789). With Indian title largely extinguished, large was parceled off in large tracts to speculators and land companies in the 1780s and 1790s. Despite these agreements, Native nations remained in the area and tensions between settlers and Indians escalated. American and Indian raids and reprisals plagued the Ohio Country for the next 20 years (Howe, 1852; Hurt, 1995; Mahon, 1988; Horsman, 1988).

After the Revolution, eastern states with claims on unappropriated western lands ceded those claims to the Federal Government, except Connecticut (Western Reserve) and Virginia (Military Tract). This resulted in the designation of these unappropriated areas as the Northwest Territory, where the U.S. Congress implemented a mechanism for the creation of new states from the area and appointed General Arthur St. Clair as territorial governor in 1787. Land companies were formed to serve as land agents to populate the area in the late 1780s. Settlement schemes were implemented by New England Company, the Scioto Land Company, the Miami Company, the Connecticut Land Company John Cleves Symmes, and Congress's French Grant (Howe, 1852; Hurt, 1995; Horsman, 1988:31; OHC, 2010; OHO, 2010). Settlers came from various points east, especially Connecticut, establishing farms along the rivers and creating a developed and

prosperous land. Many of the settlers were Revolutionary War soldiers, who received land for their services.

Confrontations between the settlers and the Indians resulted, as Indian resistance to American settlement was being fueled by an alliance with the British. A fierce battle occurred in August 1794 at Fallen Timbers in northwestern Ohio, west of Lake Erie. Despite the American victory under the command of General Anthony Wayne and the subsequent Treaty of Greenville (1795), hostilities continued in the face of increased American settlement. Moses Cleaveland landed at the mouth of the Cuyahoga in the Western Reserve in 1796, and Ebenezer Zane completed a rudimentary road across Ohio, and established three ferries in 1797 (Horsman, 1988:32-33; Scott, 1877; Howe, 1852; OHC, 2010; OHO, 2010). In 1798, the Harrison Land Act divided the Northwest Territory into the Ohio Country and the Indiana Territory (Petro, 1994; Knepper, 2002; Randall and Ryan, 1912).

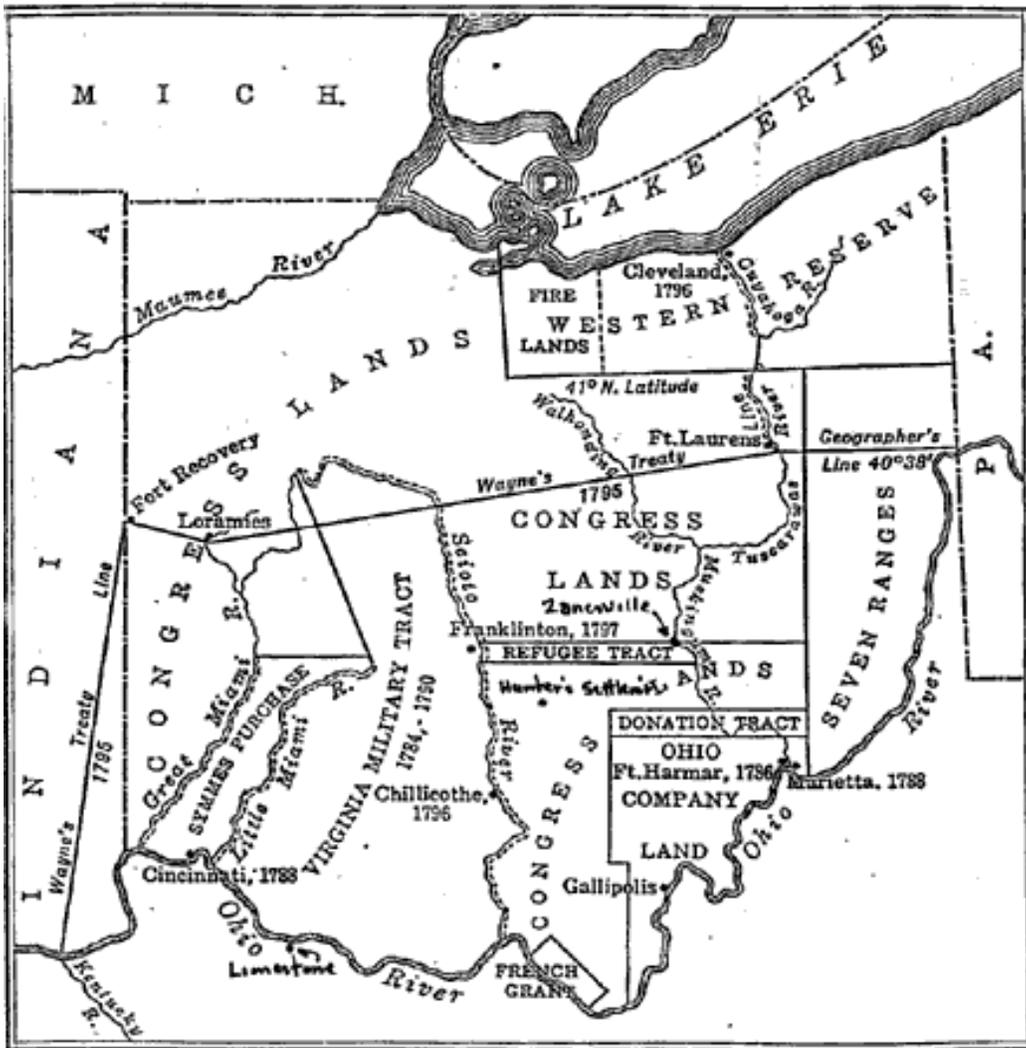
Jay's Treaty with Great Britain resolved several issues smoldering since the conclusion of the Revolution. As a result of the treaty, the British withdrew their soldiers from posts along the northern border between the United States and Canada, and a commission was established to settle outstanding border issues between the United States and Canada (Mahon, 1988:152).

During the early nineteenth century, Tecumseh and his brother Tenskwatawa led a Shawnee revival in western Ohio and Indiana. Supported by British intervention, the revival evolved into an intertribal movement that rekindled Native American resistance to American expansion. In November 1811, Gen. William Henry Harrison, Indiana Territorial Governor, led American troops against a group of Indians at the Battle of Tippecanoe in northern Indiana. The movement dissolved as a result of the battle. This conflict merged into the battles against the British during the War of 1812 (Callender, 1978:632). The American victory over and combined British-Indian force at the Battle of Thames (in Ontario, Canada) in October 1813 "marked the end of effective Indian resistance between the Ohio and Mississippi rivers" (Horsman, 1988:39).

- Transportation

Overland roads were generally poor, however, Lake Erie and inland rivers provided essential transportation as well as power for early sawmills and gristmills. Despite the improvements in roads and development of mills and other processing facilities during the early nineteenth century, economic growth still lagged. A problem facing many rural farming communities was ensuring that their products could reach markets. While the state's population rose in tandem with improved infrastructure, this infrastructure was still inadequate for farmers to get their products to market. Beginning in the 1820s, Ohio developed two main canal lines—the Ohio-Erie Canal between Cleveland on Lake Erie and Cincinnati on the Ohio River; and the Ohio-Miami Canal between Toledo and the junction of the Great Miami and Ohio rivers (Howe, 1852; McGill, 1969; OHC, 2010). A number of other feeder canals were also constructed in the following decades to support both systems.

Figure H-8. Ohio Land Grants and Surveys



Source: (Randall and Ryan, 1912).

The impact of the canals on the Ohio economy and settlement was tremendous. Farmers could get their products to market for reasonable profit, and waves of new immigrants, often coming from Lake Erie via New York's Erie Canal, settled in the state. Between 1820 and 1850, the population of the state rose to 1.98 million (McGill, 1969).

Soon after the canals had been completed, the railroad construction began, soon making the canals obsolete. The Erie & Kalamazoo Railroad was first railroad in Ohio, connecting Toledo and Adrian, Michigan in 1836. Other routes quickly followed, as the State supported both canal and railroad construction. The Baltimore & Ohio crossed the Appalachians in the 1850s assuring a connection to east coast markets (Graham, 1883). The businesses that had flourished along the canals slumped as the railroad towns prospered.

- Agriculture

Once the pioneers cleared the abundant forest cover, they planted subsistence crops, the surplus of which was sold or traded. Agriculture formed the predominant economic activity outside the larger urban areas of the state until well into the twentieth century. During the nineteenth century, wheat was the great staple, supplemented by barley, corn, and oats. From the late nineteenth century into the twentieth century, dairying and stock-raising were predominant farm specialties, and expanded into more market-oriented enterprises with the aid of improved canal, railroad, and lake transportation.

- Industry and Manufacturing

Industry developed to complement agricultural endeavors, and included saw and grist mills, iron mines and furnaces, by midcentury coal mining and steel manufacturing. Cleveland became an iron and industrial center in the 1850s, later Youngstown and Toledo emerged as centers for a variety of factories and industries. Industries and businesses blossomed along canal and railroad routes, including hotels, mills, foundries, and distilleries (Graham, 1883). Other manufacturing enterprises included pork products, farm machinery, carriages, cash registers, and oil refineries.

During the late nineteenth century into the twentieth century Cleveland was a leading industrial center as the home to Standard Oil as well as 86 oil refineries, Cleveland also supported facilities related to Dow chemical, Sherwin Williams, Goodyear Tire & Rubber Co., Firestone Tire & Rubber Co., Goodrich Corporation (Akron) and Proctor & Gamble. Other industrial locations included Akron, Toledo, Sandusky, and Ashtabula. With industrialization came increased immigration and urbanization. Like other Great Lakes industrial powers, Ohio's industrial base was undermined by changing economic circumstances in the 1960 and 1970s, notably in steel and heavy industry (Cayton, 2002).

- Commerce and Trade

Waterborne commerce along the lake was one of the earliest components of the area's prosperity, linking the State into broad national and international economies. Economic development advanced from agricultural production to early industry (saw and gristmills) progressing to heavy industrial operations during the 1850s through the twentieth century. From these developments emerged large urban areas like Cleveland, Youngstown, Cincinnati, and Sandusky, which served as commercial nodes to facilitate trade. In the years after the Civil War, Ohio developed into one of major industrial states of the union with essential commercial and shipping connection along the Great Lakes. Raw materials arrived in Ohio's ports and were exchanged for agricultural products and manufacturing goods. Later, railroads provided greater inland links to markets throughout the nation (Cayton, 2002).

- Government

Ohio was the first state created from the Northwest Territories in March 1803. At present, Ohio has 88 counties, 251 cities and 681 villages.

- Domestic, Social, and Cultural

Settlement of Ohio began in the late eighteenth century, focusing along the Lake Erie and the Ohio valley. Gradually, settlers spread throughout the state. Early settlers erected log cabins and cleared fields of trees in order to farm their land. As houses became more elaborate, they were

made of frame construction, and later from a variety of building materials, such as stone and brick. In larger urban environments, residences rose to multi-story dimensions in a variety of styles. Migration from eastern states into the state became a torrent after the War of 1812. Settlers erected log or frame homes and established a variety of rural industries including taverns, small hotels, grist and sawmills, blacksmith shops, and distilleries (Howe, 1852).

After the Civil War into the twentieth century, increasing industrial development and manufacturing attracted hundreds of thousands of new immigrants, both European immigrants and blacks from the South (Cayton, 2002).

1.2.2.4 State of Michigan (Lower Peninsula)

- Contact Period/Exploration/Colonial Period

The first Europeans made their way to what is now Michigan around 1620. Among the earliest recorded visitors were French priests and their party of fellow explorers. The French government, claiming the lands for their own, gave large sections to new settlers, who established trading posts dealing in furs and other commodities. Today, in historically French areas such as Detroit and Monroe, civil land divisions carry reminders of the earliest land claims, known as ribbon farms. These narrow and deep lots front on a river or lake and extend into the interior as much as a mile or more. This arrangement provided each settler direct access to the waterway, which was at the time the easiest means of transportation.

A number of forts were established during early settlement, including Fort Michilimackinac in Mackinaw City, Forts Detroit (later Fort Shelby), and Wayne in Detroit, and Fort Gratiot in Port Huron. Ironically, both Forts Michilimackinac and Gratiot were constructed by the French to protect the area from the British but were lost to the other side. Michigan's forts provided both a sense of security to those living in the region and a center for commerce and trade, thus encouraging settlement. As a result, the State's population grew.

- Transportation

Overland travel was initially difficult in the state, due largely to the heavy forestation. Early routes followed long-established animal and Native American pathways. North of Detroit, explorers met with swampy conditions forcing slow, difficult movement that often resulted in a general condemnation of the entire state as a wasteland.

Three key events improved the movement of both goods and people into Michigan. The completion of the Erie Canal provided a water route for immigrants from New York to the shores of lower Michigan beginning in 1825. The completion of the first locks in Sault Ste. Marie in 1855 opened a path to the west end of Lake Superior from New York and effectively connected Lakes Erie, Huron, Michigan, and Superior. Finally, the 1959 completion of the St. Lawrence Seaway provided a water route from the east coast to Chicago by water (Dunbar and May, 1995).

Forging new roads was challenging, so the existing network of paths provided a logical place to construct new roadways. Corduroy roads were among the earliest roads constructed. These were, particularly in urban environments, followed by brick roads. While most of the brick roads are gone, it is still possible to find remnants in communities such as Detroit, Mount Clemens, and Bay City. As transportation methods shifted from horseback to horse-drawn carriage and to

the horseless carriage, road surfaces became smoother. In 1909, the first one-mile stretch of concrete roadway was paved in the City of Highland Park (Dunbar and May, 1995).

By the late nineteenth century, a network of major railroad lines provided connections to the east and west, and the major industrial centers of the state were connected by interurban railroads. These rail lines connected one side of the Detroit metropolis with the other and from Detroit to Saginaw and Lansing. Railroads facilitated the growth of major industries. In communities like Jackson and Durand, railroad repair shops became dominant employers, drawing additional industries, workers, and residents.

During the twentieth century, four of the most notable bridges in the state were erected, three of which connect Michigan to Canada. In the 1920s, the Ambassador Bridge was completed connecting Detroit with Windsor. The Blue Water Bridge, opened in 1938, connects Port Huron and Sarnia across the St. Clair River. In 1962, the International Bridge was opened between Sault Ste. Marie, Michigan, and Sault Ste. Marie, Ontario, Canada. Michigan's most famous bridge, the five-mile-long Mackinac Bridge, or "Mighty Mac," opened for traffic in 1957 and connects the Lower Peninsula with the Upper Peninsula (Michigan Department of Transportation, 2009).

- Agriculture

Wheat was an early favorite crop, with other grains following soon after. In areas where heavy logging had occurred, one of the first crops to flourish after the trees were removed was the potato. Early in the twentieth century, the Petoskey area was recognized for its production of the Chief Petoskey seed potato. Corn and soy beans are common crops grown in the Lower Peninsula; sugar beets are prevalent in the Saginaw River valley.

Pomiculture was established by the late nineteenth century and early twentieth century. Microclimates in Michigan make it possible to produce apples in the Washington area of Macomb County, peaches in nearby Romeo, and both cherries and grapes on the Leelanau (an area known for its wine industry). Viticulture was practiced in the Monroe region as early as the mid-nineteenth century (Hathaway and Kegerreis, 2010).

- Industry/Manufacturing

Settlement in the northern portion of Michigan's Lower Peninsula was facilitated by logging the white pine forests. Lumber companies purchased large tracts of land, where they established camps to facilitate clear cutting. Logging company owners earned millions of dollars, and the titles of Lumber Barons, in the process.

Logging, railroads, and waterborne shipping formed a symbiotic relationship, and communities such as Bay City, Detroit, and other lakeside settlements often included at least a small shipbuilding enterprise. Although shipbuilding has largely ended, the lakeside ports remain connected to the interior by railroad and highways and continue to ship goods.

Although exactly where the automobile was first invented is often disputed, there is no argument that the automobile industry gained its power and reputation in Michigan. Small automobile manufacturers and their suppliers were located across the state, with most cities in the Lower Peninsula claiming one (or more) automotive-related industry. Michigan also claims credit for

transfiguring industry in general with the establishment of the assembly line (Catlin, 1926). Detroit-based Albert Kahn and his brother Louis revolutionized the appearance and functionality of the modern factory.

By the early twentieth century, the automobile manufacturing firms of Ford and General Motors (GM) were headquartered in or near Detroit. Ford maintains its world headquarters in Dearborn. GM was headquartered in downtown Detroit and its GM Tech Center was in nearby Warren. In 1940, much of the military's tank construction took place at the Chrysler-operated Warren Tank Factory, which operated in this capacity for over 50 years before closing in the 1990s.

- Commerce and Trade

Like most of the country, Michigan developed trade centers to serve the rural hinterlands; however, unlike most of the country, Michigan also has port cities that facilitated both intra- and interstate shipping and trade. Among the more remarkable products from Michigan manufacturers are catalog homes designed, prepared, and shipped from Bay City to points around the state and country. Tourism has also been an important aspect of Michigan's commerce, with cultural heritage tourism sites across the Lower Peninsula. Entire communities, such as Marshall, Alpena, and Mackinac Island, claim heritage tourism as a major part of their local economies. Lighthouses, a favorite tourist attraction, dot the shores of Lakes Erie, Huron, and Michigan.

- Government

The Michigan Territory was carved out of the Northwest Territories in 1829, with boundaries closely resembling those of today. In 1837, Michigan reached sufficient numbers to gain entry into the United States as the 26th state in the Union (Dunbar and May, 1995). By the time statehood was granted to Michigan, the land was divided into 37 counties. Today, the State contains 83 counties. Within each county, cities, villages, towns, and townships may also have local jurisdiction, depending on their local population and level of incorporation. A number of Michigan's counties continue to boast courthouse squares, a centrally placed courthouse building surrounded by commercial enterprises that often include attorney offices and other court-related businesses. One of the best examples of this is found in Howell, Livingston County.

- Social and Cultural

The first waves of immigration into Michigan consisted largely of people of western European ancestry who were later joined by Germans and Irish. Michigan's status as a "free" state (i.e., without legalized slavery) offered African Americans a permanent home or a refuge during their journey on the Underground Railroad. Later, the automotive industry attracted African American workers from the South. Eastern European communities developed in communities such as Delray in Detroit (Hungarian) and Hamtramck (Polish). In the early twentieth century, Hispanics found employment as migrant workers in Michigan's fields and orchards. The most recent major influx of a single ethnic group has been that from the Middle East. Dearborn, just west of Detroit, represents one of the largest Arabic populations outside the Middle East.

1.2.2.5 States of Michigan (Upper Peninsula) and Wisconsin

- Contact Period/Exploration/Colonial Period

The first Europeans made their way to what would be later known as Michigan around 1620. Among the earliest recorded visitors were French priests and their parties of fellow explorers. The French government, claiming the lands for their own, gave large sections to new settlers, who established trading posts dealing in furs and other commodities. Today, in historically French areas such as Sault Ste. Marie, civil land divisions carry reminders of the earliest land claims, known as ribbon farms. These narrow and deep lots front on a river or lake and extend into the interior as much as a mile or more. This arrangement provided each settler direct access to the waterway, which was at the time the easiest means of transportation.

A number of forts were established during early settlement, including Fort Michilimackinac in Mackinaw City. Ironically, Fort Michilimackinac was constructed by the French to protect the area from the British but was lost to the other side. Michigan's forts provided both a sense of security to those living in the region and a center for commerce and trade, thus encouraging settlement. As a result, the State's population grew.

In the northern portions of both Michigan and Wisconsin, settlers followed the logging and mining industries. By the mid- to late nineteenth century, one of major immigrant groups comprised people from Finland, who came to the United States fleeing mandatory military service for Russia, religious bigotry, and other factors (Legreid, 1986). Many of these immigrants made their way to the northern counties of Michigan and Wisconsin.

- Transportation

Water travel facilitated the earliest settlers of Michigan's Upper Peninsula, yet settlement lagged due to difficulty in traversing the region and long, harsh winters. The hazards associated with early efforts to navigate through the St. Marys Rapids (now largely the site of the Soo Locks) also meant settlement in northern Wisconsin trailed far behind the southern portion of the state.

Overland travel was initially difficult, due largely to heavy forestation. As a result, as in other areas across the country, early routes followed long-established animal and Native American pathways. Corduroy roads were among the earliest roads constructed when permanent roadways were desired. These were, particularly in urban environments, followed by brick roads and eventually concrete and asphalt paving.

Although the railroads abounded in Michigan's Lower Peninsula, they came later to the northern regions. Most of the railroads there were used to facilitate the movement of mine workers and goods, rather than the long-distance rails associated with southern portions of the state. One exception was the Duluth, South Shore & Atlantic, which was incorporated in 1886 and extended from St. Ignace to Duluth by the mid-twentieth century. In Wisconsin, a similar lack of railroads existed until the second half of the nineteenth century. The Chicago, St. Paul, Minneapolis & Omaha, part of the Omaha Road, reached the northern portion of Bayfield County, Wisconsin, in the early 1880s.

The International Bridge, completed in the early 1960s and connecting Sault Ste. Marie, Michigan, with Sault Ste. Marie, Ontario, is one of Michigan's three international bridge

crossings. The bridge follows a similar route across the Sault Ste. Marie Canals and Locks as the nearby ca. 1880 railroad bridge. Two large-scale bridges are located in Superior, Douglas County, Wisconsin. These include the 1885 Northern Pacific Drawbridge spanning the St. Louis Bay and the 1910 State Highway 105/Minnesota State Highway 23 Bridge over the St. Louis River.

- Agriculture

In most of Michigan's Upper Peninsula and Wisconsin's Lake Superior shore, once the forests were removed, farming was difficult at best. In spite of being promoted as excellent lands to encourage people to settle the regions, the sandy soils made an agricultural lifestyle difficult. In recognition of this, in the State and Federal governments began buying back the lands, and established publically owned forests. Private property is still found in and around the forests but for the most part, widespread agriculture practices are limited.

By the late nineteenth century and into the early twentieth century, fruit production began, fueled by the recognition of microclimates well-suited to pomiculture. These microclimates made it possible to produce fruit orchards in Bayfield, Wisconsin.

- Industry/Manufacturing

Settlement in the Michigan's Upper Peninsula and in the northern tip of Wisconsin was facilitated by logging the extensive white pine forests. Lumber companies purchased large tracks of land, where they established camps to facilitate clear cutting. Logging company owners earned millions of dollars, and the title of Lumber Baron, in the process.

Raw materials form the basis for some of the major industrial activities of the Upper Peninsula and northern Wisconsin. Although Native Americans had long been aware of its existence, the Euroamerican "discovery" of copper in Michigan's Keweenaw Peninsula drove early settlers to the region to pursue its extraction. The copper mining industry was active across much of the northern section of the Upper Peninsula, and lasted well into the twentieth century. At about the same time that copper mining began, iron ore was discovered in the Marquette range (Dunbar and May, 1995). Although copper played out its predominance early, iron ore had an important role on the world stage for considerably longer. In Ashland, Bayfield, and Superior counties, Wisconsin, the extractive industry focused on sandstone. Known as Bayfield or Lake Superior Sandstone, it was widely sought after as a nineteenth-century construction material (Lusignan, 1986).

Many of the extracted raw materials were transported across Lake Superior and down to ports in Indiana, southern Michigan, Ohio, and Pennsylvania for processing. The need for efficient shipping facilities resulted in improvements of harbors, canals, and locks needed to move massive amount of raw goods to the processing plants.

- Government

Michigan and Wisconsin were both part of the Northwest Territories established in the late 1780s. The Michigan Territory was carved out of the Northwest Territories in 1829, with boundaries closely resembling those of today. In 1837, Michigan reached sufficient numbers to gain entry into the United States as the 26th state in the Union (Dunbar and May, 1995). By the

time statehood was granted to Michigan, the land was divided into 37 counties. Today, the State contains 83 counties. Wisconsin followed a similar path to statehood, first becoming part of the Michigan Territory, then in 1836 forming the majority of the Wisconsin Territory, before finally entering the union in 1838 as the 30th state (Garfield, 1986a; Garfield, 1986b). Originally consisting of one large county, by the time statehood was granted, Wisconsin had 29 counties. There are currently 72 counties across the State. In both Michigan and Wisconsin, the cities, villages, towns, and townships may have local jurisdiction, depending on population and level of incorporation.

- Social and Cultural

The first waves of immigration into northern Michigan and Wisconsin brought individuals with largely western European ancestry and were later joined by Germans and Irish. Mining jobs in the Upper Peninsula and Wisconsin's Lake Superior shore attracted a number of people from areas with a tradition of mining, such as Cornwall and Wales in the United Kingdom, as well as immigrants from Finland and other Scandinavian countries.

1.2.3 EOR REGION

1.2.3.1 State of Minnesota

- Contact Period/Exploration/Colonial Period

Beginning in the mid-seventeenth century the French were the first Europeans to explore what is now Minnesota. These visitors included Claude Allouez and Daniel Greysolon, Sieur du Lhut. As the fur trade became more established during the late seventeenth century and eighteenth century, French voyageurs established trading posts amid the frontier. The first settlement in Minnesota was an outpost called Grand Portage near Lake Superior, where the French fur traders had to make a portage around the rapids of the Pigeon River. Grand Portage became the frontier headquarters of the North West Company, a dominant fur trading operation. In 1721, the French erected Fort Beauharnois on Lake Pepin. The Dakota (Sioux) and the Ojibwa (also called Chippewa) were the two prominent Native American nations in Minnesota from the colonial period until the middle of the nineteenth century (Eccles, 1997; Heidenreich, 1997; Minnesota Historical Society, 2011a).

- Frontier

The northeastern portion of the state (northeast of the Mississippi River) was included as part of the original Northwest Territory, under which the jurisdiction of the Ordinance of 1787 applied. The part of the state south of the Mississippi River was acquired by the United States from France in 1803 as part of the Louisiana Purchase. The northwestern portion of the state became U.S. territory in 1818 as part of a treaty with Britain that established the U.S.-Canadian Border at the 49th parallel, but border disputes would not be resolved until the Webster-Ashburton Treaty in 1842.

Fort Snelling (Minneapolis-St. Paul) was the first permanent U.S. settlement in the area in 1819, and was completed in 1825. The fort overlooked the junction of the Mississippi and Minnesota rivers. Immigration into the region was slow during the first half of the nineteenth century, but, once the value of the vast forestlands of northern and central Minnesota was recognized, lumbermen from the eastern states initiated a wave of settlement. This wave was followed by an

influx of German and Scandinavian immigrants who established farmsteads (Minnesota Historical Society, 2011a).

After 1860, Minnesota was the scene of bloody Indian uprisings, including the Sioux Uprising of 1862. The Dakota (Sioux), who had not remained in the state during the influx of American and European settlers, were confined to reservations, some the victims of forced land sales as the Federal Government reneged on earlier treaties. Starvation generated by drought and crop failures, the Dakota attacked local settlements, resulting more than 500 deaths, Indian and non-Indian. The Federal Government brutally extinguished the uprising.

- Transportation

The earliest passages through the wilderness were rivers and Native American trails, including the grand portage around the falls west of Lake Superior. Steamboats on the Mississippi brought settlers to St. Paul in increasing numbers during the early 1800s, and inland roads between settlements became more formalized. Railroads were the major infrastructure advance during the middle decades of the nineteenth century.

The Northern Pacific Railway and St. Paul & Pacific Railroad were early railroads in the state and they helped draw settlers to the state. James J. Hill played a major role in developing Minnesota's rail network, including connections into Canada. He also was the driving force behind extending rail routes west into North Dakota, Montana, and Idaho in the 1880s, which became the Great Northern Railway in the 1890s. Other railroads included the Milwaukee Road, the Lake Superior & Mississippi Railroad, the Soo Line, and the Minneapolis & St. Louis Railway (Hofsommer, 2005).

Ports along Lake Superior benefitted from robust trade on the Great Lakes. The port of Duluth shipped iron ore, coal, and grain from Minnesota to other Great Lakes ports as well as Canada. In 1959, the St. Lawrence Seaway opened, greatly curtailing the Lakes trade as ships leaving Duluth could access the Atlantic Ocean through the lakes and the St. Lawrence River.

- Agriculture

After the Civil War, European immigrants, notably Scandinavians and Germans flocked to Minnesota to settle the state's rich farmland, encouraged by the 1862 Homestead Act. Agricultural products include wheat, corn, oats, and flax. The volume of grain produced enabled Minnesota to become a leading maker of flour, counting Pillsbury and the Washburn-Crosby Company (later, General Mills) as leading millers by the beginning of the twentieth century.

- Industry and Manufacturing

The copious pine, balsam, and spruce forests of the territory spurred the development of the lumber industry as sawmills were built along its major rivers, notably the St. Croix in eastern Minnesota. These forests were opened to lumbering by the end of the 1830s and mostly gone by 1900. The lumbering industry shifted to the north after 1900 and declined thereafter (Minnesota Historical Society, 2011b).

Iron ore was mined commercially beginning in 1884 on the Vermilion Range. In 1890, extensive iron ore deposits were discovered at the Mesabi Range. Large-scale production at this deposit resulted in a population boom for northeastern Minnesota, especially at Duluth. Rigorous exploitation of the deposits depleted the state's reserves of high-grade ore by the late 1950s (Encyclopaedia Britannica 2009a).

- Commerce and Trade

Commerce and trade were initially locally focused. As transportation improved with the advent of better roads, steamers, and railroads, trade with southern Canada and nearby territories became more extended. Areas along Lake Superior developed as a result of a robust lake trade with such ports as Cleveland, Erie, and Buffalo. The first railroad in the state connected Minneapolis and St. Paul in 1862.

- Government

The Minnesota Territory was established on March 3, 1849, and included areas within what are now North Dakota and South Dakota. Minnesota became the 32nd state of the Union on May 11, 1858.

- Domestic, Social and Cultural

Settlement of Minnesota began during the eighteenth century, focused on areas along Lake Superior and the Mississippi. As a frontier area, commercial ties with Canada provided an important economic lifeline that was facilitated by the lack of enforcement of border crossing. Areas of central Canada were supplied from settlements in the Red River valley (Gilman, 1991; Wingerd, 2010).

Gradually, settlers spread throughout the state along the state's waterways. Early settlers erected log cabins and cleared fields of trees in order to farm their land. As houses became more elaborate, they were made of frame construction, and later from a variety of building materials, such as stone and brick. In larger urban environments, residences rose to multi-story dimensions in a variety of styles. Scandinavia immigration into the state increased rapidly after the 1862 Homestead Act and with improvements in transportation networks.

1.2.3.2 State of North Dakota

- Contact Period/Exploration/Frontier

Contact between Indigenous people and Europeans began in mid-eighteenth century as French fur traders ventured through the Northern Plains to explore the Rocky Mountains. The first recorded explorer to visit what is now North Dakota was Pierre Gaultier de Varennes, sieur (lord) de La Vérendrye. Fur traders from Canada began to arrive in the 1790s. Alexander Henry established the first trading post in the state at Pembina in 1801. Subsequent trading posts were founded at Fort Union and Fort Clark. Visits to the region by Europeans or Americans were infrequent until after 1804, when Lewis and Clark passed through the area. Men under the direction of Lewis and Clark erected Fort Mandan, where the explorers spent the winter (ND Tourism 2011; Eccles, 1997).

After the War of 1812, expansion west of the Mississippi River increased. American explorers and traders brought manufactured goods and liquor for trade with the Indians, as well as unfamiliar diseases. The populations of many native nations were decimated by contact with the American traders. As explorers and settlers moved westward, the U.S. Army erected numerous forts along the area's rivers beginning in 1857. Settlement of the Northern Plains began in earnest in 1861 with the creation of the Dakota Territory.

- Transportation

The first routes through the wilderness were Native American trails, then U.S military supply routes. Railroads were the major infrastructure advance after 1870. James J. Hill played a major role in developing North Dakota as he was the driving force behind extending rail routes west into North Dakota, Montana, and Idaho in the 1880s. Hill's Great Northern Railroad, the Soo Line Railroad, and the Northern Pacific Railroad linked the region to manufacturers in Minnesota and served to bring North Dakota's wheat crop to markets in the East (Controneo, 1970; Hedges, 1926; Murray, 1957).

- Agriculture

After the railroads reached the Red River, a period of rapid in-migration occurred as 100,000 settlers arrived into the territory between 1879 and 1886. Many of these settlers would establish farmsteads under the 1862 Homestead Act. "Some settled on 160-acre homesteads, while some created bonanza farms that were highly mechanized, well-funded and usually focused on large-scale wheat production" (ND Tourism, 2011). Many of these farms produced wheat, which was shipped to Minnesota to be processed into flour (NPS Parknet, 2011). As Bonanza farms prospered in the eastern part of the state, cattle ranches developed to the west after 1880, centered in the Badlands area.

In the twentieth century, farms diversified their production from wheat to other crops like sugar beets, sunflowers, and oats. Around the same time, farms consolidated, grew larger, and became increasingly mechanized. North Dakota has 77,690 farms in 1920 and less than 30,000 in the first decade of the twenty-first century. The average farm size at present is 1,280 acres (ND Tourism, 2011).

- Industry and Manufacturing

Local industries and light manufacturing are concentrated in the urban areas of the state, such as Fargo and Bismarck. In the twentieth century, oil and natural gas exploration became important industries. "North Dakota is a leading producer of coal, oil, gas, and wind energy" (ND Tourism 2011).

- Commerce and Trade

Commerce and trade focused on agricultural products, notably wheat. As transportation improved with the advent of better roads and railroads, trade with nearby territories became more extended.

- Government

Northeastern North Dakota was acquired by the United States through the Rush-Bagot Agreement of 1817, while most of what is now North Dakota was purchased from France in 1803 as part of the Louisiana Purchase in 1803. The Dakota Territory was established in 1861 and included what is now North and South Dakota. The territory was divided in 1889, and both North and South Dakota became states on November 2, 1889.

- Domestic, Social and Cultural

The U.S. Army established numerous forts in this region beginning in the late 1850s. Settlers and frontiersmen engaged in a great slaughter of northern bison after 1870, which undermined the nomadic culture of the local native nations. During the 1870s and 1880, the U.S. Army engaged in numerous battles with the native nations of the Northern Plains. By the end of the Indian wars in the 1890s, mining, open and fee-simple ranching, and Bonanza and dairy-farm

operations had been established throughout the region. Scandinavia and German immigration into the state increased rapidly after the 1862 Homestead Act and with improvements in transportation networks. In the 1950s, North Dakota became the home of two large Air Force bases: Minot and Grand Forks.

1.2.3.3 State of Montana

- Contact Period/Exploration/Frontier

The first recorded Euro-American exploration of what is now Montana was the Lewis and Clark Expedition on 1804-1806. François Antoine Laroque representing the North West Company of Canada, a fur-trading operation, explored the Yellowstone River after 1805. Prior to that time the state was occupied by numerous Native American nations, including the Crow, the Cheyenne, the Blackfeet, the Assiniboine (Ojibwe), the Gros Ventre, the Kootenai, the Chippewa, the Cree, the Lakota Sioux, the Arapaho, and the Shoshone.

As subsequent explorations west of the Red River increased, American fur trappers and traders brought manufactured goods and liquor for trade with the Indians, as well as unfamiliar diseases. The populations of many native nations were decimated by contact with the American traders. The period of active fur trading ended during 1840s. In addition to the mountain men, Catholic missionaries also entered the region, establishing Saint Mary's Mission in the Bitterroot Valley. This settlement is presumed to be the first permanent settlement in the state. The priests promoted agriculture and erected a sawmill (State of Montana, 2011).

Fort Benton, established as a fur trading post on the Missouri River in 1847, was the first permanent fort in Montana in 1865. In the 1860s, gold was discovered in Montana. As a result, prospectors and other settlers flocked to the region. "The rapid influx of people led to boomtowns that grew rapidly and declined just as quickly when the gold ran out" (State of Montana, 2011).

- Transportation

The first routes through the wilderness were Native American trails, then U.S. military supply routes. Fort Benton was the western-most navigable point for steamboats on the Missouri River, and became an important trade center as a result. Railroads were the major infrastructure advance after 1880. The Northern Pacific reached Billings in 1882. James J. Hill played a major role in developing the rail network along the northern border, extending a line from Minnesota across North Dakota, Montana, and Idaho into Washington during the 1880s. The line became the Great Northern Railway in the 1890s (Controneo, 1970; Hickcox, 1983; Yenne, 2005).

- Agriculture

Beginning in the 1860s, cattle ranches were established in the western valleys of the territory, spurred by the demand for meat by newly founded mining communities. The availability of free public-domain land in eastern Montana attracted open-range cattle ranches in the 1870s. The railroads also encouraged the development of agriculture along their routes. In 1909, the U.S. Congress passed the Enlarged Homestead Act as an encouragement to settle more marginal lands that could not be irrigated, which resulted in an influx of settlers. Many farmers grew oats and then switched to wheat. Wheat was a successful crop until drought and poor prices destroyed the market after World War I (State of Montana, 2011).

- Industry and Manufacturing

Montana is rich in mineral resources. Beginning in the 1860s, mining for gold, silver and copper led to the emergence of mining communities. Butte developed from nearby silver and copper deposits. The Anaconda Copper Company, one of the world's largest copper mining companies, was based in Butte (State of Montana, 2011). The demand for Montana's mineral wealth drew immigrants from Scandinavia, Central and Eastern Europe, and the United Kingdom.

- Commerce and Trade

Commerce and trade focused on agricultural products, notably oats and later wheat, beef, and mineral products. As transportation improved with the advent of better roads and railroads, trade with nearby territories became more extended.

- Government

Prior to 1863, what is now Montana was included as part of the Dakota and Washington territories. In 1863, Montana, Idaho, and most of Wyoming were subsumed as the Idaho territory. In 1864, the Montana Territory was created with the same boundaries it has now as a state. Montana was admitted to the union on November 8, 1889.

- Domestic, Social and Cultural

The increasing influx of settlers after 1860 engendered conflicts with the native nations, which could not access their traditional hunting areas. During the same time, the U.S. Army began establishing numerous forts in this region to provide protection and assert Federal authority. As a result, Montana became the scene of numerous battles between the army and various native nations over control of the land. These battles included the Battle of Little Big Horn with the Lakota and battles with the Nez Perce. By the end of the Indian wars in the 1890s, mining, open and fee-simple ranching, and farming operations had been established throughout the region.

The demand for Montana's mineral wealth drew immigrants from Scandinavia, Central and Eastern Europe, and the United Kingdom. The mixture of immigrant cultures as well as the manual nature of the work led to the emergence of union movements in the mines of Montana.

Beginning in the late nineteenth century, the Federal Government began purchasing large swaths of territory to serve as national parks, with Yellowstone being the first. Other parks include Glacier and Badlands national parks, and more than 20 national wildlife refuges in the region. Montana contains seven Indian reservations: Fort Peck Indian Reservation; Fort Belknap Indian Reservation; Northern Cheyenne Indian Reservation; Crow Indian Reservation; Rocky Boy's Indian Reservation; Blackfeet Indian Reservation; and Flathead Indian Reservation.

1.2.4 WOR REGION

1.2.4.1 State of Montana

A portion of the State of Montana is considered part of the EOR Region and a portion is considered part of the WOR Region. The historic context developed for the State is presented in its entirety in EOR Region section present above (see Section 1.2.4.2).

1.2.4.2 State of Idaho

- Exploration and Frontier

American exploration in the Northwest expanded after the Lewis and Clark expedition had crossed the continent in 1805. John Jacob Astor's Pacific Fur Company tried to compete in the fur trade by establishing an overland system of posts combined with a maritime trading network. The company sold out to the Northwest Company as a result of the War of 1812, but other independent traders known as mountain men continued to maintain an American presence in the region.

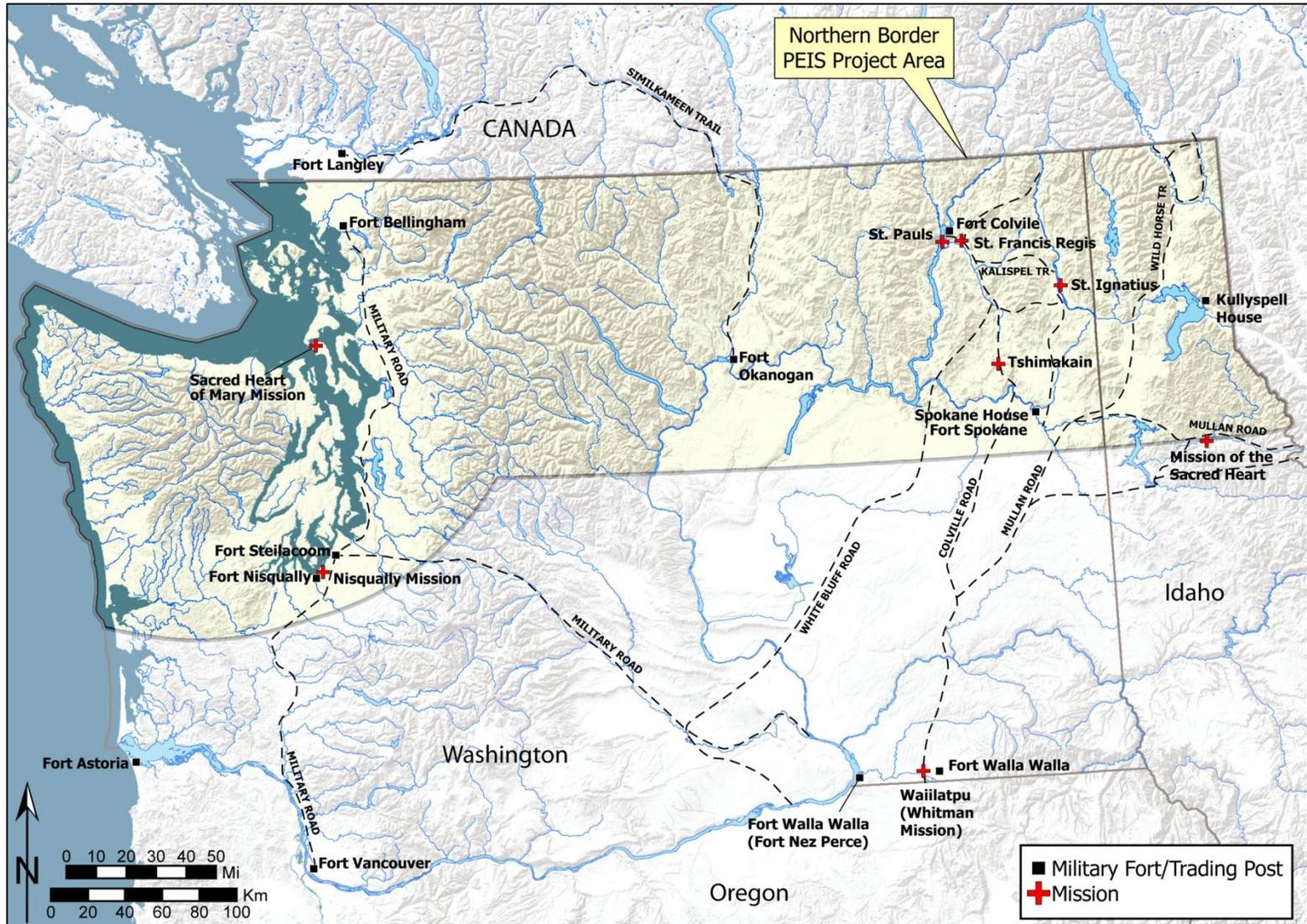
Rivalry between the two largest trading companies, the British Hudson's Bay Company (HBC) and Montreal-based Northwest Company, ended in a merger in 1821, and under the Hudson's Bay name. The new company not only controlled much of the Northwest fur trade but also advanced British dominance in the region. HBC established forts at strategic locations and set up far-reaching networks of exchange throughout the Northwest. None of these forts, however, was located in what is now Idaho (Figure H-9; Carpenter, 1986:25, 26, 30).

As expected, Christian missionaries followed closely behind the commercial ventures, hoping to convert the region's Native peoples. Missionaries conducted religious services at previously established fur-trading operations, as well as at newly created missions along important trade routes or near Native villages.

The American government had long contested British claims in the Northwest, and both sides signed a joint occupation agreement in 1818, which was renewed indefinitely in 1826. The United States pushed for a boundary between British and American interests running from the Rocky Mountains along the 49th parallel to the Pacific. England stood firm against this proposal, calling for the Columbia River as its suggested boundary. The British finally accepted the 49th parallel as the dividing line between the territories of the two countries in 1946. Each nation selected its own boundary commission, and together they spent a total of six years from 1857 to 1862 surveying, clearing and then marking the final boundary (Galbraith, 1957:196-199; Hayes, 2000:150, 171-174).

American settlement in the vast region north of the Columbia expanded quickly once the boundary treaty was signed. Oregon Territory was established in 1848 and included all of the land currently encompassed by Oregon, Washington, Idaho, northwestern Montana and western portions of Wyoming. As the territorial population grew, more would-be settlers headed north to the Puget Sound region and a few into the interior. These residents soon felt isolated from the Oregon territorial government based in Salem and petitioned Congress to create a separate northern territory. In March 1853 the Federal Government established Washington Territory, which continued to include large portions of present-day Idaho and Montana. A huge mining rush that increased the population of the inland counties ultimately led to the formation of a separate Idaho Territory in 1863 (Ficken, 2002:17-19; ISHS, 1976:36-38).

Figure H-9. Early Trails, Trading Posts, Forts, and Missions in Idaho and Washington



- Transportation

Improvements in transportation became the major determinant of growth throughout the region. Most Native peoples as well as outsiders who came into the region initially relied on water travel. The earliest explorers and traders along the coast arrived on sailing vessels but canoes were the preferred method of transportation on Puget Sound as well as most of the navigable rivers and streams throughout the interior.

The earliest trade routes in the region were established by Native peoples and were frequently linked to waterways. Incoming traders, miners and settlers readily utilized these established pathways to the interior. As early as 1807, Northwest Company traders crossed the Great Road of the Flatheads, a long-standing Native trail that extended from the Spokane River northeastward through Idaho to the Canadian border. This route became known as the Wild Horse Trail by the 1850s and was used by miners to reach the gold fields of British Columbia (Cork, 1991:3-6).

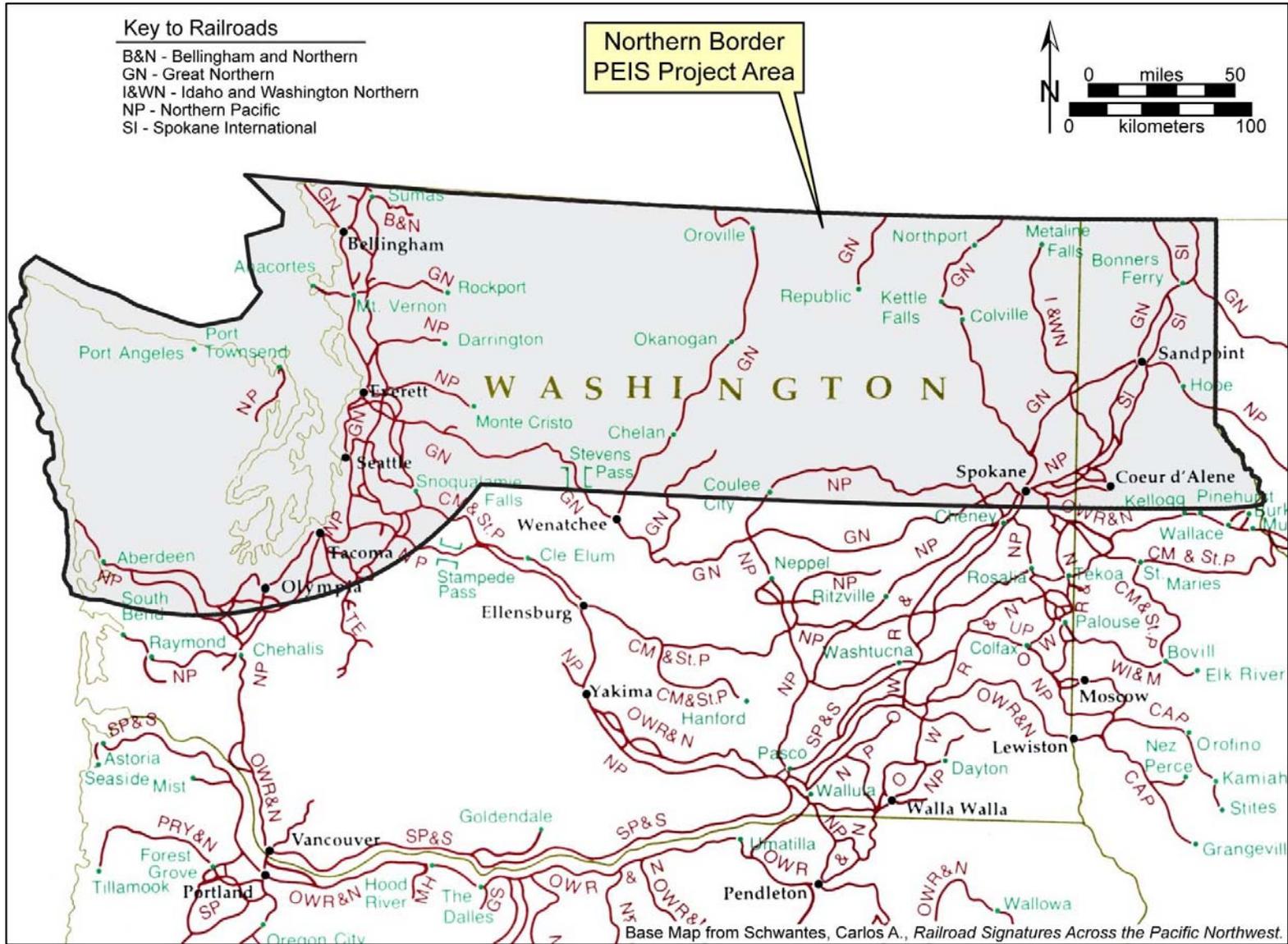
American settlers who wanted to claim their own land in the West came in greater numbers with the opening of the Oregon Trail. Construction of more permanent roads began once the region attained territorial status and the government needed to provide protection and other services for residents. Military roads connected newly built forts across the region and eventually helped to encourage new settlement. The government-built Mullan Road, which extended west from Fort Benton on the Missouri River through Idaho to Fort Walla Walla, opened in 1861 (Schwantes, 1989:149).

Despite the improvements in overland transportation, residents had to wait for the arrival of the railroads for reliable connections to outside markets (Figure H-10). As expected, politics led to the siting of the first transcontinental line through the center of the country, but a second transcontinental line—the Northern Pacific—was chartered in 1864 (Goetzmann, 1959: 274; Schwantes, 1989:142-144).

In 1870, construction of the Northern Pacific began simultaneously at Duluth, Minnesota, in the east and Kalama, Washington (near Tacoma), in the west. Construction was halted periodically as a result of financial difficulties but by 1880 work started on the Pend Oreille Division, which ran more than 200 miles from Ainsworth, near the confluence of the Snake and Columbia rivers, to Lake Pend Oreille. Tracks reached Spokane Falls in June 1881 and the south shore of Lake Pend Oreille on January 9, 1882 (Lewty, 1987:50-64, 90-92).

The first railroad to challenge the Northern Pacific was the Great Northern Railroad. The route of James J. Hill's Great Northern through Idaho ran south from Bonners Ferry to Sandpoint and then followed the northern shore of the Pend Oreille River, heading to Spokane (Armbruster 1999:163-173).

Figure H-10. Railroad System in Idaho and Washington, ca. 1916



Other regional railroads that crossed through eastern Washington and North Idaho included the Spokane International in 1906 and the Idaho & Washington Northern Railroad. Branch lines from the main railroads also spread across the region, joining towns and stimulating industrial growth (Fahey, 1986:195-196; Fahey, 1965:209-218).

Rail transport remained important from the World War I through the end of World War II, when improvements to the highway systems undermined the profitability of the lines. As automobile travel increased throughout the 1900s, Federal, State, and local governments worked to improve the network of roads nationwide. Significant Federal funding first became available with passage of the Federal Road Act of 1916 and both State and Federal legislation over the next few decades provided further support for new highway construction (Dilger, 2003:12-13).

- Agriculture

Congress passed the Donation Land Claim Act of 1850, which made very generous land grants to established residents of the territory. In most of the Northern Border PEIS project area these claims were limited in number and were often made by former HBC employees. The Donation law expired in 1855. In parts of North Idaho, two other land laws, the Timber and Stone Act and the Forest Homestead Act, were also widely used to make claims in heavily timbered areas. Settlers also purchased property from the railroads, which advertised and sold portions of their land grants, or in later years from lumber companies that offered cheap, cut-over lands (McLaughlin, 1994:64).

The range of crops grown varied with the environment, which was extremely diverse throughout the PEIS project area. One historian has likened the agricultural regions of the Northwest to “islands separated from one another by forests, mountains and vast prairies of sagebrush and native grasses” (Schwantes 1989:167). One of these islands of agriculture was in forested areas of eastern Washington and North Idaho, where stump ranch pioneers tried to convert cut-over lands into fields and pastures. In semi-arid parts of the interior, much of the land was initially used for grazing of cattle and sheep, while dryland farming techniques enabled some successful grain production (Schwantes, 1989:167-168).

The emergence of irrigation transformed other parts of the semi-arid interior. Apples, cherries and other fruit trees thrived on irrigated lands in the Okanogan and Wenatchee Valleys. Later, the construction of the Grand Coulee Dam led to the development of the Columbia Basin Project, an ambitious effort to irrigate more than half a million arid acres for alfalfa, sugar beets, potatoes and a variety of other crops. Near the Idaho border, the Rathdrum Prairie was also irrigated for agricultural production, although financed by several private ventures (Schwantes, 1989:167-171, 349; Meinig, 1969:479-480; Schwantes et al., 1988:90, 157, 160; Renk, 2002).

- Industry and Manufacturing

Timber was often the first “cash crop” for early settlers who cut railroad ties, shingle bolts and fence posts on their own claims. Like many other Northwest industries, the first sawmill in the region was operated by the HBC, but as more Americans arrived, small water-powered mills sprang up in virtually every settlement to mill lumber for buildings. The timber industry experienced a severe downturn during the 1893 depression but rebounded after 1900 when several giant lumber companies moved into the region, looking for new opportunities as

Midwestern reserves of white pine began to dwindle. The largest was the Weyerhaeuser syndicate, which purchased existing mills or started new ones in a number of North Idaho and Washington towns. Competing companies also located in the project area, all supported by lumber camps in the woods that used logging railroads, chutes and flumes and even river drives to remove the timber from often steep and rugged terrain. A unique timber culture also emerged, peopled by itinerant woodsmen and steam donkey engineers, crews of Japanese millworkers and ultimately union organizers trying to protect the interests of many of these laborers. Lumber production peaked in the mid-1920s but experienced a sharp decline with the onset of the Depression, only to recover once more following World War II when the nationwide housing boom led to a renewed demand for lumber products (Hutchison, 1938).

The mining industry in the region also experienced similar boom and bust cycles. Once the 1849 gold excitement in California began to wane, prospectors fanned out across the west looking for new opportunities. The first rush to the northern Rocky Mountain region came in 1855 with the discovery of gold near Colville, Washington. Similar discoveries followed in British Columbia, central and southern Idaho and Montana, generating considerable traffic across the Idaho panhandle. Eager miners and pack trains carrying supplies often used the Mullan Road or the Wildhorse Trail to reach the latest finds (Cork, 1991:3-6).

Another period of mining excitement began in 1882 with the discovery of gold near Murray, Idaho, followed by a major rush to the North Fork of the Coeur d'Alene River in the winter of 1883-1884. Regional mining soon shifted from gold to silver and lead and from placer to lode, as capitalists developed the mineral wealth of Shoshone County, Idaho, in particular. While these mines were by far the most important in northern Idaho, other areas attracted interest as well. An overflow of prospectors poked around the southern end of Lake Pend Oreille with little success, although a nearby silver-lead discovery sparked a rush to the new camp of Chloride in 1888. The community of Lakeview developed into a more permanent town to serve the surrounding mining region, where some lode mining and exploration continued intermittently until the 1960s (Fahey, 1986:175-176; Dahlgren and Kincaid, 1991:173; Hackbarth, 2003:57; Savage, 1967:90-95).

Lime and concrete manufacturing also developed along Lake Pend Oreille and was the basis of important industrial expansion in other parts of the Northwest, including the Baker River drainage and the San Juan Islands in the Western Washington. Energy production also became an important industry in the Northwest, as rivers were harnessed to provide power for growing communities. Private companies built many of the early dams and hydroelectric facilities, but public projects like Seattle's Ross Lake Dam development or the huge, Federally-sponsored Grand Coulee Dam on the Columbia River, added significantly to the region's industrial base.

- Commerce and Trade

In northern Idaho, the availability of transportation also frequently dictated the growth of towns and the development of commercial enterprises. Communities usually first evolved around significant industrial or agricultural activities, but location on major road or rail systems helped to ensure longevity. Depending on their size, smaller towns in northern Idaho, eastern Washington, the Columbia Basin and the interior of northwestern Washington often developed their own commercial districts that included basic banking, retail and supply functions, but also warehousing and storage facilities for the products that were grown, mined or manufactured

nearby. Transportation-related activities, including gas stations, auto repair as well as restaurants, taverns and tourist facilities also became established commercial ventures, especially as highway systems improved.

- Domestic

Initially, relatively large pieces of “free” property were offered in exchange for the construction of a dwelling and evidence of working the land. As a result, less desirable locations on steep mountainsides or arid bluffs were settled quickly once the more fertile options were no longer available. As a result, small single-family dwellings as well as a variety of outbuildings are found throughout the region where such lands were homesteaded. In many of these areas log construction was most prevalent in the early years of development. Frame houses predominated in communities where sawmills provided a ready supply of lumber, and often in more rural areas homeowners progressed from log cabins to larger frame homes as their economic situation or transportation access improved.

Towns developed in very different patterns than many areas of the eastern United States. Instead of commercial centers arising naturally out of well-established farming regions or industrial centers, many towns in the Northwest essentially arrived in the wilderness with the railroad. The major lines established stations at regular intervals and these stops became the centers of new communities. In other cases entrepreneurs claimed land at the junction of major roads on potential trade networks and hoped to profit by platting their holdings into town sites.

In both Washington and Idaho where extractive industries flourished, many companies built not only mills and manufacturing plants but also employee housing and other standard amenities. In some remote areas, there were no alternatives. In some industry-dominated communities, the settings were less picturesque, and often utilitarian company-built housing was merely an addition to an already-established town (Schwantes et al., 1988:113).

By the beginning of the twentieth century the leading cities within the PEIS project area—Seattle, Tacoma and Spokane—initiated most of the economic activity in the region, serving as labor pools, trade and transportation centers and the principal markets for the production of the rest of Washington and northern Idaho. Multi-family dwellings, residential hotels and tenements marked the city centers until the World War II era, when an influx of war workers led to the construction of defense housing as well as new urban and suburban neighborhoods (Schwantes, 1989:192; Woodbridge and Montgomery, 1980:12-18).

- Government

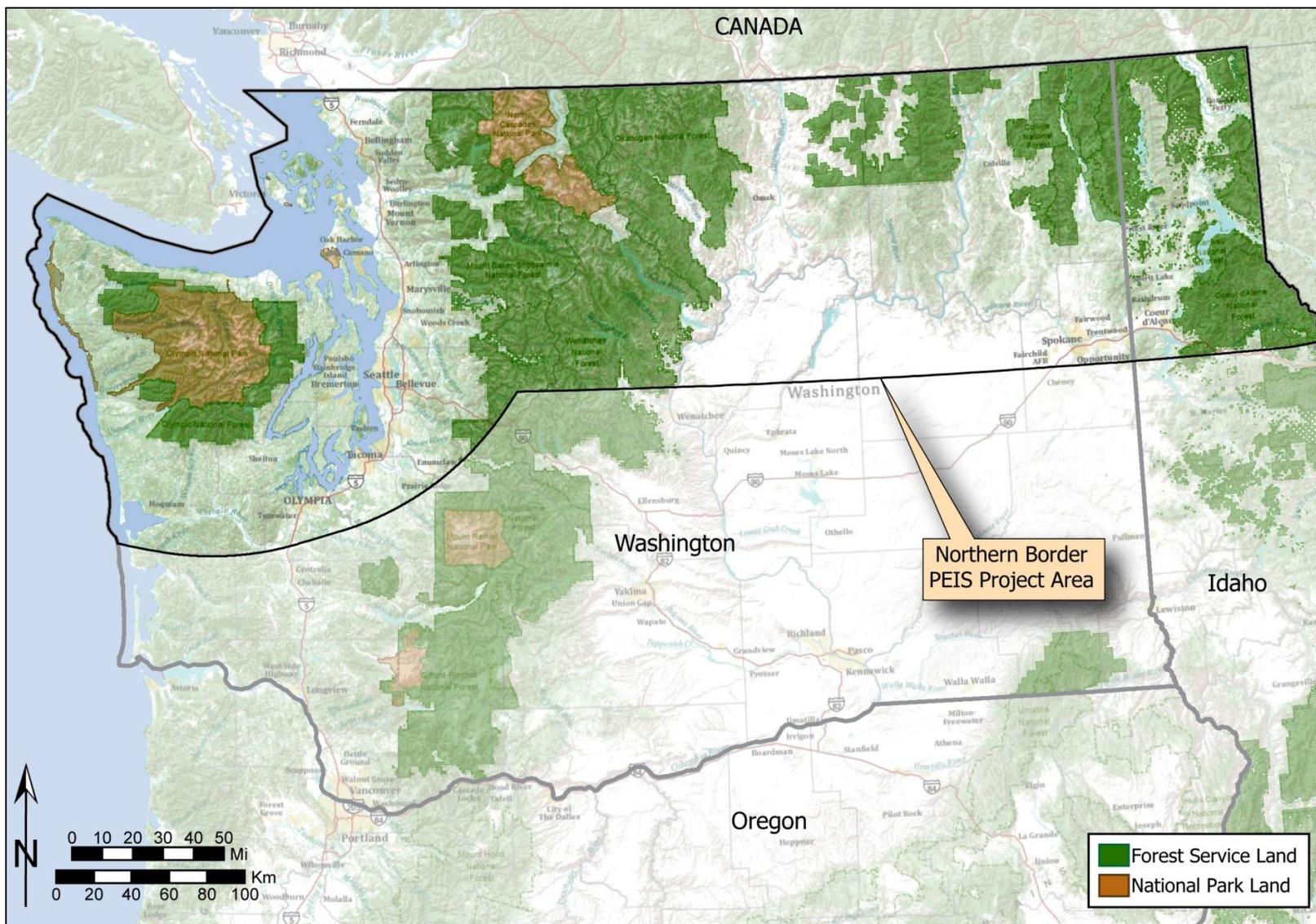
Idaho was included in the Territory of Washington beginning in 1853. Later North Idaho residents periodically threatened secession because of the huge distance to the State capital in Boise. An early role of the Federal Government was to disburse land to settlers, but gradually the value of preserving some of these lands for National Forests and other public uses changed the government’s focus to stewardship of remaining resources. Forests reserves established in the 1890s were precursors to the North Cascades National Park and the Mt. Baker-Snoqualmie National Forest. Similarly the first reserves in northeastern Washington and Idaho evolved into today’s Wenatchee, Colville, and Idaho Panhandle national forests. Today national park and national forest lands in the PEIS project area encompass more than 9.9 million acres in addition

to wildlife preserves, parks and protected areas administered by other government and private agencies (Figure H-11) (Steen, 1991:74-75; Holstine, 1978:44, 50; GIS data from Washington Department of Ecology and Idaho Department of Water Resources, 2009).

Early provisions that prohibited timber harvests, mining, or grazing on Federal lands eventually led to multiple-use management plans that sought to balance resource protection with public access. Government responsibilities in the national forests, for example, included the development of trails and roads for fire protection and logging but also for recreational use.

Government programs, and especially those connected with New Deal measures during the Depression era of the 1930s, also had an important impact on the improvement of public facilities. The Civilian Conservation Corps (CCC), for example, used young, jobless enrollees to work in forest protection and improvement, recreation development, range and wildlife enhancement as well as in emergency work to combat floods, fires, and other disasters. The Works Progress Administration (WPA), among other State and Federal programs, improved additional types of public lands by hiring the unemployed to construct new roadways, bridges and government buildings (Steen, 1991:34-36; Hollenbeck, 1987:284; CCC, 1939:73; Otis et al., 1986:9-10).

Figure H-11. Modern National Forests and Parks in Idaho and Washington



- Social and Cultural

Single men predominated in early migrations, and in some areas Masonic Lodges and other fraternal organizations, in addition to saloons, were among the first social establishments. As women and children followed, a primary emphasis was placed on schools. Parochial and private education remained common in growing communities. Territorial legislation in Idaho initiated tax-supported public education (Schwantes, 1989:222-223).

Many of the social institutions that developed also reflected the Northwest's multi-ethnic population base. The wide range of environments within the Northwest contributed to cultural diversity among the region's Native populations, and that diversity continued as newcomers from throughout the world made their way to Idaho. The railroads, in particular, fostered this diversity by hiring huge crews of Chinese, and later Japanese, construction workers and then by promotional efforts in many European countries to encourage immigration on their lines. Hispanic immigration also occurred throughout these periods although most notable are large groups who were drawn to the field of eastern Washington by labor shortages during World War II (Schwantes et al., 1988:70).

By 1900, 15 percent of Idaho's population was foreign born, and those numbers continued to grow over the next few decades. Ethnic groups brought with them social and cultural institutions that were often re-established in their new communities. As was the pattern throughout the West, immigrants frequently settled together around their places of work. Whether they included Italian railroad workers in Priest River, Idaho, German-Russian farmers in Ritzville, Washington, or Chinese business owners in Seattle, these ethnic communities developed their own social fabric that was a unique mix of age-old traditions and new practices. Like the rest of the country, racism and nativism were present in the Northwest, resulting in events like the expulsion of Chinese workers from coastal cities in the 1880s, segregated housing for Blacks in many cities, and the internment of Japanese citizens during World War II, but generally the region has recognized and tried to preserve the unique values of diversity (Schwantes, 1989:186).

1.2.4.3 State of Washington

- Exploration and Frontier

The earliest known explorers to interact with the Native peoples of the Pacific Northwest arrived by sea. Spanish seamen sailed up the Northwest coast as early as 1774, although it was not until 1790 that one of their expeditions first entered Puget Sound. The British joined northwest maritime exploration in 1792 when Captain George Vancouver led an expedition that further surveyed what became coastal Washington, mapping and naming a number of its land and water features.

Sea traders soon followed these explorers. Initially, the valuable pelts of the sea otter were the most sought-after commodity provided by native hunters. In the early nineteenth century, the high prices paid for beaver and other fur-bearing animals drew representatives of large trading companies in Britain, Canada, and the United States overland. They primarily traveled on rivers and streams and followed Indian trails or blazed their own way through mountains or other terrain where there was no navigable water (Scott and DeLorme, 1988:15; Whitebrook, 1959:65-67; 76-78).

American exploration in the Northwest also expanded after the Lewis and Clark expedition had crossed the continent in 1805. John Jacob Astor's Pacific Fur Company tried to compete in the fur trade by establishing an overland system of posts combined with a maritime trading network. The company sold out to the Northwest Company as a result of the War of 1812, but other independent traders known as mountain men continued to maintain an American presence in the region.

Rivalry between the two largest trading companies, the British Hudson's Bay Company (HBC) and Montreal-based Northwest Company, ended in a merger in 1821, and under the Hudson's Bay name. The new company not only controlled much of the Northwest fur trade but also advanced British dominance in the region. HBC established forts at strategic locations and set up far-reaching networks of exchange throughout the Northwest (see Figure H-9). Fort Vancouver, built near the confluence of the Columbia River and the Willamette River in 1824, became the centerpiece of company operations in the Northwest. Three years later HBC constructed Fort Langley at the mouth of the Fraser River in Canada to anchor the coastal trade on the north and eventually developed a coastal land route between the two outposts (Carpenter, 1986:25, 26, 30).

American exploration of the region also continued after Congress authorized the President to send naval vessels to survey the Pacific. The United States Exploring Expedition, under the command of Lieutenant Charles Wilkes, set out in 1838 on a four-year expedition, which further established American interest in the settlement of the Northwest Coast. Wilkes and his men made detailed surveys throughout Puget Sound and portions of the Columbia River, while other members of the party also traveled inland across the Cascade Mountains (Viola and Margolis, 1985: 9-11; Haskett, 1974:1-3; Tyler, 1968:244-245).

Both Catholic and Protestant missionaries soon followed the commercial ventures, hoping to minister to the Native peoples of the region, but often having more success with the expanding non-Native populations. Some conducted religious services at the fur trade forts, while others established their own missions along important travel routes or near major Indian villages.

The American government had long contested British claims in the Northwest, and both sides signed a joint occupation agreement in 1818, which was renewed indefinitely in 1826. The United States pushed for a boundary between British and American interests running from the Rocky Mountains along the 49th parallel to the Pacific. England stood firm against this proposal, calling for the Columbia River as its suggested boundary. The British finally accepted the 49th parallel as the dividing line between the territories of the two countries in 1946. Each nation selected its own boundary commission, and together they spent a total of six years from 1857 to 1862 surveying, clearing and then marking the final boundary. No agreement could be reached on the location of the offshore line between the mainland and Vancouver Island, and eventually this final portion of the boundary was settled by arbitration in 1872 (Galbraith, 1957:196-199; Hayes, 2000:150, 171-174).

American settlement in the vast region north of the Columbia expanded quickly once the boundary treaty was signed. Oregon Territory was established in 1848 and included all of the land currently encompassed by Oregon, Washington, Idaho, northwestern Montana and western portions of Wyoming. As the territorial population grew, more would-be settlers headed north to

the Puget Sound region and a few into the interior. These residents soon felt isolated from the Oregon territorial government based in Salem and petitioned Congress to create a separate northern territory. In March 1853 the Federal Government established Washington Territory, which continued to include large portions of present-day Idaho and Montana. A huge mining rush that increased the population of the inland counties ultimately led to the formation of a separate Idaho Territory in 1863 (Ficken, 2002:17-19; ISHS, 1976:36-38).

- Transportation

Improvements in transportation became the major determinant of growth throughout the region. Most Native peoples as well as outsiders who came into the region initially relied on water travel. The earliest explorers and traders along the coast arrived on sailing vessels but canoes were the preferred method of transportation on Puget Sound as well as most of the navigable rivers and streams throughout the interior. As the fur trade grew, the HBC first introduced steam vessels to carry larger loads on Puget Sound in 1836, but it was a few more decades before steamer traffic became common on inland lakes and rivers.

A system of trails established by Native peoples of the region often linked these waterways and became important travel routes for traders and the miners and settlers who followed them into the interior. As early as 1807, Northwest Company traders crossed a centuries-old trail called the Great Road of the Flatheads, which extended from the Spokane River northeastward through Idaho to the Canadian border. By the 1850s the same route became known as the Wild Horse Trail and was used by miners to reach the gold fields of British Columbia. Other important overland routes within the Northern Border PEIS project area included the Kalispel Trail in eastern Washington and trails that linked the Hudson's Bay posts in the interior and along the Pacific coast (Cork, 1991:3-6).

American settlers who wanted to claim their own land in the West came in greater numbers with the opening of the Oregon Trail. Most settlers reached Puget Sound by boat, although gradually trails along the coast were expanded into wagon roads. Construction of more permanent roads began once the region attained territorial status and the government needed to provide protection and other services for residents. Military roads connected newly built forts across the region and eventually helped to encourage new settlement. By 1854 one major route connected Fort Steilacoom on Puget Sound to Fort Walla Walla in south-central Washington, while the government-built Mullan Road, which extended west from Fort Benton on the Missouri River through Idaho to Fort Walla Walla, opened in 1861 (Schwantes, 1989:149).

Water transport also remained important on inland lakes and rivers, especially when it helped to shorten the journey to remote regions. In the 1860s steamers carried passengers up the Columbia River from Kettle Falls to the British Columbia mines and also on the Pend Oreille River north to the Metaline mining district. A system of small ferries, often cable-driven, also provided passage at deep-water crossings of rivers and streams until bridges were built (Harvey, 1989:6; Holstine, 1978:27-28).

Despite improvements in transportation access, Northwest residents also hoped for rail service to connect them to a much broader network of markets across the country (see Figure H-10). In 1853 railroad proponents persuaded Congress to appropriate funds for surveys of potential transcontinental routes. The timing of the surveys coincided with the approval of Washington's

territorial status, and the newly appointed governor, Isaac Ingalls Stevens, headed the exploring party that surveyed a potential northern route to the Pacific. Politics determined the location of the first transcontinental line through the center of the country, but a second cross-country railroad, the Northern Pacific, was chartered in 1864 (Goetzmann, 1959: 274; Schwantes, 1989:142-144; White [Richard], 1991:125; Moody, 1911:141-142).

In 1870 the Northern Pacific began construction at Duluth, Minnesota in the east and Kalama, Washington (near Tacoma), in the west. Financial difficulties halted progress but by 1880 work started on the Pend Oreille Division, which ran more than 200 miles from Ainsworth, near the confluence of the Snake and Columbia rivers, to Lake Pend Oreille. Tracks reached Spokane Falls in June 1881 and the south shore of Lake Pend Oreille on January 9, 1882 (Lewty, 1987:50-64, 90-92).

On the Puget Sound side, railroad officials had chosen Tacoma as the terminus. Disappointed rivals like Seattle responded by raising funds to build their own regional lines that would provide rail connections north to Canada or east to important mining and agricultural areas. The Seattle and Walla Walla and the Seattle, Lakeshore and Eastern as well as the Fairhaven and Southern in Bellingham were just a few of the local railroads that were ultimately absorbed by major lines as competition heated up for access to the Northwest.

The first of the transcontinental railroads to challenge the Northern Pacific was the Great Northern Railroad pushed west from the Great Lakes to the Pacific by James J. Hill. The Great Northern route ran through Idaho to the northern shore of the Pend Oreille River, heading to Spokane. The line then proceeded west through Stevens Pass, arriving in Seattle by 1893 (Armbruster1999:163-173).

Other regional railroads that crossed through Eastern Washington and North Idaho included the Spokane International, which joined Spokane with the Canadian Pacific Railroad at Eastport, Idaho, in 1906, and the Idaho & Washington Northern Railroad running north from McGuire through Spirit Lake and eventually on to Metaline Falls. Branch lines from the main railroads also spread across the region, joining towns and stimulating industrial growth (Fahey, 1986:195-196; Fahey, 1965:209-218).

Rail transport remained important through the World War I era and then experienced decline until World War II. At the same time, improved highway systems provided were increasingly used for both freight and public transportation. As automobile travel increased throughout the early 1900s, Federal, State, and local governments worked to improve the network of roads nationwide. Significant Federal funding first became available with passage of the Federal Road Act of 1916 and both State and Federal legislation over the next few decades provided further support for new highway construction (Dilger, 2003:12-13).

Airplanes also offered an alternative to ground, water and rail transportation. During the World War I era, military aircraft were manufactured in the Northwest and the first of a number of airbases were built. In the post-World War I era additional construction of landing strips, airfields and airports was undertaken for military, commercial and fire-prevention purposes. Some Federal funds were made available during the Depression era to build large numbers of

community airfields. By this time, the Forest Service had also begun to use airplanes for spotting fires and later flew smokejumpers into dangerous areas as a rapid response measure.

- Agriculture

Much of the early impetus for settlement in the Northwest was to claim land for agriculture, but it was not until transportation systems were in place by the 1890s that the amount of farm acreage began to rise dramatically and major crops were established. The HBC first introduced European agricultural practices at its posts throughout the Northwest to reduce high food costs and increase self-sufficiency. In addition, the company set up a subsidiary venture, the Puget Sound Agricultural Company, which established agriculture and grazing on company lands along south Puget Sound and on Whidbey Island to produce commodities for sale to Russia, Alaska, and Hawaii. Missionaries also introduced agricultural practices to local Indian populations and developed some of the first small irrigation systems in the region (Gibson, 1968:18).

Congress passed the Donation Land Claim Act of 1850, which made very generous land grants to established residents of the territory. In most of the Northern Border PEIS project area these claims were limited in number and were often made by former HBC employees. The Donation law expired in 1855 and subsequently the majority of Washington settlers filed for land under the Preemption Act, which allowed land purchases for a nominal fee, and the Homestead Act of 1862. Settlers also purchased property from the railroads, which advertised and sold portions of their land grants, or in later years from lumber companies that offered cheap, cut-over lands. In the Colville area large parcels of former Indian lands were also sold in the early twentieth century once allotments had been made under the provisions of the Dawes Act of 1887 (McLaughlin, 1994:64).

The range of crops grown varied with the environment, which was extremely diverse throughout the PEIS project area. One historian has likened the agricultural regions of the Northwest to “islands separated from one another by forests, mountains and vast prairies of sagebrush and native grasses” (Schwantes 1989:167). One of these islands of agriculture was immediately east of Puget Sound where plentiful rainfall and adequate soils encouraged dairying and truck farming. Another was in forested areas of Eastern Washington and North Idaho, where stump ranch pioneers tried to convert cut-over lands into fields and pastures. In semi-arid parts of the interior, much of the land was initially used for grazing of cattle and sheep, while dryland farming techniques enabled some successful grain production. Wheat became Washington’s most important crop by 1910, but its growing area extended only to the southern edges of the PEIS project area (Schwantes, 1989:167-168).

The emergence of irrigation transformed other parts of the semi-arid interior. Apples, cherries and other fruit trees thrived on irrigated lands in the Okanogan and Wenatchee Valleys. In 1908 Washington State planted over a million apple trees in a period known as “apple fever,” and within a decade Washington became the country’s leading producer, although subject to huge market swings. Later, the construction of the Grand Coulee Dam led to the development of the Columbia Basin Project, an ambitious effort to irrigate more than half a million arid acres for alfalfa, sugar beets, potatoes and a variety of other crops. Near the Idaho border, the Rathdrum Prairie was also irrigated for agricultural production, although financed by several private ventures (Schwantes, 1989:167-171, 349; Meinig, 1969:479-480; Schwantes et al., 1988:90, 157, 160; Renk, 2002).

- Industry and Manufacturing

The northern Puget Sound region and the inland Northwest offered an array of natural resources that could be exploited once transportation systems were in place. After the immediate needs of nearby communities were met, most industrial production and food processing was focused on the export market since the region's initial population was relatively small. The timber industry dominated during the early decades of growth on the Pacific coast, although mining brought the earliest population into the interior. Fish canning, grain milling, lime and concrete manufacture have been other important industries in the project area as has energy production (Chasen, 1981:6).

Timber was often the first "cash crop" for early settlers who cut railroad ties, shingle bolts and fence posts on their own claims. Like many other Northwest industries, the first sawmill in the region was operated by the HBC, but as more Americans arrived, small water-powered mills sprang up in virtually every settlement to mill lumber for buildings. The region's first steam mill was operating in Seattle by 1853, but it was the Olympic Peninsula that for a time became one of the world's leading lumber-producing regions. Much of the production was sent to California for use in its thriving Gold Rush settlements. Also prevalent in western Washington and parts of northern Idaho were shake and shingle mills that utilized locally available Western Red Cedar for their products. By 1890 Washington provided more than one third of the nation's supply (Hutchison, 1938; Ficken, 1967:60).

The timber industry experienced a severe downturn during the 1893 depression but rebounded after 1900 when several giant lumber companies moved into the region, looking for new opportunities as Midwestern reserves of white pine began to dwindle. The largest was the Weyerhaeuser syndicate, which purchased existing mills or started new ones in a number of North Idaho and Washington towns. Competing companies also located in the project area, all supported by lumber camps in the woods that used logging railroads, chutes and flumes and even river drives to remove the timber from often steep and rugged terrain. A unique timber culture also emerged, peopled by itinerant woodsmen and steam donkey engineers, crews of Japanese millworkers and ultimately union organizers trying to protect the interests of many of these laborers. Lumber production peaked in the mid-1920s but experienced a sharp decline with the onset of the Depression, only to recover once more following World War II when the nationwide housing boom led to a renewed demand for lumber products (Hutchison, 1938).

The mining industry in the region also experienced similar boom and bust cycles. Once the 1849 gold excitement in California began to wane, prospectors fanned out across the west looking for new opportunities. The first rush to the northern Rocky Mountain region came in 1855 with the discovery of gold near Colville, Washington. Similar discoveries followed in British Columbia, central and southern Idaho and Montana, generating considerable traffic across the Idaho panhandle. Eager miners and pack trains carrying supplies often used the Mullan Road or the Wildhorse Trail to reach the latest finds (Cork, 1991:3-6).

An overflow of prospectors poked around the southern end of Lake Pend Oreille with little success, although a nearby silver-lead discovery sparked a rush to the new camp of Chloride in 1888. The community of Lakeview developed into a more permanent town to serve the surrounding mining region, where some lode mining and exploration continued intermittently

until the 1960s (Fahey, 1986:175-176; Dahlgren and Kincaid, 1991:173; Hackbarth, 2003:57; Savage, 1967:90-95).

Lime and concrete manufacturing also developed along Lake Pend Oreille and was the basis of important industrial expansion in other parts of the Northwest, including the Baker River drainage and the San Juan Islands in the Western Washington. Coal mining conducted in the Cascade Mountains and in areas south of Seattle contributed to that city's early export base. Food processing began as early as the 1870s as salmon canneries were built in coastal towns like Mukilteo and Anacortes, while the milling of wheat and other grains became an early mainstay of Spokane and other inland communities. The advent of the railroad allowed grain to be shipped to coastal ports like Seattle and Tacoma where it could also be processed and shipped to markets abroad. Energy production also became an important industry in the Northwest, as rivers were harnessed to provide power for growing communities. Private companies built many of the early dams and hydroelectric facilities, but public projects like Seattle's Ross Lake Dam development or the huge, Federally sponsored Grand Coulee Dam on the Columbia River, added significantly to the region's industrial base.

- Commerce and Trade

Beginning with the shipment of furs, salted salmon and a few agricultural products during the early decades of the nineteenth century, the Northwest coast developed a thriving Pacific trade. For many years California was the region's major commercial partner, and a number of new ports, including Bellingham, Anacortes and Port Gamble, grew up around north Puget Sound to ship out lumber and other wood products. The advent of regional and then transcontinental rail lines not only opened up interior markets by the 1880s and 1890s, but also fostered an expanded trans-Pacific trade with Hawaii, China and other parts of Southeast Asia as well as Central and South America. Seattle became a supply point for the Klondike Gold Rush of 1897, forging stronger trade ties with Alaska and British Columbia (Berner, 1991:22-23).

Elsewhere in Washington and northern Idaho, the availability of transportation also frequently dictated the growth of towns and the development of commercial enterprises. Communities usually first evolved around significant industrial or agricultural activities, but location on major road or rail systems helped to ensure longevity. Most of the major Washington cities—Bellingham, Everett, Seattle, Tacoma and Olympia on Puget Sound and Spokane in the interior—are within the Northern Border PEIS project area, and these urban centers generally grew as transportation hubs and commercial entrepots for resource-rich hinterlands.

Depending on their size, smaller towns in northern Idaho, eastern Washington, the Columbia Basin and the interior of northwestern Washington often developed their own commercial districts that included basic banking, retail and supply functions, but also warehousing and storage facilities for the products that were grown, mined or manufactured nearby. Transportation-related activities, including gas stations, auto repair as well as restaurants, taverns and tourist facilities also became established commercial ventures, especially as highway systems improved.

- Domestic

Population distribution throughout the Northwest has generally been very uneven, with the preponderance of settlement in lowlands along the coastline or on major river drainages. Since

early land laws offered relatively large pieces of “free” property in exchange for construction of a dwelling and evidence of working the land, less desirable locations on steep mountainsides or arid bluffs were also settled quickly once the choice options were no longer available. As a result, small single-family dwellings as well as a variety of outbuildings are found throughout the region where such lands were homesteaded. In many of these areas log construction was most prevalent in the early years of development. Frame houses predominated in communities where sawmills provided a ready supply of lumber, and often in more rural areas homeowners progressed from log cabins to larger frame homes as their economic situation or transportation access improved.

Towns developed in very different patterns than many areas of the eastern United States. Instead of commercial centers arising naturally out of well-established farming regions or industrial centers, many towns in the Northwest essentially arrived in the wilderness with the railroad. The major lines established stations at regular intervals and these stops became the centers of new communities. In other cases entrepreneurs claimed land at the junction of major roads on potential trade networks and hoped to profit by platting their holdings into town sites.

In both Washington and Idaho where extractive industries flourished, many companies built not only mills and manufacturing plants but also employee housing and other standard amenities. In some remote areas, there were no alternatives. In situations like the Puget Sound sawmill town of Port Gamble, built by the Pope and Talbot Lumber Company, small worker houses that reflected the firm’s New England roots were set on tree-lined streets with a community hall, school and hospital nearby. In other industry-dominated communities, the settings were much less picturesque, and often utilitarian company-built housing was merely an addition to an already-established town (Schwantes et al., 1988:113).

By the beginning of the twentieth century the leading cities within the PEIS project area—Seattle, Tacoma, and Spokane—initiated most of the economic activity in the region, serving as labor pools, trade and transportation centers, and the principal markets for the production of the rest of Washington and northern Idaho. The rate of growth in these urban centers was dramatic. Spokane, in particular, developed from a backwater of only 350 people in 1880 to a metropolis of over 100,000 in 1920, while during the same period, Seattle’s population increased ten-fold. All these people needed homes and within the growing cities, single-family residences increasingly were built outside the urban core, with neighborhoods defined by socio-economic criteria, ranging from pattern book to architect-designed styles that generally reflected prestige and perceived popular taste rather than a local identity. Multi-family dwellings, residential hotels and tenements marked the city centers until the World War II era, when an influx of war workers led to the construction of defense housing as well as new urban and suburban neighborhoods (Schwantes, 1989:192; Woodbridge and Montgomery, 1980:12-18).

- Government

The Territory of Washington was first established in 1853 because its far-flung settlers felt that they were being ignored by the Oregon territorial government. Later North Idaho residents periodically threatened secession because of the huge distance to the State capital in Boise. Yet over time, despite some citizen mistrust, Federal, State and local governments played a major role in many aspects of Northwest life, from military operations, resource management and infrastructure development to political organization and protection of citizens.

Among the first actions of Washington territorial government were treaty negotiations with Indian tribes and the establishment of a justice system. During what became known as the Treaty War period, small communities feared attack from local tribes after the treaties were negotiated, and the government responded by calling out volunteer militia units and also building a few strategic forts and blockhouses. Naval ships patrolled the Washington coast while in the interior Army troops battled with Indian groups in several interior areas, including Spokane Plains and Four Lakes. In later years, problems with Native peoples no longer threatened, but new military and strategic considerations also prompted the government to locate a number of Army, Navy and Coast Guard facilities around Puget Sound, including several within the PEIS project area. Additional military bases were established near Spokane, including the World War II-era Farragut Naval Station on Lake Pend Oreille in Idaho (Ruby and Brown, 1970:128-133).

Another early role of the Federal Government was to disburse land to settlers, but gradually the value of preserving some of these lands for National Forests and other public uses changed the government's focus to stewardship of remaining resources. Forests reserves established in the 1890s were precursors to the North Cascades National Park and the Mt. Baker-Snoqualmie National Forest. Similarly the first reserves in northeastern Washington and Idaho evolved into today's Wenatchee, Colville, and Idaho Panhandle national forests. Today national park and national forest lands in the PEIS project area encompass more than 9.9 million acres in addition to wildlife preserves, parks and protected areas administered by other government and private agencies (see Figure H-11) (Steen, 1991:74-75; Holstine, 1978:44, 50; GIS data from Washington Department of Ecology and Idaho Department of Water Resources, 2009).

Early provisions that prohibited timber harvests, mining, or grazing on Federal lands eventually led to multiple-use management plans that sought to balance resource protection with public access. Government responsibilities in the national forests, for example, included the development of trails and roads for fire protection and logging but also for recreational use. Government programs, and especially those connected with New Deal measures during the Depression era of the 1930s, also had an important impact on the improvement of public facilities. The CCC, for example, used young, jobless enrollees to work in forest protection and improvement, recreation development, range and wildlife enhancement as well as in emergency work to combat floods, fires, and other disasters. The WPA, among other state and Federal programs, improved additional types of public lands by hiring the unemployed to construct new roadways, bridges and government buildings (Steen, 1991:34-36; Hollenbeck, 1987:284; CCC, 1939:73; Otis et al., 1986:9-10).

- Social and Cultural

Communities of all sizes needed to address issues related to quality of life and social interactions among its citizens. In this context social and cultural components are broadly defined to include a wide array of activities related to entertainment, health, religious, educational and funerary practices as well as the unique contributions made by the region's widely diverse populations.

In communities across the Northwest, social institutions quickly followed settlement. Single men predominated in early migrations, and in some areas Masonic Lodges and other fraternal organizations, in addition to saloons, were among the first social establishments. As women and children followed, a primary emphasis was placed on schools. The early missionaries had integrated education into their religious programs, and parochial and private education remained

common in growing communities. Territorial legislation in both Washington and Idaho initiated tax-supported public education and Washington's Organic Law of 1853 reserved two sections of land in each township to support schools (Schwantes, 1989:222-223).

Other social institutions evolved with the growth of communities. With limited entertainment options, civic groups provided an opportunity for residents to come together outside of their homes or places of work. Churches often became community centers, while public meeting halls were often privately built or incorporated into the same space as organizations like the Grange or local unions. Entertainment options varied from traveling chautauquas and circuses to vaudeville shows in larger cities, while civic organizations, and particularly women's clubs, sponsored musical and cultural events and raised money to support of libraries, gardens, parks and other civic improvements. Generally it was not until the 1880s that towns or other government entities began to play a role in establishing public amenities like parks, playgrounds and other recreational and social facilities. This mix of private and public responsibility for social needs also extended to health care, where physicians developed practices and even small infirmaries in their homes until public facilities, including hospitals, sanitariums, and orphanages, were established.

Many of the social institutions that developed also reflected the Northwest's multi-ethnic population base. The wide range of environments within the Northwest contributed to cultural diversity among the region's Native populations, and that diversity continued as newcomers from throughout the world made their way to Washington and Idaho. The mixed racial fur trade communities introduced by the HBC gave way to new ethnic groups who came for labor or agricultural opportunities. The railroads, in particular, fostered this diversity by hiring huge crews of Chinese, and later Japanese, construction workers and then by promotional efforts in many European countries to encourage immigration on their lines. Scandinavians formed the largest incoming ethnic group, but Great Britain, Italy, and Russia also contributed significant numbers who populated factories and farms between 1880 and 1920. Hispanic immigration also occurred throughout these periods although most notable are large groups who were drawn to the field of eastern Washington by labor shortages during World War II (Schwantes et al., 1988:70).

By 1900, 22 percent of Washington's population was foreign born, and those numbers continued to grow over the next few decades. Ethnic groups brought with them social and cultural institutions that were often re-established in their new communities. As was the pattern throughout the West, immigrants frequently settled together around their places of work. Whether they included Italian railroad workers in Priest River, Idaho, German-Russian farmers in Ritzville, Washington, or Chinese business owners in Seattle, these ethnic communities developed their own social fabric that was a unique mix of age-old traditions and new practices. Like the rest of the country, racism and nativism were present in the Northwest, resulting in events like the expulsion of Chinese workers from coastal cities in the 1880s, segregated housing for Blacks in many cities, and the internment of Japanese citizens during World War II, but generally the region has recognized and tried to preserve the unique values of diversity (Schwantes, 1989:186).

2 NATIVE AMERICAN SACRED SITES AND TRADITIONAL CULTURAL PROPERTIES

2.1 INTRODUCTION

This section includes brief descriptions of Native American sacred sites and Traditional Cultural Properties (TCP) in the four geographic regions (encompassing 13 states) that are within the 100-mile corridor of the northern border project area. Much of this information is highly protected and is difficult, and often impossible, to obtain. Additional information about these properties may be obtained during the Section 106 consultation process.

Cultural resources may include Traditional Cultural Places or sacred sites as outlined in National Register Bulletin 38 (cf., Parker and King, 1991, 1992; Hadley, 1993; Staap and Burney, 2002). Additional relevant legislation includes the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA) Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act. Native American sacred sites and TCPs certainly exist within the northern border project area. However, these property types present specific challenges in regard to identification, because no single database exists for this purpose. There are also several challenges to ascribing cultural affiliation to a specific sacred site or TCPs for the purposes of consultation.

Examples of some categories of Native American sacred sites and TCPs that occur within the northern border project area include:

- Burials sites
- Notable Places and/or Landmarks

Places of religious significance

Several forms of data can typically be used to ascribe cultural affiliation to a specific sacred site or TCPs for the purposes of consultation. However, in some instances insufficient data may preclude an objective valid conclusion concerning cultural affiliation. Several groups may claim cultural ties to or ownership of a specific sacred site or TCP. The absence of a sacred sites and TCP database might require the collection of some basic information as to the range of resources that are likely to provide information in regard to sacred sites and TCPs within the northern border project area. Some likely archives or organizations to contact to learn of the scope of their holdings for primary, secondary, and ethnographic data include various Native and ethnic cultural groups, local and state libraries, historical societies, and preservation organizations, folklore societies, and universities and colleges. Oral interviews with individuals who may possess firsthand knowledge of or have researched Native American sacred sites and TCPs might also be productive. Information can be tabulated manually or digitized in a geographic information system (GIS) format for more powerful use.

2.1.1 NEW ENGLAND REGION

2.1.1.1 State of Maine

Although Maine's Tribes certainly have locations considered sacred and locations considered to represent TCPs, none are officially designated with the National Park Service. For instance, the Penobscot Nation considers locations such as Mt. Katahdin, Cadillac Mountain and the historic village of Norridgewock, as sacred sites, but these locations are not formally designated as such and this is not an exhaustive listing of all locations considered sacred to the Penobscot.

2.1.1.2 State of New Hampshire

Native American sacred sites and TCPs in the New Hampshire portion of the northern border project area include, but are not limited to, burials, notable places and/or landmarks, and places of religious significance. In general, human burial sites should be afforded some specific recognition or degree of respect. The manner and degree of treatment ultimately falls upon individual customs and beliefs. Ancient to modern Native American, Euro-American, and other ethnic burials exist across the northern border project area of New Hampshire. Burial contexts range widely from isolated unmarked burials to large cemeteries.

It is not unusual for natural landmarks to traditionally mark Native American or Euro-American travel corridors, burials, boundaries, or the places of significant events. Additionally, the places where events occurred may themselves be considered significant. Notable places and landmarks could represent a category of Native American sacred sites and TCPs within the northern border project area of New Hampshire. For example, the Old Man of the Mountain, in Franconia, New Hampshire was a series of five granite cliff ledges on Cannon Mountain in the White Mountains and when viewed from the north, appeared to be the jagged profile of a face. In 2003, the formation collapsed to the ground. The profile has long been a recognizable place and symbol for New Hampshire that could be considered a sacred or Traditional Cultural Place. Special significance might be attributed to places that witnessed important, tragic, or ceremonial events, such as battles, trading spots, or peace ceremonies (Price 1956). Some groups might also consider natural resource areas, where food or medicinal plants were gathered, sacred sites or TCPs.

Americans generally agree that individuals should be free to worship in any manner that they choose as long as their activities do not infringe upon others. For many cultures throughout time, worship is tied to a specific location. Native peoples of New Hampshire ascribe sacred and traditional significance to places associated with Abenaki mythology and creation stories. Ethnohistorical accounts of Native Americans in New Hampshire specifically identify Mount Washington as a sacred location and attribute spiritual significance to other mountainous areas in general (Bayly 1997). "Today Mt. Washington is nicknamed 'The Rockpile' but to the Native Americans it was Agiocochook, an Abenaki name meaning 'Home of the Great Spirit'" (www.nhmagazine.com 2009).

2.1.1.3 State of Vermont

The United States, Vermont, and local communities within the state encourage preservation of a range of Historic Properties through a variety of means. In addition to Federal legislation noted in Section 2.1, state legislation concerning Native American sacred sites and TCPs in Vermont

includes the Vermont Historic Preservation Act and the state's land use law ACT 250, as well as local ordinances. Together with the Federal legislation, these state ordinances led to the establishment of state agencies who safeguard archeological sites and historical properties, such as the Vermont Division for Historic Preservation. Other organizations such as Partners for Sacred Places, the only national, non-sectarian, non-profit organization devoted to helping congregations and their communities sustain and actively use older and historic sacred places (<http://www.sacredplaces.org/>) may be interested in issues concerning sacred sites. Non-profit organizations such as the Archaeological Conservancy, the Vermont Archaeological Society, the Vermont Historical Society, and the Land Trust of Vermont are key partners toward effective historic preservation. During the last decade, states across the nation have made significant progress toward cultural resource stewardship through programs like Archaeology Week or Month and other public outreach. These exemplary programs discourage unnecessary collecting and excavation of archeological sites, Native American sacred sites, and TCPs.

Native American sacred sites and TCPs in the New Hampshire portion of the northern border project area include, but are not limited to, burials, notable places and/or landmarks, and places of religious significance. In general, human burial sites should be afforded some specific recognition or degree of respect. The manner and degree of treatment ultimately falls upon individual customs and beliefs. Ancient to modern Native American, Euro-American, and other ethnic burials exist across the northern border project area of New Hampshire. Burial contexts range widely from isolated unmarked burials to large cemeteries.

It is not unusual for natural landmarks to traditionally mark Native American or Euro-American travel corridors, burials, boundaries, or the places of significant events. Additionally, the places where events occurred may themselves be considered significant. Notable places and landmarks could represent a category of Native American sacred sites and TCPs within the northern border project area of Vermont. For example, a Traditional Cultural Place could be the Socialist Labor Party Hall in Barre, Vermont that had special significance to the city's Italian community. This 1900 Labor Hall provided a meeting place for the Italian community. Special significance might be attributed to places that witnessed important, tragic, or ceremonial events, such as battles, trading spots, or peace ceremonies (Price 1956). Some groups might also consider natural resource areas, where food or medicinal plants were gathered, sacred sites or TCPs.

Americans generally agree that individuals should be free to worship in any manner that they choose as long as their activities do not infringe upon others. For many cultures throughout time, worship is tied to a specific location. Native peoples of Vermont ascribe sacred and traditional significance to places associated with Abenaki mythology and creation stories such as those of Odzihózo on Lake Champlain and Bedgwadzo "Round Mountain" (Haviland and Power 1994), perhaps in a manner similar to Roman Catholics of French-Canadian descents who travel to St. Anne's Shrine. Meeks (1986b:241) wrote that in 1976, St. Anne's Shrine ranked seventh of Vermont's summer stopping spots with 56,000 visitors. Modern Abenaki peoples have also regarded petroglyph sites, such as those at Bellows Falls and Brattleboro, Vermont as powerful sacred places.

2.1.2 GREAT LAKES REGION

2.1.2.1 State of New York

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.2.2 Commonwealth of Pennsylvania

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.2.3 State of Ohio

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.2.4 State of Michigan (Lower Peninsula)

There are no Native American sacred sites known although they undoubtedly exist in Michigan's Lower Peninsula. Additional consultation on a project-specific basis will be required.

2.1.2.5 States of Michigan (Upper Peninsula) and Wisconsin

There are no Native American sacred sites known although they undoubtedly do exist in Michigan's Upper Peninsula and northern Wisconsin. Additional consultation on a project-specific basis will be required.

2.1.3 EOR REGION

2.1.3.1 State of Minnesota

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.3.2 State of North Dakota

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.3.3 State of Montana

This sensitive information is presently unavailable for this area. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

2.1.4 WOR REGION

2.1.4.1 States of Washington and Idaho

This sensitive information is presently unavailable for the states of Washington and Idaho. However, it is hoped that consultation with interested tribal parties, as part of the ongoing Section 106 process, will develop the appropriate information.

3 ABOVE-GROUND HISTORIC PROPERTY TYPES

The National Historic Preservation Act defines a historic property as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (36 Code of Federal Regulations (CFR) 800.16(1)). For Section 106 review purposes, properties eligible for listing in the National Register are treated the same as properties listed in the National Register.

In order for a property to be eligible for listing in the National Register, and be considered a historic property, it must be:

- A building, site, structure, object, or historic district.
- At least 50 years old. In rare exceptions, a property less than 50 years old may be considered a historic property. These exceptions are for more recent properties of outstanding historical significance (as an example, the Allen Park Veterans Affairs Medical Center in Michigan, built in 1939, was determined eligible for its exceptional architecture in 1981).
- Significant within its historic context.
- Possessing integrity, meaning maintaining enough of the original qualities that make it significant.

Section 101 of the NHPA and the National Register regulations (36 CFR 60.3) classify historic properties in the following broad types:

- **Building.** A building is a structure that shelters people where they live and work. Historic buildings may be public or private, grand or humble, and reflect the diversity of human activity. Examples include houses, offices, schools, mills, prisons, libraries, and train stations. In addition to buildings with notable architectural features, so-called vernacular buildings may have historic significance because of their association with people's everyday lives. Examples include buildings such as barns, row or tract houses, rural cottages, and diners.
- **Site.** A site is the location of an event or events. It may be historically important regardless of the historic value of any existing building or structure it encompasses. Examples include archaeological sites, whether ancient or relatively recent (historic), battlefields, designed landscapes such as cemeteries or parks, vernacular landscapes, ruins, and places of religious significance. Archaeological sites might include above-ground components such as intaglios or petroglyphs (rock carvings), pictographs (rock paintings), or standing ruins; however the majority are buried in the ground, and require subsurface field testing to locate, identify, and evaluate. Historic landscapes and traditional religious sites may be difficult to identify. Traditional cultural properties such as sites of religious significance may be identified by the Tribal Historic Preservation Officer (THPO), Native Hawaiian organization, or other tribal representative.
- **Structure.** A structure is a functional construction, built for some purpose other than sheltering human activity. Often structures are large-scale engineering projects. Examples include bridges, dams, canals, roads, windmills, signal towers, and air or watercraft.

- **Object.** An object is defined as a small-scale construction, often of artistic intent, that exists in a setting appropriate to its historic significance. Objects may be small and moveable, but are intended for a specific location. Examples include monuments, statues, boundary markers, and mileposts.
- **District.** A district may be composed of a variety of property types, unified by their relationships to a historic period or periods. They often contain both “contributing” and “non-contributing” components. That is to say, not all the buildings, sites, structures, etc. within the district contribute to its historical significance. Examples include college campuses, rural estates, rural villages, industrial complexes, commercial centers, concentrations of archaeological sites, areas of traditional cultural significance to Native American tribes, irrigation systems, and transportation systems.

This section includes overviews of the above-ground historic property types found within the four geographic regions (encompassing 13 states) covered by the 100-mile corridor of the northern border project area.

3.1 NEW ENGLAND REGION

3.1.1 STATE OF MAINE

Buildings

As a primarily rural, agricultural state, historic buildings in Maine tend overwhelmingly to be residential and small-scale commercial (i.e., smaller downtown business districts). While the earliest houses in the state, from the late seventeenth and early eighteenth centuries, tend to be along the coast, several eighteenth century houses exist in the southern portions of the study area. The highest concentration of eighteenth century houses outside of the coastal counties can be found in Oxford County, where 12 are listed on the National Register of Historic Places (NRHP). Most of the counties in the central and northern parts of the state, however, show few if any eighteenth century buildings. Houses from the early eighteenth century generally are one or one and one-half story buildings, often constructed of logs, while houses from the middle and later parts of the eighteenth century are one, one and one-half, or two stories in height, constructed around a timber frame, and generally with a central brick chimney and unadorned wood siding.

The northern portion of Maine, principally Aroostook County, was in flux through the early nineteenth century as a result of the uncertainty over the border with Canada. The border tensions led to the creation of a blockhouse fort (now located in Fort Kent) along the St. John River. The early architectural traditions in northern Aroostook County along the border remained influenced by the Acadian settlers, whose building technology differed from that of their English counterparts in the lower part of the state. The Acadian vernacular architectural traditions in the eighteenth century included log houses that used tenons at the corners rather than notches.

The rivers that drained from the uplands to the coast provided both a source of power and an easy access route to the markets of Boston; this combination provided great opportunities for entrepreneurs in the early nineteenth century. Railroads first arrived in Maine in the late 1840s, and expanded quickly through the 1850s and 1860s; these provided additional incentives for growth by making the development of factories and larger lumber mills feasible. As a result, the

state of Maine saw a period of impressive economic growth in the decades leading up to the Civil War. Much of this development took place in the central portions of the state, where the rivers proved easier to control. New towns emerged to take advantage of this growth, including Auburn, Lewiston Rumford, Farmington, Madison, Skowhegan, Houlton, and were filled with houses reflecting the then-popular residential styles, particularly Greek Revival, Gothic Revival, and, later, variations of the Italianate styles.

Further from the new and establishing towns of the central and southern portions of the state, in the St. John River Valley along Maine's northern border with Canada, residential architecture tended to be more conservative in style, and continued to reflect the Acadian origins. Greek Revival influences remained longer in these rural areas, and can be seen the variations of vernacular Acadian house types including the one and one-half story front-gable, half-cape house that is scattered throughout the central and northern portions of the state. By the early and mid-twentieth century, however, examples of high-style residential architecture including variations on the Colonial Revival and Mediterranean styles can be found throughout the State.

One of Maine's principal agricultural crops led to the establishment of a particular form of agricultural building: the potato barn. Set partially below grade with only the roof extending above the ground, examples of nineteenth century potato barns can be seen throughout the northern parts of the state, especially in northeastern Aroostook County. Between 1996 and 2004, the SHPO conducted surveys of agricultural buildings in Aroostook County, with particular emphasis on potato barns.

In the late nineteenth century, as the rail lines extended into the state's northern regions, Maine's lakes and forests drew increasingly large numbers of visitors, or "sports," who sought hunting and fishing vacations. This resulted in one of the important new architectural elements in the state, the "sporting camps." These camps range in scale from simple front-gable frame buildings to elaborate estates designed according to formal national architectural styles. These are found most often in the northwestern parts of the state, in the Moosehead/Rangeley Lakes and the Richardson/Mooselookmeguntic Lakes areas. In reviewing projects in these lake and wilderness areas of northern Maine, the SHPO has paid particular attention to sporting camps. The most common theme among the sporting camps is their orientation to water, either rivers or lakes.

In addition to residences, Maine's industrial heritage continues to be represented in historic architecture. Some small-scale industrial buildings remain in the southern portion of the study area: small mill buildings that made use of the limited fall of the rivers and their tidal movement as they approached the coast. More common, though, are the large-scale factory buildings relating to the State's industries, principally paper and textiles. By the late nineteenth and early twentieth centuries, these buildings tended overwhelmingly to be built of brick, two to four stories high, with rows of multi-paned metal-framed windows. Like the sporting camps, many of these older factory buildings tended to be located along the State's rivers, to take advantage of the available hydropower. These buildings are found most often in the smaller and mid-sized piedmont cities such as Waterville, Auburn, Madison, and Skowhegan. Maine also has a long history of the use of hydroelectric power. Many of these hydroelectric powerhouses, dating from the 1890s into the mid-twentieth century, remain, and generally are considered historically significant.

Structures

The most imposing historic structures are the various dams on the state's rivers, especially in the southern half of the state. Maine has a long history of hydropower, both in support of small- and large-scale manufacturing and in the generation of electricity. Many of the dams that allowed for the use of that hydropower remain, from small-scale masonry dams, often under 15 feet high, to larger concrete dams that support hydroelectric generation. In addition to dams, the SHPO has in recent years paid attention to the state's bridges. The SHPO, working with the Maine DOT, has completed surveys of the historic bridges in the state in recent years.

Districts

In the central and southern portions of the state, historic districts are located primarily in cities and villages. In addition, however, several farmsteads have been identified as historic districts, particularly in Aroostook County where five of the seven NRHP historic districts are farms. While there are some historic districts that relate primarily to the eighteenth century, particularly in the coastal cities, most urban historic districts in Maine have as a period of significance the late nineteenth and early twentieth centuries. These districts tend to revolve around some combination of residential, commercial, and industrial buildings. Important historic districts can be found in Farmington, Auburn, Lewiston, and Livermore, though many of the smaller cities and villages in the central and northern parts of Maine have not been surveyed and thus may contain significant historic districts.

Objects

Objects that are eligible for the NRHP frequently include public monuments. Like historic districts, NRHP eligible or listed objects are found most frequently in towns and cities, where they commemorate veterans or military endeavors. One type of monument, however, is likely to be found in the extreme northern parts of the state: border monuments. These monuments are small obelisks, approximately three feet high, and are made of either concrete or metal. One border monument identified in a 2009 survey of the Hamlin LPOE at the northeastern corner of Maine was recommended eligible for the NRHP. It is not known how many border monuments are in Maine. However, given the importance of the border dispute with Canada in the history of the state, it is likely that other border monuments may be found eligible for the NRHP as well.

Sites

Sites that are eligible for the NRHP tend overwhelmingly to be archaeological in nature. However, the Maine SHPO takes linear features into account in assessing effects to above-ground resources. Most frequently, these linear features tend to be former railroad rights of way, though historic roads may also be significant. Perhaps the most significant historic linear feature is the Arnold Trail to Quebec, which has been listed on the NRHP. This linear feature represents the route that Benedict Arnold took during the Revolutionary War, leading a force of 1,100 Continental Army troops in a planned assault on the British stronghold at Quebec. Arnold's route passed through the western portions of Maine and crossed into Canada at what is now Coburn Gore.

3.1.2 STATES OF NEW HAMPSHIRE AND VERMONT

The listing of historic properties in Vermont and New Hampshire is an ongoing process and the number of actual inventoried properties and those nominated to the federal register changes. A

current listing of historic properties on the National Register by state is maintained by the National Park Service and best accessed online. Information on inventoried properties can be obtained by contacting the state historic preservation office of each state directly.

One of the duties of a State Historic Preservation Officer is to prepare a state historic preservation plan and review and revise that plan. In Vermont, the Division for Historic Preservation highlights significant types of sites in *Keeping Vermont A Special World: The Vermont Historic Preservation Plan*. This ten-year plan summarizes historic contexts that describe what we know about our past according to important themes types of cultural resources, quantity, and quality. Archaeologists further define significance, as a site's potential to yield important information about the past, despite site size, artifact number, or site notoriety. The National Park service maintains a summary of state plans including the ones for Vermont, <http://www.nps.gov/history/hps/pad/stateplans/vermont.htm> and the New Hampshire 2006-2-10 plan is at the state web site <http://www.nh.gov/nhdhr/programs/plan.htm>. Both plans are currently under revision.

A state preservation plan is supposed to identify historic preservation contexts and themes. A context is an organizational tool for grouping properties related through their histories by theme, place and time. New Hampshire's list of does not represent all of the historical research topics that could be pursued in New Hampshire. Instead, it reflects the historic contexts illustrated by the properties in the Division of Historical Resources' survey files. Vermont has fewer themes, but they are more developed. The themes of both states are reflected in the context for Vermont and New Hampshire in this document.

3.2 GREAT LAKES REGION

3.2.1 STATE OF NEW YORK

National Historic Landmarks

New York State leads the nation in the number of National Historic Landmarks (NHL) with 263 designated properties representing more than 10 percent of nearly 2,500 NHLs nationwide. New York State's NHLs include: more than half of the state-owned historic sites; eight National Register listed historic districts; natural and scenic areas such as the Adirondack Forest Preserve, Central Park, and Governors Island; numerous historic vessels; the Erie Canal; several Adirondack camps; prehistoric and historic archeological sites; forts and battlefields associated with the French & Indian War, War of 1812, and Revolutionary War; mansions of New York State's landed gentry; numerous buildings designed by internationally- and nationally-significant architects; and places associated with African American history, women's rights, and gay and lesbian civil rights (NYSHPO 2009). The project area includes the NHL Fort Niagara on Lake Ontario, which contains six of the oldest buildings in the entire Great Lakes region.

Historical Areas of the National Park System in New York State

Approximately 26 units of the National Park System are also located within New York State. These national monuments, national scenic trails, national heritage areas and corridors, and national historic sites depict the diverse history and culture of America through stories of immigrants arriving in America, the nation's only site dedicated to a first lady, life in the eighteenth and nineteenth centuries, memorials to those who led and fought in battles, historical

figures, and the women's rights movement (NYSHPO 2009). Five National Park Service (NPS) historical areas in the project area include the following:

- Erie Canalway National Heritage Corridor (Upstate New York)
- Fort Stanwix National Monument (Rome)
- Hudson River Valley National Heritage Area
- Theodore Roosevelt Inaugural National Historic Site (Buffalo)
- Women's Rights National Historical Park (Seneca Falls)

The project area includes historic resources located in the boundaries of two National Heritage Areas, The Erie Canalway National Heritage Corridor (NHC) and the Champlain Valley National Heritage Partnership (NHP). New York State Heritage Areas in the project area include the following:

- Buffalo
- Concord Grape Belt
- Rochester
- Sackets Harbor
- Schenectady
- Seneca Falls
- Syracuse
- Mohawk Valley Heritage Corridor (only Oneida and Herkimer counties)
- Western Erie Canal Heritage Corridor (Erie, Niagara, Orleans, Monroe and Wayne counties) New York

New York Heritage Trails in the project area include the following:

- French and Indian War Heritage Trail
- Abraham Lincoln Heritage Trail
- Underground Railroad Heritage Trail
- Revolutionary War Heritage Trail
- Women's Heritage Trail

Theodore Roosevelt Heritage Trail

Underground Railroad Heritage Trail honors freedom-seekers (escaped slaves) who journeyed north to New York State and those New Yorkers who helped them achieve their dream. It consists of a network of designated historic sites, and regional and local interpretive centers associated with the Underground Railroad, the anti-slavery movement and slavery. Some of these sites are Listed or Eligible for listing in the NRHP (e.g. NRL properties: Harriet Tubman Home for the Aged, Residence and Thomason AME Zion Church[Auburn]; St. James AME Zion

Church [Ithaca; Gerrit Smith Estate and Land Office [Peterboro]; and John Brown Estate and Grave Site [Lake Placid]).

Revolutionary War Heritage Trail links together 82 significant historic sites to reveal New York's decisive role in America's fight for independence (e.g. Fort Niagara, Sackets Harbor Fort Stanwix, Oriskany, Herkimer Home State Historic Site, Fort Klock, Crown Point, Fort Ticonderoga).

Women's Heritage Trail- celebrates the achievements and history of women in New York State. These sites enhance our understanding of the daily life and culture of women, as well as their contributions in the struggle for equal rights, and the success they attained in social reform, business, politics and the arts.

The project area includes all of New York State's Seaway Trail a state and national Scenic Byway, which follows 454 miles of the state's northern coastal region along the shores of Lake Erie, Lake Ontario, and the St. Lawrence River. The Great Lakes Seaway Trail is one of America's Byways and is recognized for its unique landscape, scenic freshwater coastline, and historical significance. The Seaway Trail has some 25 historic lighthouses, sites associated with the French and Indian War and Revolutionary War, and 42 War of 1812 sites. The Great Lake Seaway Trail region was the vital transportation and communication link between France and her colonies. In addition, other New York State Scenic Byways cross the North Country region of the state.

3.2.2 COMMONWEALTH OF PENNSYLVANIA

Representative Architectural Styles

Architectural styles of historic structures and districts vary widely across the large area encompassed by this study (Table H-1). This section briefly outlines the typical architectural styles to be found in Pennsylvania. The PHMC's *Pennsylvania Architectural Field Guide* categorizes architectural styles by key periods of the Commonwealth's development (PHMC, 2011). Available online, the guide provides a brief introduction for each period of development with more detailed information about specific styles on separate Web pages. The PHMC emphasizes the importance of understanding and recognizing the state's traditional and vernacular building traditions and, as such, vernacular designs transcend an era-based classification and are identified in their own category (PHMC, 2010).

Table H-1. Representative Architectural Styles in Pennsylvania

TRADITIONAL/VERNACULAR	1638 - 1950
Log Buildings	1638 - 1880
Postmedieval English	1682 - 1730
Pennsylvania German Traditional	1700 - 1870
Barns and Outbuildings	1700 - 1930
Meetinghouses	1695 - 1950
TRADITIONAL/VERNACULAR	1638 - 1950
Log Buildings	1638 - 1880
Postmedieval English	1682 - 1730
Pennsylvania German Traditional	1700 - 1870
Barns and Outbuildings	1700 - 1930
Meetinghouses	1695 - 1950
COLONIAL PERIOD	1640 - 1800
Georgian Style	1700 - 1800
EARLY REPUBLIC PERIOD	1780 - 1830
Federal Style	1780 - 1820
Early Classical Revival Style	
Roman Classical Revival Style	1790 - 1830
Greek Revival Style	1820 - 1860
MID 19TH CENTURY PERIOD	1830 - 1860
Gothic Revival Style	1830 - 1860
Exotic Revival/Egyptian Revival Style	1830-1850, 1920-1930
Italianate Villa/Italianate Style	1840 - 1885
Octagon Style	1850 - 1870
LATE VICTORIAN PERIOD	1850 - 1910
Romanesque Revival Style	1840 - 1900
Second Empire/Mansard Style	1860 - 1900
High Victorian Gothic Style	1860 - 1890
Chateausque Style	1860 - 1910
Stick Style	1860 - 1890
Queen Anne Style	1880 - 1900

LATE 19TH & EARLY 20TH CENTURY REVIVAL PERIOD	1880 - 1940
Colonial Revival Style	1880 - 1960
Tudor Revival Style	1890 - 1940
Collegiate Gothic Style	1890 - 1940
Italianate Renaissance Revival Style	1890 - 1935
Classical Revival Style	1895 - 1950
Beaux Arts Classicism Style	1885 - 1930
Spanish Colonial Revival Style	1915 - 1940
MODERN MOVEMENT PERIOD	1925 - 1950
Art Deco Style	1925 - 1940
Moderne Style	1930 - 1950
International Style	1930 - 1950

Above Ground Historic Property Types

The PHMC’s Web page offers a detailed discussion of the most commonly recognized traditional house forms found in Pennsylvania (PHMC, 2010). Common historic building types in Pennsylvania include mills, agricultural or industrial complexes, railroad related structures, schools, churches, novelty buildings, Lake transport/shipping, forest and extraction industries, state parks, and a wide variety of vernacular domestic forms. These buildings may include details of established historic architectural styles, but their appearance is more dictated by necessity and the function they serve (PHMC, 2010). Other historic resources include burial grounds and cemeteries.

Pennsylvania is widely-recognized for possessing one of the most interesting collections of historic bridges of any state. Its ever-expanding population and consequent transportation requirements made the Keystone State a pioneer in transportation innovation, particularly in the design of bridges. Pennsylvania claims numerous engineering milestones in American bridge-building technology. The isolation of its western counties prompted a Fayette County judge, James Finley (1756–1828) to invent America’s first suspension bridge in 1796. As the historic center of the iron and steel industry, Pennsylvania once had several iron-bridge manufacturing companies in the state. In 1996, Pennsylvania DOT and the Pennsylvania Division, Federal Highway Administration, in cooperation with PHMC, launched an evaluation of all pre-1957 bridges, which includes county and municipality-owned structures, to identify and record even more historic bridges.

Multiple and thematic resource property documentation

PHMC maintains a working list of multiple and thematic resource property documentation through 2010 accepted by or listed in the National Register of Historic Places (NRHP). One-third of National Register listed properties in the Commonwealth have been submitted under a multiple or thematic context. The developed historic contexts relevant to the project area include the following themes:

Allegheny County Owned River Bridges Thematic Resource (Thematic Resource Documentation Property [TR])

Allegheny Portage Railroad Multiple Property Submission (Multiple Property Submission [MPS]) Allegheny River Navigation System MPS Aluminum Industry Resources of Southwestern Pennsylvania MPS Bituminous Coal and Coke Resources of Pennsylvania MPS Covered Bridges of Erie County TR Emergency Conservation Work (ECW) Architecture in Pennsylvania State Parks: 1933--1942, TR Highway Bridges Owned by the Commonwealth of Pennsylvania, Department of Transportation TR Historic Agricultural Resources of Pennsylvania (available on the PHMC's website) Historic Educational Resources of Pennsylvania (available on the PHMC's website) Iron and Steel Resources of Pennsylvania MPS Oil Industry Resources in Western Pennsylvania MPS Pennsylvania National Guard Armories MPS Pennsylvania Railroad Rolling Stock TR US Coast Guard Lighthouses and Light Stations on the Great Lakes TR Whiskey Rebellion Resources in Southwestern Pennsylvania MPS

The project area includes the 64-mile long Pennsylvania Great Lakes Seaway Trail, which is one of America's Byways recognized for its unique landscape, scenic freshwater coastline, and historical significance. The Pennsylvania section of the Great Lakes Seaway Trail offers rural agricultural landscape, historic downtowns, and historic sites related to events of the French and Indian War (Fort de la Presque Isle and Fort Sur La Rivere aux Boeufs) and the War of 1812. The City of Erie section includes Presque Island State Park and three mid-to-late nineteenth century historic lighthouses.

Pennsylvania further recognizes historic resources and sites in its Trails of History program. The project area includes portions of the following Trails: Military History Trail; Industrial Heritage Trail; and Rural Farm and Village History Trail. These trails represent some of Pennsylvania's most historic sites.

3.2.3 STATE OF OHIO

Representative Architectural Styles

Architectural styles of historic buildings and districts vary widely across the large area encompassed by this study (Table H-2). This section briefly outlines the architectural styles identified in Ohio. Architectural styles in Ohio range from roughly 1790 to the present. The dates provided for each style represent a frequency range in Ohio based on surveys, observation, and archival research (Gordon, 1992). The list of representative styles is not definitive. For further information on how to identify Ohio's architectural styles and historic building types (i.e. the structure's function, floor plan, configuration, etc.) consult *How to Complete the Ohio Historic Inventory* (Gordon, 1992).

Table H-2. Representative Architectural Styles in Ohio

Federal (1790-1840)Greek Revival (1835-1860)Gothic Revival (1835-1870)Romanesque Revival (1850-1880) Exotic Revivals (1830-1855; 1920-30) Italianate (1850-1880) Second Empire/Mansard (1855-1885) High Victorian Gothic (1870-1885) Stick (1870-1890) Eastlake (1880-1890) Queen Anne (1880-1905) Chateausque (1885-1905) Shingle Style (1885-1890) Richardsonian Romanesque (1885-1895)Sullivan-esque (1890-1920) Commercial Chicago Style (1890-1910) Beaux Arts (1890-1910) Second Renaissance Revival (1890-1925) Neo-classical Revival (1895-1950) Colonial Revival (1895-present) Georgian Revival (1895-present)	Craftsman/Arts and Crafts (1900-1925) Mission (1900-1930) Dutch colonial Revival (1900-1925) Late Gothic Revival (1900-1930) Jacobethan (1900-1935) Prairie (1905-1930) Bungalow (1910-1935) Tudor/English Revival (ca. 1910-1940) French Colonial/Norman Revival (1910-1940) Mediterranean (1915-1940) Art Deco (1927-1940) International (1932-1960) Art Moderne (1935-1950) Modern Movement (1945-1990) Miesian (1945-1970) New Formalism (1955-1970) Postmodernism (1970-present) Neo-expressionism (1950-1970) Brutalism (1960-1970) Deconstructivism (1988-present)
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3.2.4 STATE OF MICHIGAN (LOWER PENINSULA)

Property Types by Theme

Perhaps because of the wealth brought to Michigan’s citizens by the automobile industry, the most common building type across the state is the single-family home. Blocks of houses occupy most of southeast Michigan; apartments and condominiums are present primarily in Michigan’s urban areas. In more rural areas, houses are surrounded by agricultural buildings, forming farmstead complexes. Scientific farming has resulted in the decline of family-owned farms, but many complexes still survive in areas where scientific farming is impractical. Because of the large number of recreational opportunities associated with lakes, waterways, and hundreds of miles of lakeshore, Michigan boasts a large number of cottages and retreats. These same shorelines also contain lighthouses, docks, piers, and harbors. Early industrial buildings line many of the waterways in the state, particularly near harbors and shipping ports. This trend has changed over the last half-century, moving parklands to these areas and creating “parks” of industrial buildings in less desirable locations.

Commercial centers are situated in most downtown areas, from the tiniest community with a single gas station to the largest cities. Historically, these commercial centers consisted of multi-story buildings packed side-by-side. In the mid-twentieth century, the nationwide trend of indoor shopping centers made its way to the state. More recently, ready vehicular transportation has contributed to the success of strip malls.

Architectural Styles/Forms

Buildings of most styles and forms established across the country exist in Michigan. Perhaps the earliest building style constructed in Michigan was Greek Revival. Cobblestone houses or commercial buildings (often in Greek Revival style) are also present in the lower part of the peninsula. In Michigan, some variations on building forms, such as the Hen-and-Chicks, are present, particularly in the southern part of the state where settlement occurred earlier. The I-House is also present in the state. Mid-Century Modern homes are present across the state, although more are present in urban areas than in rural areas. Rustic-style homes and commercial buildings are often associated with the resort areas of northern Michigan, as are large-scale Victorian era hotels and lodges.

Building materials include everything from stone and wood to metal and porcelain enameled panels. Cobblestone construction tends to be found in southern Michigan, while fieldstone sheathing is common in northern parts of the state. A local manufacturer has developed concrete “logs” featured on some rustic buildings, and three well-known catalog house companies were located in Bay City, shipping their products across the state and nation.

3.2.5 STATES OF MICHIGAN (UPPER PENINSULA) AND WISCONSIN

Property Types by Theme

The most prevalent above-ground resource in the northern portions of Michigan and Wisconsin is the single-family house. These buildings are found in both urban areas and in rural portions of the region, with a greater trend toward higher style buildings in urban areas. Houses tend to be smaller than in the southern portions of Michigan or Wisconsin. Apartments and condominiums may be present but tend to be found in urban areas rather than small towns and rural areas. In rural areas, buildings may be part of a farmstead complex or a camp associated with logging or mining. Because of the large number of recreational opportunities associated with lakes, waterways, and hundreds of miles of lakeshore, the area boasts a large number of cottages and retreats, including housekeeping cabins in motel-like settings, first popularized in the 1930s, with the advent of motor travel. Lighthouses, docks, piers, and harbors are situated along lakeshores.

Early industrial buildings line waterways, particularly near harbors and shipping ports. This trend has changed over the last half-century, moving parklands to these areas and creating “parks” of industrial buildings in less desirable locations. Other extant industrial buildings include modern and historic mining facilities.

Commercial centers are situated in most downtown areas, from the tiniest communities with a single gas station, to the larger cities with many storefronts. Historically, these commercial centers consisted of multi-story buildings packed side-by-side. In the mid-twentieth century, the nationwide trend of indoor shopping centers made its way to the larger cities within the region. Even in the smallest community, commercial development tends to mean the construction of strip malls, where automobile access drives the success.

Architectural styles/forms

Perhaps the earliest building style constructed in Michigan was Greek Revival; however, because settlement came much later to the northern portion of Michigan’s Lower Peninsula and to the Upper Peninsula, there are few buildings of this style present. Although distinctly more rural

than the southern part of the Lower Peninsula, this area does include historic wealth and communities of sufficient size to permit construction of high-style buildings; Second Empire, Italianate, Gothic Revival, Beaux Arts, and Tudor Revival styles all exist there. Richardson Romanesque buildings constructed from local red sandstone are scattered across the Upper Peninsula and along Wisconsin's southern Lake Superior shore.

While examples of the Art Deco and Art Moderne styles are less frequent in the northern region, the Craftsman style Bungalow is found in virtually every community. Rustic style homes and commercial buildings are often associated with the resort areas of northern Michigan. Large-scale Victorian era hotels and lodges constructed to serve those seeking the pleasant summers away from allergens and city heat dot major tourist areas such as Mackinac Island, Michigan, and Bayfield, Wisconsin.

3.3 EOR REGION

3.3.1 STATE OF MINNESOTA

This section briefly outlines the typical architectural styles to be found throughout the large area encompassed by this study. The wide area subsumed by the project in Minnesota includes a wide range of architectural types such as agricultural, commercial, industrial, residential, tourism/recreation, religious, transportation, and civic/governmental. Architectural styles represented include all popular national styles ranging from frontier-type resource through the popular Craftsman and Prairie styles. Minnesota has distinctive grand lodges, hotels, resorts, health spas, camp facilities, dude ranches. These tourism/recreation resources include architect-designed buildings executed in rustic/park, frontier revival, and simple wood frame. One of the few residential examples of the Streamline Modern style in the state is located in study area (David and Wanda Park House, in Bemidji, Beltrami County). Other property types include agriculture, agricultural process, and resources related to the state's lumber industry. Examples of all popular national architectural styles are represented in the state. Distinctive architectural styles include log, subsistence (non-log early settlement structures), and rustic. Four National Historic Landmarks are located in the study area (Hull-Rust-Mahoning Mine, Soudan Mine, and Mountain Iron Mine in St. Louis County; Rabideau Civilian Conservation Corps Camp in Beltrami County). The harbor city of Duluth is the largest city in the northeastern region of the state and in the study area. Historic lighthouses are located on the northern shore of Lake Superior in Cook and Lake counties.

Northeastern Minnesota is known for its rich supply of iron ore and its historic mining industry. Historic resources associated with the mining industry remain in Minnesota's Iron Range region. The iron mining communities were developed by entrepreneurs and mining companies. The companies used standard designs for their mining operations as evidenced in company general offices. These model communities were established throughout in the northeastern region of the state. The northeastern region has abundant wilderness and lakes. Superior National Forest, with four million acres of woods and lake, and Chippewa National Forest are located in the study area. The Northwest region of Minnesota, where the north woods meet the western prairie, includes the state's largest lakes and the headwaters of the Mississippi River. The Red River Valley flows along the far northwest border of the state through a fertile agricultural region. Fargo-Moorhead and Grand Forks-East Grand Forks are the cultural and commercial centers of the valley. Vernacular and Queen Anne farmhouses are found in the Red River Valley.

Numerous historic-era lodges, resorts, and campgrounds are found in the northern part of the state. Northern Minnesota also has several scenic byways, which are dotted by small towns.

3.3.2 STATE OF NORTH DAKOTA

Architectural styles of historic structures and districts vary widely across the large area encompassed by this study. As North Dakota is a rural, agriculturally dependent state the majority of types of historic resources embraced by the project will likely be associated with farms and ranches. In the 1920s, North Dakota like other agricultural areas experienced economic failure and a decade-long draught. During the Great Depression of the 1930s, numerous Federal relief construction work programs were initiated in the state resulting in projects located in the area of the project. Two main stylistic tendencies, the Art Deco and WPA-Rustic, characterize most Depression-era architecture in North Dakota. One of the prominent historic industries in the state is the extraction industry (e.g. lignite), examples of which can be found in the project boundaries.

North Dakota's earliest industries were fur trading and agriculture. Nearly ninety percent of its land area is agricultural, which is reflected in the study area. Historic resources found in the study area will be associated with homesteads and the state's agricultural heritage. Grand Forks and Minot are the largest cities in the study area. Minot was founded in 1886 during the construction of the Great Northern Railway. Grand Forks was historically dependent on local agriculture and quickly expanded after the railroad's construction. These two cities hold the widest range of architectural styles in the study area spanning the period from ca. 1870 through the mid-twentieth century.

The northern part of North Dakota contains several scenic byways and backways. The Rendezvous Region Scenic Backway in northeastern portion of the state features historic and natural sites along the winding Pembina River. The Gingras Trading Post State Historic Site preserves the 1840s home and trading post of Métis legislator and businessman Antoine Blanc Gingras, northeast of Walhalla, Pembina County. The Turtle Mountain Scenic Byway in the north west-central part of the state passes farmsteads, pasture land, prairie, lakes, and wildlife and nature areas. A mill (Danish Mill) used by farmers to grind grains in the northwest region was constructed 1902 on a homestead eleven miles north of Kenmare.

3.3.3 STATE OF MONTANA

The study area in Montana embraces portions of three distinct ecological regions which include the following: grasslands of the east; high plains and isolated mountains of the central region; and rugged mountains and forested ridges of the west. Montana's distinctive geography, climate, and resources have shaped a varied history and culture in each region. A section of the Lewis and Clark Trail and its associated historic sites are located in the study area along the Missouri River and in northwestern Montana. In the 1830s, trading posts and missions began to raise cattle in Montana.

By the 1880s, all of the Montana's industries boomed (i.e. railroads, mines, smelters, logging, lumber, open range cattle raising). Montana's development corresponded with the country's westward expansion and the construction of railroad in the late nineteenth century. Historic ranches typically consisted of large homesteads with log structures, associated resources, and ranges. Numerous boom towns in the state which formed from mining and cattle industries

diminished in the first half of the twentieth century. Remnants of these so called ghost towns are found across the state. From 1909 to 1917, Montana experienced a population surge with the arrival of homesteaders from Missouri, Pennsylvania, and Minnesota. Homesteaders brought generations of agricultural knowledge and transformed the landscape of the plains. Farms were established and small communities developed. School buildings and community halls were constructed. Other community establishments included volunteer fire departments and cooperatives. School buildings were often the first public building constructed in Montana towns in all settings (i.e. booming mining towns, rural ranching communities, prosperous merchant cities) and served as the central meeting place for social functions.

Missoula and Great Falls are the largest cities in the study area. Most of the communities in the Montana study area are located on U.S. Route 2, the primary east-west road across the northern portion of the state, and the smaller state and county roads off of this main transportation corridor. Northwestern Montana contains Glacier National Park as well as Flathead, Kaniksu and Lolo National Forests. Glacier National Park consists of over one million acres along the International Border; it is the National Park in the Montana section of the study area. Historic hotels and chalets in the park were constructed by the Great Northern Railway and are listed as National Historic Landmarks. A total of 350 locations in the park are listed on the National Register of Historic Places. The park also has several National Register Listed Ranger Station Historic Districts such as the Belly River Ranger Station Historic District.

3.4 WOR REGION

3.4.1 STATES OF WASHINGTON AND IDAHO

Historic property types include are categorized in Washington and Idaho under Contact and Exploration, Frontier Transportation, Agriculture, Industry and Manufacturing, Commerce and Trade, Domestic, Government, and Social and Cultural. During the Contact and Exploration period in the inland areas of Washington and northern Idaho, early traders often followed well-established overland routes and interacted with Native peoples of the region, sometimes establishing semi-permanent occupation sites that could include cabins as well as caches and storage structures. During this period any building construction most likely consisted of logs either laid horizontally or in the Hudson's Bay Style with vertical log posts and horizontal log infill mortised to uprights. Property types relating to early exploration of the region include both temporary camps that would likely have only archaeological components and semi-permanent occupation sites that may consist of above-ground contributing resources such as caches, sheds or wooden shelters.

In the frontier period, fur trade companies erected a number of forts and smaller outposts to conduct the trade and provide a base of operations for employees. Missionaries sometimes built mission complexes at strategic locations. Semi-permanent and permanent occupation sites are property types that could include forts, trading posts, cabins and missions as well as associated storage, domestic and food-processing structures. Property types associated with the American Boundary Commission's survey and marking of the border along the 49th parallel include temporary camp sites as well as markers, stone cairns and other transportation features.

The development of various transportation networks brought new settlement to Washington and Idaho and ultimately encouraged the growth of industry and commerce as improved water routes,

roads and rail lines connected the region to the outside world. Property types in this section are divided into modes of transportation that correspond to travel by water, land and air. These categories are further subdivided, when appropriate, by the functions of construction (processes and equipment required to produce the transportation feature), engineering (the product of construction) and operation (features associated with use or continued operation of the transportation mode).

Agricultural property types reflect the environmental and geographic conditions that dictate the kinds of farming, grazing or other agricultural activities taking place in a specific area. Property types related to this theme include animal husbandry, grazing, and crop production properties as well as storage, processing and maintenance facilities associated with agricultural pursuits. Among the prominent features of animal-related agricultural properties are barns, corrals, birthing sheds and small animal pens. Grazing properties may include stock driveways, holding pens and chutes, fencing and pastures as well as salting areas. Contributing to crop-related properties are fields, orchards, gardens and fences. Storage properties are represented by barns, hay sheds, silos, granaries, and milk houses, while smokehouses and stills are examples of common processing properties. In addition, irrigation systems are a type of agricultural property prevalent in the arid and semi-arid portions of the region and contributing features may include dams, reservoirs and pump facilities as well as systems of ditches, canals, flumes and pipes. Many of these agricultural property types may also be associated with domestic buildings and structures such as dwellings, privies or other outbuildings that frequently characterize small farmsteads or independently run agricultural operations.

The early economies of Washington and Idaho relied on logging and mining as their primary industries, although fish and grain processing, concrete manufacturing and energy production were among a number of other industries that made use of the region's rich natural resources. Properties for each of these industries can be related to extraction, processing, maintenance, storage, and manufacture. A number of coastal cities as well Spokane in the interior became commercial centers not only for regional but also international trade. Towns of all sizes also developed commercial districts that provided retail, supply and storage facilities. Historic property types associated with commerce and trade include retail, wholesale, and professional properties as well as organizational and storage facilities

Early settlement in Idaho and Washington focused on river drainages and coastal lowlands, but generous land laws also encouraged claims in more remote areas and early dwellings were often built as a requirement for "proving up" on these properties. Many towns grew on transportation routes or were built by companies for their workers, and as cities grew, neighborhood development was often based on a variety of socio-economic factors. Domestic property types in the PEIS project area include single-family and multiple-occupancy dwellings as well as hotels, institutional housing and camps.

Various levels of government have affected life in the Northern Border PEIS project area and played a role in military defense, resource management, infrastructure development and political organization. Historic property types associated with the government's military functions include fortifications, battle sites, and arms storage as well as naval, air, coast guard and army facilities. Resource management functions are related to the operation of national parks, national forests, wildlife refuges and other public lands managed by federal, state and local governments.

Historic property types include administrative facilities, fire protection facilities, maintenance and work facilities, recreational facilities, interpretive features and landscape features. Among the property types associated with infrastructure development are post offices, custom houses, correctional facilities, fire protection facilities and public works, which are represented by generating plants, sewer systems, and dam sites as well as other types of features.

Social and cultural properties are broadly defined to include a range of types related to organizations, recreation, health, culture, education, religion and funerary practices as well as the contributions of the region's diverse population groups. Historic property types associated with social activities include organization facilities with contributing features such as meeting halls, clubhouses and civic facilities.

4 PALEONTOLOGIC RESOURCES

This Paleontological Identification section describes potential paleontological resources located in the northern border study area. This area includes the following states: Washington, Montana, Idaho, North Dakota, Minnesota, Wisconsin, Michigan, Ohio, Pennsylvania, New York, Vermont, New Hampshire, and Maine. The Paleontological Study Area (PSA) includes a 100-mile-wide zone along the northern border. While most paleontological studies focus on the most detailed information available, this study attempts to give a broad but useful overview of the paleontologically sensitive geological units by state.

Background research conducted for this study consisted of a literature and map review and a generalized fossil locality search. Most paleontological investigations commonly use a scale of 1:24,000 to describe the paleontological sensitivities of geological units. For the purpose of this study, such a resolution is not feasible. This research identified the geologic units at a scale of 1:25,000,000 and the types of fossils in geologic units that may be within or adjacent to the study area (see Figures H-12 through H-20). Creating a paleontological overview at the above scale has been a major challenge for paleontology and geology alike.

A research platform for creating a nationwide database, PaleoPortal is maintained by the University of California Museum of Paleontology (UCMP) and is the result of collaboration between UCMP, the Paleontological Society (PS), the Society of Vertebrate Paleontology (SVP), and the U.S. Geological Service (USGS). It gives access to dozens of museum-collection databases and records of fossil finds throughout the United States in correlation with geological maps by the USGS. The information presented in this document relies heavily on the peer-reviewed texts within the PaleoPortal platform (PaleoPortal, 2010).

Within the PSA four major geological groups were identified: sedimentary rocks, volcanic rocks, plutonic rocks, and metamorphic rocks. Of these rock groups, only sedimentary rocks have a high or moderate potential for containing paleontological materials. Both plutonic and volcanic rocks rarely contain fossils because igneous environments are not suitable for living things. Metamorphic rocks rarely contain fossils because the conditions of metamorphism tend to alter the texture of the rocks and destroy any fossils contained within. Consequently, only sedimentary units will be considered for the purpose of this study. Metamorphic or igneous rocks are mentioned in the rare cases when they do contain fossils.

4.1 PALEONTOLOGICAL SENSITIVITY

Paleontological resources include fossil plants and animals and other evidence of past life such as preserved animal tracks and burrows. The paleontological sensitivity of a geologic unit is determined by its potential to contain paleontological resources (SVP, 1995). The paleontological sensitivity of a geologic unit may be classified according to SVP guidelines (SVP, 2010) as follows:

High Potential - Rock units are considered to have a high potential for containing significant, nonrenewable, fossiliferous resources if vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered. These units include, but are not limited to, sedimentary and volcanic formations that contain significant nonrenewable paleontological resources and sedimentary rock units temporally or lithologically suitable for the preservation of

fossils. Sensitivity comprises both of the following: 1) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils that are large or small, vertebrate, invertebrate, or botanical, and 2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than recent and areas that may contain new vertebrate deposits, traces, or trackways are also classified as significant.

Undetermined Potential - Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before mitigation programs to reduce impacts can be developed.

Low Potential - Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections. These deposits generally will not require protection or salvage operations (SVP, 2010).

The SVP identifies vertebrate fossils, their taphonomic and associated environmental data, and fossiliferous deposits as significant, nonrenewable, paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant (SVP, 1995). Due to the rarity of fossils and the scientific information they provide, a paleontological resource can be considered significant (Scott and Springer, 2003) if the resource does any of the following:

- Provides data on the evolutionary relationships and developmental trends among organisms, both living and extinct;
- Provides data useful in determining the age(s) of the geologic unit or stratigraphy, as well as timing of associated geological events;
- Provides data on a community level;
- Demonstrates unusual or spectacular circumstances in the history of life; and/or,

Is not abundant or found in other geographic locations and may be in danger of being depleted or destroyed by the elements or by vandalism.

Paleontological resources must be evaluated to determine if any of the criteria above are applicable. Proper identification of paleontological resources is often difficult in the field; therefore, the recovery, preparation, and analysis of paleontological resources are necessary to determine their significance. This process must be done by, or under the supervision of, a qualified paleontologist (SVP, 1995). Microvertebrate fossils are generally not visible to the naked eye; although initial sifting may be conducted in the field, analysis for microinvertebrates requires laboratory processing of bulk samples from paleontologically sensitive geologic units (SVP, 1995; Scott and Springer, 2003).

4.2 PALEONTOLOGICAL RESOURCES WITHIN THE STUDY AREA

The following paragraphs describe only the geological units with a potentially high paleontological sensitivity within the PSA. Geological-mapping units are indicated with respect

to the geological study-area maps at the end of this section. Multiple paleontologically sensitive geological units within the PSA do not occur on these maps due to the previously described selection of a large-scale resolution for the PSA. Generalized geological units and a PSA summary for each state are described below. The order in which the paleontologically relevant geologic ages occurred is found in Figure H-12.

Figure H-12. Geologic Timeline for Eons, Eras, and Periods Important to the Paleontologic Resources of the Northern Border

EON	ERA	PERIOD	MILLION YRS AGO	
PHANEROZOIC	CENOZOIC	Quaternary	0.01	
		Tertiary	Neogene	5.3
			Paleogene	55.8
		MESOZOIC	Cretaceous	65.5
	Jurassic		146	
	Triassic		200	
	PALEOZOIC	Permian	252	
		Carboniferous	Pennsylvanian	299
			Mississippian	318
		Devonian	359	
		Silurian	416	
		Ordovician	444	
		Cambrian	488	
	PRECAMBRIAN	PROTEROZOIC		542
ARCHEAN			2,500	
HADEAN			4,500	

4.2.1 NEW ENGLAND REGION

4.2.1.1 Maine

Summary

Paleontologically sensitive geological units in Maine's PSA include Paleozoic and Cenozoic deposits. Fossiliferous Paleozoic deposits have been destroyed by metamorphism associated with *orogenies*, or mountain-building events, within the southern portion of the PSA only. In all other areas, the Paleozoic deposits are intact. Paleozoic deposits represent sea-level fluctuations and include habitats ranging from nearshore to deepwater. Fossils from these geological units include numerous invertebrates. Cenozoic deposits consist of retreating glacial deposits containing many different plant and large-vertebrate fossils.

Quaternary - Quaternary glaciation peaked in Maine nearly 20,000 years ago, leaving the state covered with a thick layer of ice. The weight of the overriding glaciers had temporarily depressed the crust, allowing the sea to flood areas far inland, and glacial clay was deposited on the seafloor. Common fossils include clams, snails, and barnacles, although mammoth, walrus, and seal remains have also been found (Churchill-Dickson, 2010).

Devonian - The fossiliferous deposits in Maine from this time represent a variety of habitats. Nearshore marine settings were dominated by brachiopods, although bivalves, corals, crinoids, conodonts, gastropods, ostracods, and trilobites have also been found. Fully terrestrial habitats existed as well, and fragmented plant fossils have been preserved in a few rock units (Churchill-Dickson, 2010).

Silurian - Common nearshore fauna of this time period included brachiopods, corals, bivalves, conodonts, gastropods, ostracods, trilobites, and stromatoporoids. Graptolites, trace fossils, and some brachiopods dominate the deepwater deposits (Churchill-Dickson, 2010).

Ordovician - All fossil-bearing deposits in Maine were formed in the marine realm and represent habitats ranging from nearshore to deepwater basins. The nearshore fauna are dominated by brachiopods but also contain snails, trilobites, corals, and clams. Graptolites and rare occurrences of brachiopods, trilobites, and conodonts are found in the deeper-water deposits (Churchill-Dickson, 2010).

Cambrian - Maine has a few deepwater fossils from this time (Churchill-Dickson, 2010).

Precambrian - During the Precambrian, Maine did not yet exist. The first parts of Maine were not assembled until the Ordovician, when ancient landmasses were accreted to North America during a mountain-building event. Preserved in a few places are Late Precambrian sediments that were likely deposited in deep water and that contain a few trace fossils (Churchill-Dickson, 2010).

4.2.1.2 New Hampshire

Summary

Paleontologically sensitive geological units in New Hampshire's PSA include only a very small area in the north of the state. These paleontologically sensitive units are only of Cenozoic age because metamorphism associated with the orogenies destroyed or altered any sediments formed during Paleozoic times. Cenozoic deposits consist of retreating glacial deposits containing many different plant and large-vertebrate fossils.

Quaternary - During much of the Quaternary, thick sheets of ice covered New Hampshire, and after the glaciers melted, the present sea level was reached approximately 3,000 to 5,000 years ago. The fossil evidence of plants and pollen from Pleistocene sediments in New Hampshire indicate that species of herbs and sedges, spruce, balsam poplar, willow, and dwarf birch trees grew in the area when the ice sheets periodically retreated (Springer, 2008a).

Devonian - During an episode of mountain building, igneous rocks were formed and older rocks were metamorphosed. These igneous and metamorphic rocks contain no fossils (Springer, 2008a).

Silurian - Rocks of this time interval are metamorphic and igneous and do not contain fossils (Springer, 2008a).

Ordovician - Rocks of this time interval are entirely metamorphic and igneous and do not contain fossils (Springer, 2008a).

Cambrian - There are no fossils in the few rocks in New Hampshire that may be of Cambrian age (Springer, 2008a).

Precambrian - Precambrian rocks in New Hampshire are predominantly metamorphic; no fossils are found in them (Springer, 2008a).

4.2.1.3 Vermont

Summary

Paleontologically sensitive geological units in Vermont's PSA include Paleozoic and Cenozoic deposits. Paleozoic deposits containing fossils are sparse in Vermont, and metamorphism associated with the orogenies destroyed or altered any sediments formed at this time. Paleozoic sediments include sandstone, siltstone, and mudstone and contain bryozoans, brachiopods, cephalopods, gastropods, sponges, and trilobites. Cenozoic deposits consist of Pleistocene glacial deposits containing large-vertebrate fossils.

Quaternary - During much of the Quaternary, a thick sheet of ice covered Vermont. The weight of the ice depressed the surface of the land, allowing ocean waters to infiltrate the lakes of this region. In westernmost Vermont, fossils in lake deposits indicate that the salinity fluctuated as lake waters mingled with ocean water entering through the St. Lawrence River to the north. As the glaciers melted, the land was able to rebound in elevation, building a barrier to the ocean so

that freshwater-lake conditions returned. Sediments left by the melting ice can be found in many areas. Mastodons, ground sloths, and saber-toothed cats roamed the PSA (Mehrtens, 2008).

Silurian - Most rocks of Silurian age were metamorphosed during later tectonic activity, and few marine fossils are found in them (Mehrtens, 2008).

Ordovician - Tropical seas in Vermont were rich in marine life, including the some of the first corals as well as bryozoans, brachiopods, cephalopods, gastropods, sponges, and trilobites (Mehrtens, 2008).

Cambrian - Tracks and trails of trilobites are common in the muddy and sandy shoreline sediments deposited during this time (Mehrtens, 2008).

Precambrian - Precambrian rocks in Vermont are mostly metamorphic and do not contain any fossils (Mehrtens, 2008).

4.2.2 GREAT LAKES REGION

4.2.2.1 New York

Summary

Paleontologically sensitive geological units in New York's PSA include predominantly Paleozoic and Cenozoic deposits. Paleozoic deposits represent a fast-rising and then eventually falling sea level. Fossils of trilobites, brachiopods, clams, and other marine organisms can be found in these rocks. Other geological units within the PSA represent early deltas that contained small-forest and other plants. Cenozoic deposits consist of Pleistocene glacial deposits, such as terminal and lateral moraines, containing large-vertebrate fossils.

Quaternary - Glacial deposits across New York and the northeastern United States record the movements of enormous ice sheets. The ice sheets helped to shape the landscape of New York, scraping off loose rock materials, gouging the bedrock beneath the ice as it advanced, and scouring river valleys. The Finger Lakes are a famous example of New York lakes formed by glacial scouring. Mammoths and mastodons roamed the landscape (Picconi, 2006). Fossil mastodons, bison, and other mammals may be found where unconsolidated deposits vary near the surface. Freshwater snail and clam fossils occur along old drainage systems (RASNY, 2010).

Carboniferous - Thick accumulations of peat were compressed over time and transformed into layers of coal. This geological unit is not known to contain fossils (Picconi, 2006).

Devonian - The most fossiliferous limestones include coral reefs and inter-reef deposits of shallower bottoms; deeper-water limestones contain abundant chert (flint) nodules. Relatively clear waters over the shallower shelf favored a profusion of brachiopods, bryozoans, corals, crinoids, and trilobites. Mollusks were more prominent east of the foreland basin (closer to shore) where silts and sands accumulated under more turbid waters (RASNY, 2010).

Silurian - With a changing sea level in the Silurian, the inland ocean covering western New York became extremely shallow, and circulation was poor (Picconi, 2006). Trace fossils, occasional

brachiopods, nautiloids, and even rare jellyfish imprints may be found. Near the end of the Silurian, the sea became deeper but apparently remained very salty, and the shallowest areas were home to a strange fauna dominated by eurypterids (RASNY, 2010).

Ordovician - During the Early Ordovician, the rocks formed in New York were predominantly limestone and dolostone. Toward the end of the Ordovician, volcanic islands formed along a subduction zone between North America and Western Europe. Fossils from this time include trilobites, graptolites, and bryozoans (Picconi, 2006).

Cambrian - Early during the Late Cambrian, global sea level rose, flooding New York with a shallow sea. Sedimentary rocks were formed from sand, silt, and clay deposited in this sea (Picconi, 2006). The fossil record is scarce from this time period but includes numerous records of trilobites (Bassett et al., 1976).

Precambrian - The Grenville Mountains formed during the Precambrian as North America collided with an ancient supercontinent and the sandstone, shale, and limestone deposited earlier were squeezed and pushed up onto the margin of the early North-American continent. The intensity of the collision metamorphosed the rocks as follows: 1) sandstone became quartzite, gneiss, or schist; 2) limestone became marble; and 3) shale became gneiss and schist. These rocks are the oldest found in the PSA. The Precambrian fossil record in these rocks consists predominantly of bacteria or microfossils (Picconi, 2006).

4.2.2.2 Pennsylvania

Summary

Paleontologically sensitive geological units in Pennsylvania's PSA include predominantly Paleozoic and Cenozoic deposits. Paleozoic deposits range from shallow marine deposits that contain limestone and mudstones to terrestrial sandstone deposits. Inscribed in the Cenozoic deposits of the PSA is also the continental collision of Gondwana. Fossils include many different marine forms, such as trilobites, and terrestrial deposits such as scale trees and ferns. Cenozoic deposits include glacial deposits containing large-vertebrate fossils.

Quaternary - Ice sheets covered much of the PSA during the Late Quaternary. Sediments left by the melting ice can be found in many areas. Mastodons, ground sloths, and saber-toothed cats roamed most of the state. Fossils of plants, such as willow and sedge, help paleontologists decipher the complex climatic history of Pennsylvania during the Quaternary (Springer, 2008b).

Jurassic – Jurassic-era deposits are found in Pennsylvania but not within the PSA (Springer, 2008b).

Triassic – Triassic-era deposits are found in Pennsylvania but not within the PSA (Springer, 2008b).

Permian - Since the Permian was primarily a time of erosion in the state, few outcrops of this age have been identified. However, ostracods and a few tiny fish teeth have been recovered (Springer, 2008b).

Carboniferous - Vast swamps developed in the lowland areas, and enormous amounts of plant matter accumulated, making the fossil record of today (Springer, 2008b).

Devonian - The muddy sea floor of Pennsylvania was home to brachiopods and tall, flower-like crinoids (Springer, 2008b).

Silurian - Colonial corals flourished on the limy sea floor as did bryozoans, brachiopods, and tiny ostracods (Springer, 2008b).

Cambrian - A shallow sea rose to cover the state, and sediments eroding off the land formed a sandy sea floor inhabited by trilobites, brachiopods, and other marine organisms. Cambrian rocks contain stromatolites typical of a shallow-water environment (Springer, 2008b).

4.2.2.3 Ohio

Summary

Paleontologically sensitive geological units in Ohio's PSA include only Paleozoic and Cenozoic sedimentary deposits. Paleozoic deposits ranging from sandstone and siltstone to mudstone reflect changing sea levels. Other sedimentary deposits also include deltas and swamp deposits. Cenozoic deposits represent the massive glacial advances and retreats and contain many different large-vertebrate fossils.

Quaternary - There were massive glacial advances and retreats in Ohio during the Early Quaternary (Pleistocene). The fossil record from these glacial times consists of mammoths, mastodons, ground sloths, giant beavers, and musk oxen (Ausich, 2006).

Permian - Layers of rocks are preserved from this time period and indicate that the area was fully terrestrial. Lakes, rivers, and other habitats dominated the landscape; fossils of ferns and horsetails are common (Ausich, 2006).

Carboniferous - During the Early Carboniferous, sediments from the eroding Appalachian Mountains to the east formed extensive marine deposits of muds and silts. Brachiopods are common fossils of this time. Other fossils include early trees and vines (Ausich, 2006).

Devonian - Shallow tropical seas continued to cover Ohio during the Early Devonian, producing thick deposits of limestones on the sea floor. Fossils of brachiopods, crinoids, trilobites, and placoderms (armored fish) are found in shales formed during this time (Ausich, 2006).

Silurian - Large coral and sponge reefs separated the shallower waters across much of Ohio from the deeper waters of the Michigan Basin to the north and the Appalachian Basin to the east. Corals, brachiopods, and stalked echinoderms are common fossils from these ancient reefs (Ausich, 2006).

Ordovician - Muds from the emerging Taconic Mountains in the northeast were deposited in shallow tropical seas teeming with abundant sea-floor life. Fossils of brachiopods, bryozoans, corals, and crinoids are common in the Ordovician rocks in southwestern Ohio (Ausich, 2006).

4.2.2.4 Michigan

Summary

Paleontologically sensitive geological units in Michigan's PSA include some of the oldest known fossils from the Precambrian, including filamentous algae. Most parts of the PSA are covered with Paleozoic-age rocks representing shallow, tropical seas as well as nearshore coal-forming swamps. Other deposits consist of Cenozoic glacial deposits containing large-vertebrate fossils.

Quaternary - There are abundant Quaternary glacial deposits in Michigan. Glaciers up to a mile thick advanced over Michigan at least four times during the Early Quaternary (Pleistocene), carving out the Great Lakes and sculpting the present-day landscape of lakes, hills, and swamps. Fossils from this time include freshwater clams, snails, fish, amphibians, and birds as well as mammals such as mammoths, mastodons, musk oxen, and giant beavers (Brandt, 2006).

Carboniferous - The shallow seas that had covered Michigan left behind invertebrate marine fossils such as crinoids, blastoids, clams, and corals. Plants dominate the fossil record of this time period (Brandt, 2006).

Devonian - Fossils are particularly abundant in the rocks of this time and include trilobites, many species of brachiopods, cephalopods, snails, crinoids, and *Hexagonaria*, the coral more commonly known as the Petoskey Stone, Michigan's state rock. The vertebrates are represented by fossilized plates of armored fish (Brandt, 2006).

Silurian - Coral reefs grew around shallow seas in Michigan. Fossils of this period include corals, bryozoans, crinoids, trilobites, brachiopods, clams, snails, and cephalopods (Brandt, 2006).

Ordovician - North America was positioned over the equator, and a shallow sea in Michigan was host to a diverse, tropical marine fauna dominated by brachiopods, trilobites, crinoids, and corals (Brandt, 2006).

Cambrian - Because North America was situated over the equator at this time, the climate was tropical, and invertebrate marine organisms such as trilobites and brachiopods proliferated (Brandt, 2006).

Precambrian - Some of the oldest rocks in North America are within the PSA. These metamorphic and igneous rocks are the remnants of mountain ranges raised during the Precambrian collision of landmasses that formed the beginnings of the North American continent. Partially metamorphosed sedimentary rocks contain fossil evidence of the earliest eukaryotes (organisms whose cells have a nucleus), a filamentous alga (Brandt, 2006).

4.2.2.5 Wisconsin

Summary

Paleontologically sensitive geological units in Wisconsin's PSA include Paleozoic sandstone, siltstone, and mudstone representing shallow-sea environments. A large range of marine life from brachiopods to sharks as well as soft-bodied fossils has been found. Other deposits are of Cenozoic age and represent glacial deposits containing woolly mammoth and other large-vertebrate fossils.

Quaternary - During the Quaternary, massive glacial ice sheets influenced North America, and nowhere are their effects more striking than in Wisconsin. Glaciers deposited large boulders called erratics, created drumlins, gouged bedrock, and formed the scenic landscapes comprising moraines, eskers, and kettle lakes of today's Wisconsin. Animals adapted to a cold climate mark the fossil record of this time, such as the woolly mammoth, large beaver, and horses. Fossils of seal, walrus, and whale are found along the Great Lakes (Barreto, 2005).

Ordovician - A shallow sea covered Wisconsin, and sediments representing the nearshore environment contain fossils of colonial corals, bryozoans, and cephalopods (Barreto, 2005).

Cambrian - Wisconsin had a tropical climate and was covered by a shallow sea teeming with diverse life forms. Fine-grained sediments eroding from adjacent landmasses settled on the sea floor. The deposits of sandstone and shale preserve the remains and traces of intriguing ancient sea life and thin-shelled brachiopods. Studying Wisconsin's Cambrian fossil record reveals many mysteries of early evolution, ancient ancestors, and bizarre experimental life forms that left no living descendants (Barreto, 2005).

Precambrian - The earliest history of Wisconsin is recorded by ancient rocks of Precambrian age, but they do not contain fossils (Barreto, 2005).

4.2.3 EAST OF THE ROCKIES REGION

4.2.3.1 Minnesota

Summary

Paleontologically sensitive geological units in Minnesota's PSA include predominantly Precambrian and Cenozoic deposits. Banded iron formations and stromatolites mark Precambrian deposits. Paleozoic deposits consist of tropical sandy coastline and shallow marine deposits. Limestone and dolostone are common from this age. Cenozoic deposits include mostly glacial deposits containing mastodons, mammoths, musk ox, and other large mammals.

Quaternary - The alternating advance and retreat of glaciers dominated the Quaternary of Minnesota. The glaciers left behind thick blankets of muddy sediment, as well as sand and gravel carried by streams formed from melting glacial ice. Enormous lakes formed south of the retreating ice sheets and streams flowing out of these lakes carved the major river valleys that we see in Minnesota today. Mastodons, mammoths, musk ox, and other large mammals roamed the Quaternary landscape (Runkel, 2006).

Cretaceous - A northeastern extension of the Western Interior Seaway frequently covered much of Minnesota during this time. A muddy coastline gave way to a shallow sea floor that was home to oysters, clams, ammonites, and crocodiles (Runkel, 2006).

Devonian - During the Devonian, a shallow sea covered parts of Minnesota. Within these waters, the skeletons of marine organisms slowly accumulated and contributed to the limy sediments on the sea floor. These sediments eventually formed limestone with a rich fossil record (Runkel, 2006).

Ordovician - A shallow, tropical sea covered most of Minnesota during the Ordovician and, at times, may have flooded the entire state. For much of this period, the skeletons of marine organisms accumulated and contributed to the limy sediments on the sea floor. Early in the Ordovician, microbial organisms that formed stromatolites and microbial mats dominated the sea. Later in Ordovician time, “shelly” fossils were most common, chiefly bryozoans, brachiopods, crinoids, and mollusks (Runkel, 2006).

Cambrian - The sediments that were deposited in the warm, shallow sea were mostly sandy and contain a record of life dominated by trilobites, brachiopods, and strange, shelled organisms called hyoliths (Runkel, 2006).

Precambrian - Sedimentary structures formed by the activity of bacteria, such as stromatolites, are common in Precambrian rocks. These fossils are typically primitive, single-celled organisms (Runkel, 2006).

4.2.3.2 North Dakota

Summary

Paleontologically sensitive geological units in North Dakota’s PSA consist predominantly of Mesozoic and Cenozoic deposits. Paleozoic deposits only exist in the PSA in the most eastern part of the state. Paleozoic deposits represent fluctuating sea levels with large assemblages of different marine invertebrates. Mesozoic deposits are predominantly of shallow marine origin and include many fishes, reptiles, and birds. Cenozoic deposits range from subtropical, swampy lowlands to glacial deposits.

Quaternary - Glaciers flowed across the northeastern two-thirds of North Dakota during the Quaternary, and debris deposited by the melting ice still covers much of the surface. Fossils of mastodons, mammoths, horses, bison, giant ground sloths, and camels have been recovered from Quaternary deposits in the state (Springer, 2006a).

Tertiary - Most of North Dakota was above sea level during the Tertiary, and volcanic ash deposits became layers of bentonite clay interbedded with the river and lake deposits derived from erosion of the rising Rocky Mountains. Fossils of freshwater mollusks, titanotheres, crocodile-like champsosaurs, and primitive trees such as sequoia, bald cypress, magnolia, and ginkgo can be found in these rocks (Springer, 2006a).

Cretaceous - During the Cretaceous, North Dakota was either completely or partially covered by a warm, shallow sea called the Western Interior Seaway. Fine-grained sediments, mostly silt and

clay, were deposited on the seafloor. Entombed in these rocks are fossils of marine reptiles as well as sharks, rays, ratfish, birds, and numerous marine invertebrates (Springer, 2006a).

Jurassic - Fossils of gastropods, bivalves, echinoderms, and foraminifera are found in Jurassic rocks of North Dakota (Springer, 2006a).

Triassic - North Dakota's Triassic rocks are not commonly exposed at the surface, but information about them comes from drill cores (Springer, 2006a).

Silurian - Corals, trilobites, and other invertebrates inhabited the shallow, subtropical seas. Near the end of the Silurian, the seas receded, and karst topography developed on the eroding land surface. Silurian rocks are exposed at the surface only in a small area in the northeastern part of the state (Springer, 2006a).

Ordovician - Diverse assemblages of invertebrate animals including corals, cephalopods, trilobites, brachiopods, bryozoans, and graptolites inhabited the shallow marine environments. Ordovician rocks are exposed at the surface only in a small area at the eastern edge of the state (Springer, 2006a).

Cambrian - The most abundant fossils in Cambrian rocks are those of conodonts, but there are also remains of brachiopods and trilobites. Cambrian rocks are not exposed at the surface, but information about them comes from drill cores (Springer, 2006a).

4.2.3.3 Montana

Summary

Paleontologically sensitive geological units in Montana's PSA consist predominantly of Precambrian, Cretaceous, and Tertiary sedimentary units. Precambrian sedimentary units include shallow-sea stromatolites and trace fossils. Paleozoic deposits are from warm and shallow marine waters that created a thin blanket over almost all of Montana. Mesozoic deposits are of terrestrial and tropical marine origin. The Cenozoic marks the retreat of the ocean and the onset of a colder period. Deposits from the Cenozoic thus range from those of tropical, shallow seas to glacial deposits.

Quaternary - Quaternary deposits are found primarily in the western regions of the state (Varricchio, 2006). During the Quaternary, the climate became increasingly wetter, and this wetness invigorated streams that began to carve deep valleys into the plains of Montana. Glaciers carved out serrated rows of jagged mountain peaks and flattened the northern third of the state. Several large, ice-dammed lakes occupied much of the state as well. Mammoths, dire wolves, and musk ox roamed the regions to the front of the ice sheets.

Tertiary - Tertiary vegetation varied significantly as climates alternated between wet and dry intervals. Large titanotheres, dogs, and other mammals mark the fossil record for the Tertiary in northern Montana (Varricchio, 2006).

Cretaceous - The Cretaceous was a geologically active time in Montana, and the western part of the state experienced mountain building and episodes of violent volcanism. Climates were

warm, with wetter conditions near the coast and seas that existed in Montana at that time and seasonally arid ones in the shadow of the mountains. Terrestrial ecosystems supported a wide diversity of plants and animals, such as many dinosaurs including one of the most famous, *Tyrannosaurus rex* (Varricchio, 2006).

Jurassic - Warm, shallow seas covered much of Montana throughout most of the Jurassic. Small, sluggish rivers carried terrestrial sediments to the east and northeast, forming a low coastal plain. Montana's oldest dinosaur fossils are found among ferns (Varricchio, 2006).

Triassic - A hot, arid landscape stretched across Montana throughout most of the Triassic. Fossils from marine rocks include brachiopods and ammonites (Varricchio, 2006).

Carboniferous - For most of the Early Carboniferous, warm marine waters ranging from deep to shallow covered the state. The diverse marine fauna included algae, sponges, worms, arthropods, bivalves, cephalopods, brachiopods, and nearly 100 species of fish. Rainwater dissolved limestones, forming the karst topography seen today in parts of Montana (Varricchio, 2006).

Devonian - The Devonian Period in the PSA recorded a diversity of marine life, including crinoids, sponges, brachiopods, mollusks, and conodonts. Devonian deposits even include plant spores washed or blown in from nearby lands (Varricchio, 2006).

Silurian - Very little remains of any Silurian rocks in Montana due to high rates of erosion in the Devonian, although there are subsurface Silurian rock layers in the eastern third of the state (Varricchio, 2006).

Ordovician - Warm marine waters supported a diversity of algae, crinoids, bryozoans, brachiopods, and corals, and remnants of some of the earliest vertebrates also occur (Varricchio, 2006).

Cambrian - Shallow seas flooded over Montana, and limestones and shales were deposited. When the seas retreated, sandy beach deposits accumulated. Trilobites represent the most abundantly fossilized animals of the time, and their remains are common in many Cambrian rocks from the state.

Precambrian - From about 1.5 billion years ago to 800 million years ago, a thick sequence of sandy and muddy deposits accumulated in the western part of Montana. These sediments represent the west coast of the early North American continent and contain the oldest evidence of life in Montana. Fossils include stromatolites as well as traces left by marine animals crawling along the sea floor (Varricchio, 2006).

4.2.4 WEST OF THE ROCKIES REGION

4.2.4.1 Idaho

Summary

Paleontologically sensitive geological units in Idaho's PSA include Precambrian, Paleozoic, Mesozoic, and Cenozoic deposits. Precambrian deposits contain stromatolites and trace fossils. Paleozoic deposits are terrestrial and marine and represent fluctuating sea levels. Mesozoic deposits are shallow marine sedimentary rocks. Cenozoic deposits consist of lake and river deposits as well as retreating glacial deposits containing large-vertebrate fossils.

Quaternary - Quaternary deposits include glacial valley sediments, layers of wind-blown glacial dust. Two hundred species of vertebrates are known from the Quaternary fossils of Idaho. The most common fossils are of mammoths, horses, camels, bison, mountain sheep, ground sloths, rodents, rabbits, birds, snakes, lizards, and fish (Springer, 2006b).

Tertiary - Tertiary river and lake sediments contain fossils of fish, rodents, rabbits, horses, rhinos, camels, pronghorns, oreodonts (sheep-like mammals), and plants (Springer, 2006b).

Jurassic - Outcrops of Jurassic rocks occur only in southern Idaho, not along the northern border (Springer, 2006b).

Triassic - Outcrops of Triassic rocks occur only in southern Idaho, not along the northern border (Springer, 2006b).

Permian - The Permian Phosphoria Formation of eastern Idaho is mined for its rich phosphate deposits and contains fossils of spiral-toothed sharks, fishes, corals, brachiopods, snails, bryozoa, octopus and squid, pelecypods, and ostracods (Springer, 2006b).

Devonian - Late Devonian rocks in Idaho are mostly shallow- to moderate-depth marine sediments. A variety of well-preserved marine fossils in these layers including corals, sponges, gastropods, pelecypods, ostracods, cephalopods, conodonts, and fishes have been found. Scattered river deposits have produced fossils of a variety of primitive fishes (Springer, 2006b).

Ordovician - A shallow sea covered parts of Idaho during the Ordovician, and large, thick deposits of Ordovician marine sediments are known. These deposits contain a variety of fossils including algae, brachiopods, trilobites, ostracods, graptolites, corals, gastropods, sponges, and very large trace fossils (Springer, 2006b).

Cambrian - A shallow sea covered parts of Idaho during the Cambrian. The northernmost outcrops are metamorphosed and yield only a sparse fauna, mostly trilobites and brachiopods (Springer, 2006b).

Precambrian - Slightly to moderately metamorphosed Precambrian sediments can be seen in northernmost Idaho. The only known Precambrian fossils in the state are stromatolites (Springer, 2006b).

4.2.4.2 Washington

Summary

Paleontologically sensitive geological units in Washington's PSA include Precambrian rocks; Paleozoic sandstone, shale, and limestone from ancient shorelines; and deep and shallow Mesozoic marine sediments. Cenozoic deposits include shallow marine sandstone and siltstone as well as glacial deposits containing large-vertebrate fossils.

Quaternary - During the Quaternary, glaciers carved the landscape of northernmost Washington and the Puget Sound area in the western part of the state. Larger mammals are represented in Pleistocene deposits by mammoth and mastodon teeth and tusks as well as the bones of giant sloths (Nesbitt, 2010).

Tertiary - Mountain building marks this period in Washington's PSA and many of the rocks formed during this time are igneous. Marine waters covered the state east of the Cascades during part of this time interval. The sedimentary rocks formed in these waters contain fossils of clams, snails, and crabs as well as a high diversity of whales and rare marine birds. Coastal swamps were home to a variety of plant and insect life. Fossil leaves, fruit seeds, flowers, and insects occur in great abundance in some of the rocks formed in these swamps. Footprints and rare teeth indicate that small mammals roamed the landscape (Nesbitt, 2010).

Cretaceous - Mid-Cretaceous marine ammonite and clam fossils are found east of Mt. Baker in the Cascades Range. Fossils of Late Cretaceous ammonites, clams, snails, and marine reptiles occur in the westernmost San Juan Islands, the adjacent Gulf Islands, and Vancouver Island of British Columbia (Haugerud et al., 2009; Nesbitt, 2010).

Jurassic and Triassic - The rocks of the Nooksack terrain include exposures of fossil-rich Jurassic sedimentary rocks on the west side of Mt. Baker. This thick sequence of marine sandstones and dark shales lies over volcanic rocks that were formed in an island arc. Fossils of clams, snails, and ammonites can be found in the black shales. No Triassic fossils have been found in Washington, as most Triassic rocks are volcanic in nature (Nesbitt, 2010).

Ordovician - Exposures of Ordovician slates occur in the northeastern-most corner of Washington. These rocks are metamorphosed shales formed from muds that were deposited in a deep ocean off the west coast of North America. In general fossils are abundant in these rocks; although trilobite fossils are rare (Nesbitt, 2010).

Precambrian - Most of the land that is now Washington State did not exist along the West Coast of North America until the Jurassic. Late Precambrian rocks from the ancient North-American continent extend a few kilometers into easternmost Washington. These rocks show mud cracks, ripple marks, and very rare trace fossils. These units are not paleontologically sensitive (Nesbitt, 2010).

Figure H-13. Geologically Relevant Strata along the Northern Border in Washington and Idaho

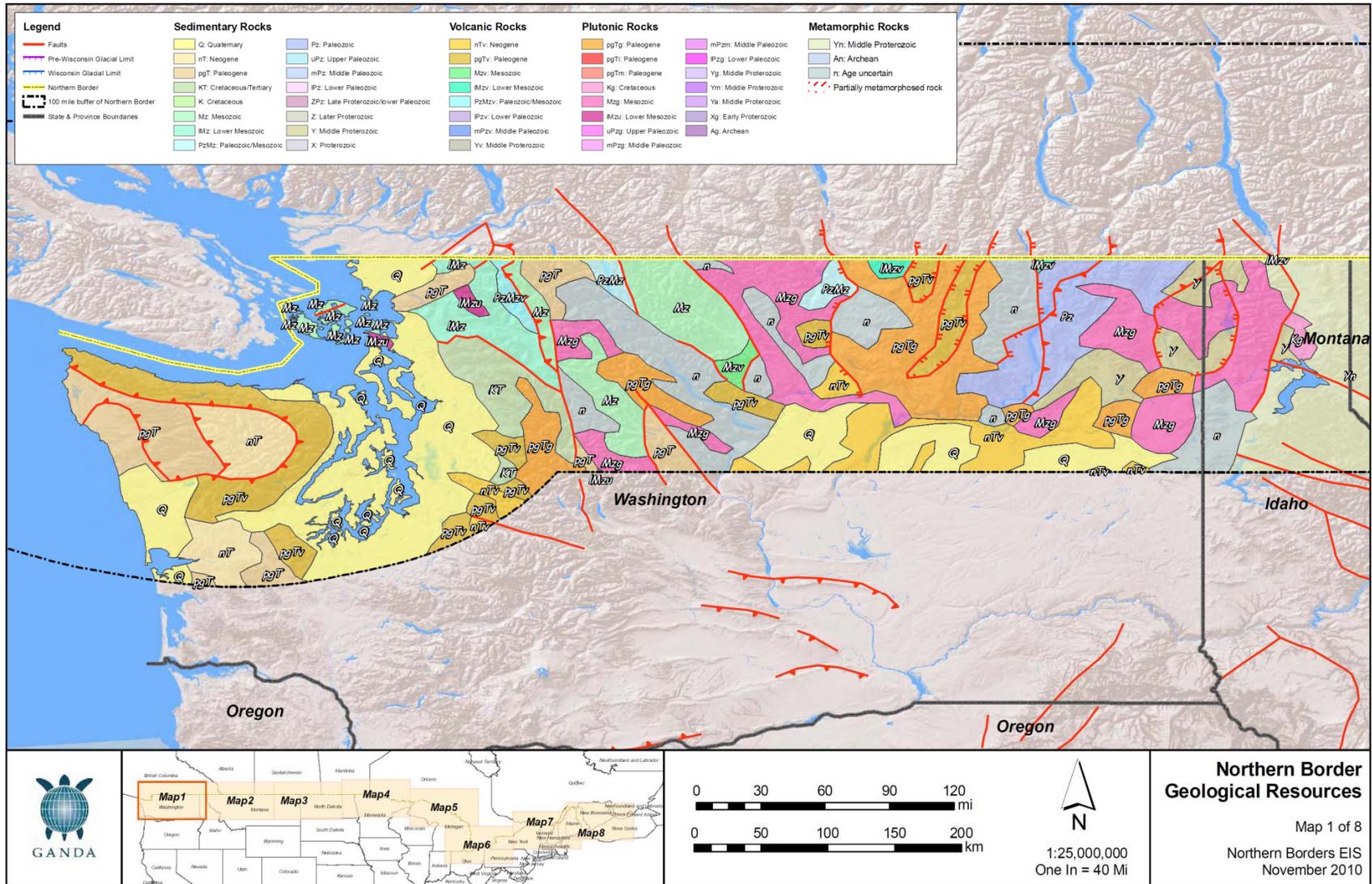


Figure H-14. Geologically Relevant Strata along the Northern Border in Western and Central Montana

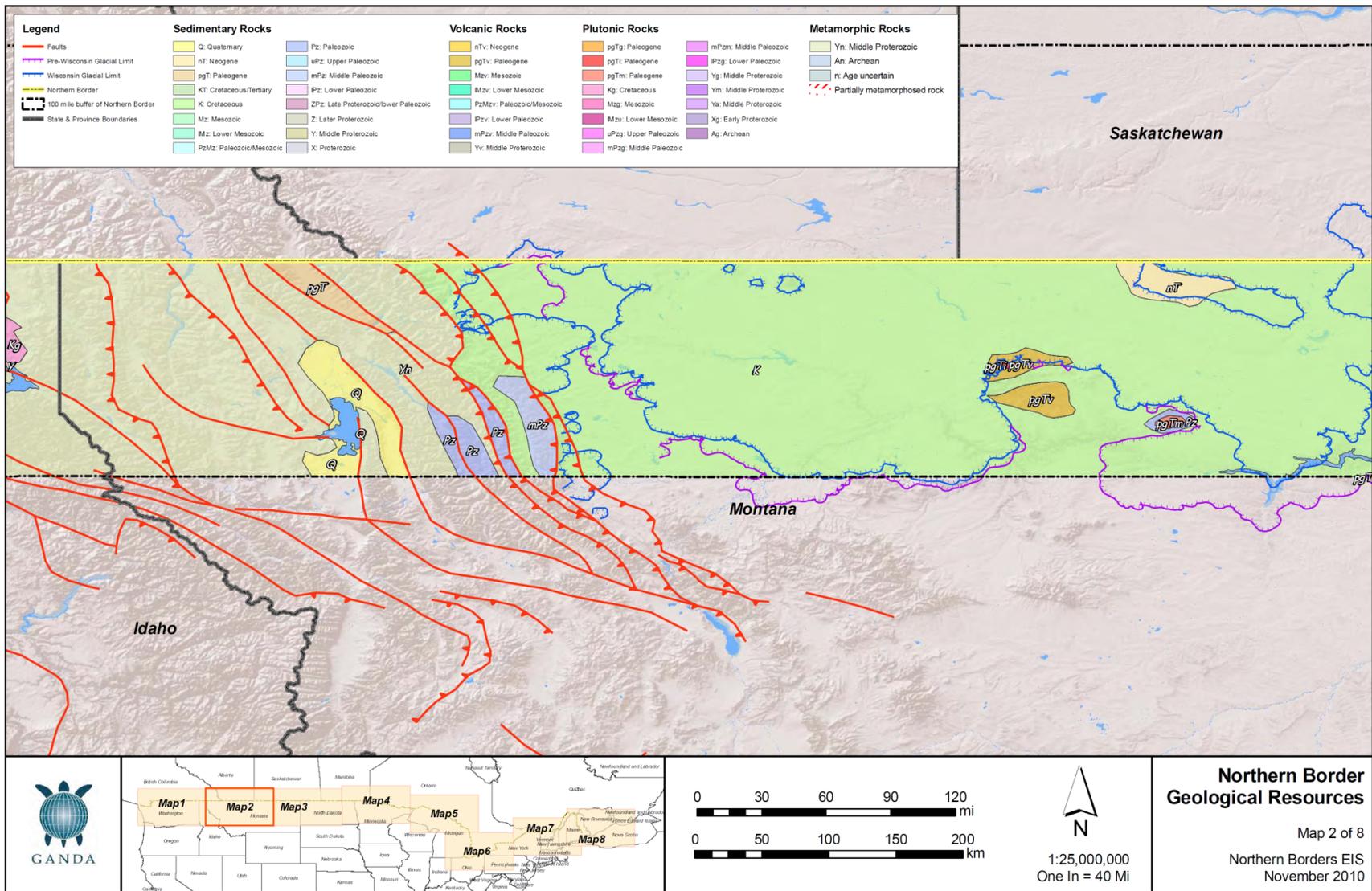


Figure H-15. Geologically Relevant Strata along the Northern Border in Eastern Montana and Western and Central North Dakota

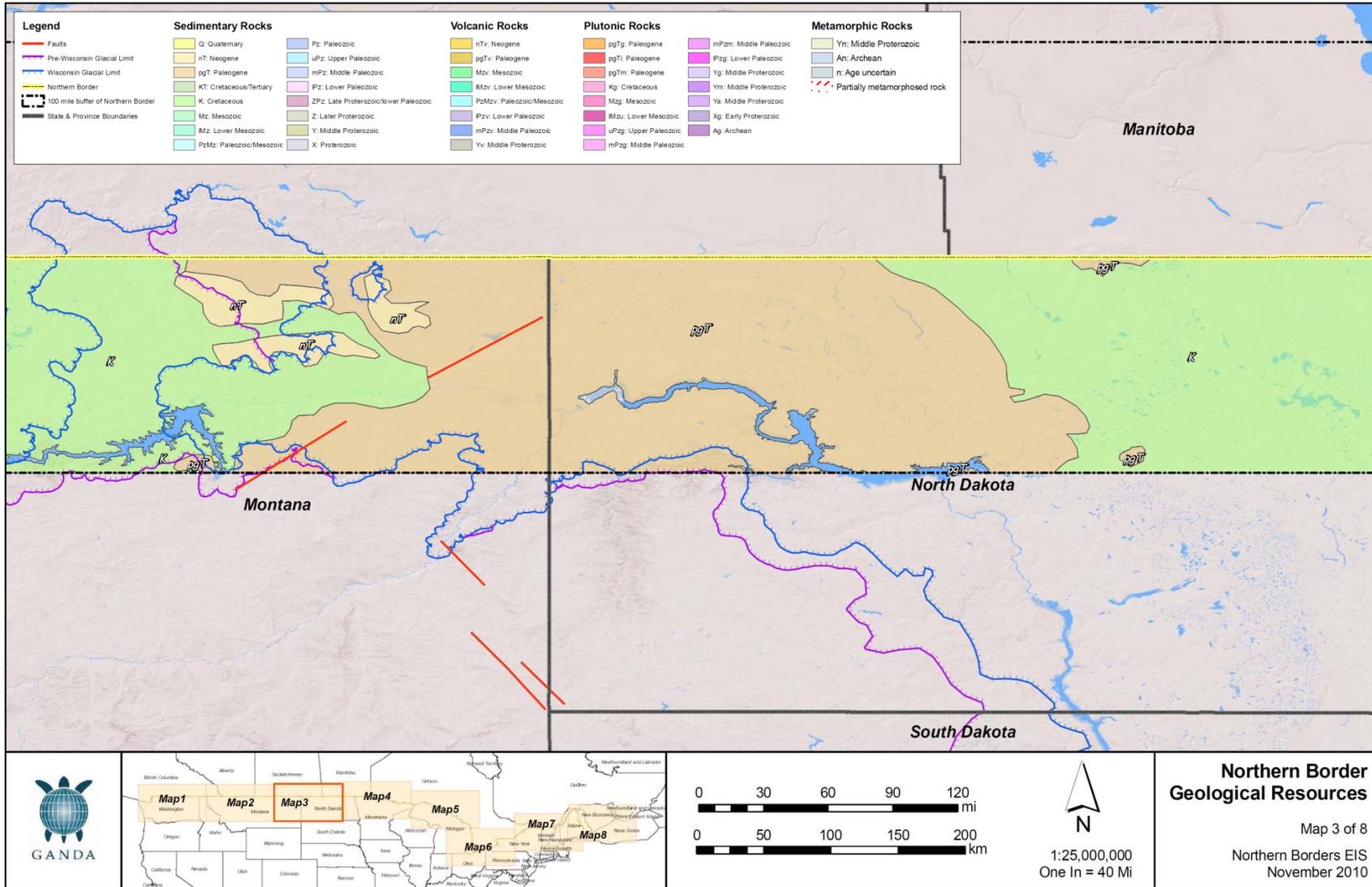


Figure H-16. Geologically Relevant Strata along the Northern Border in Eastern North Dakota, Minnesota, and Western Wisconsin

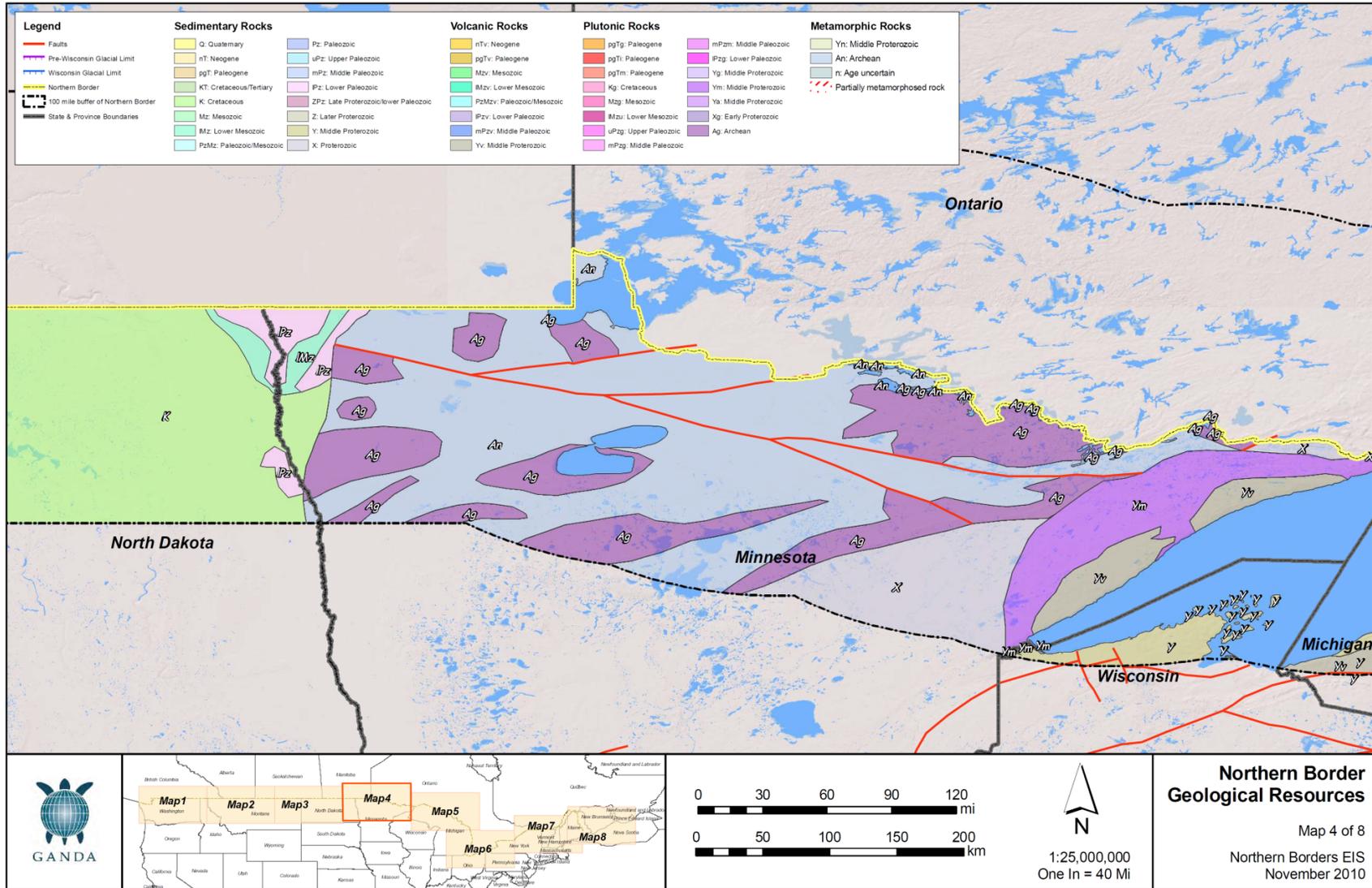


Figure H-17. Geologically Relevant Strata along the Northern Border in Eastern Wisconsin and Upper Michigan

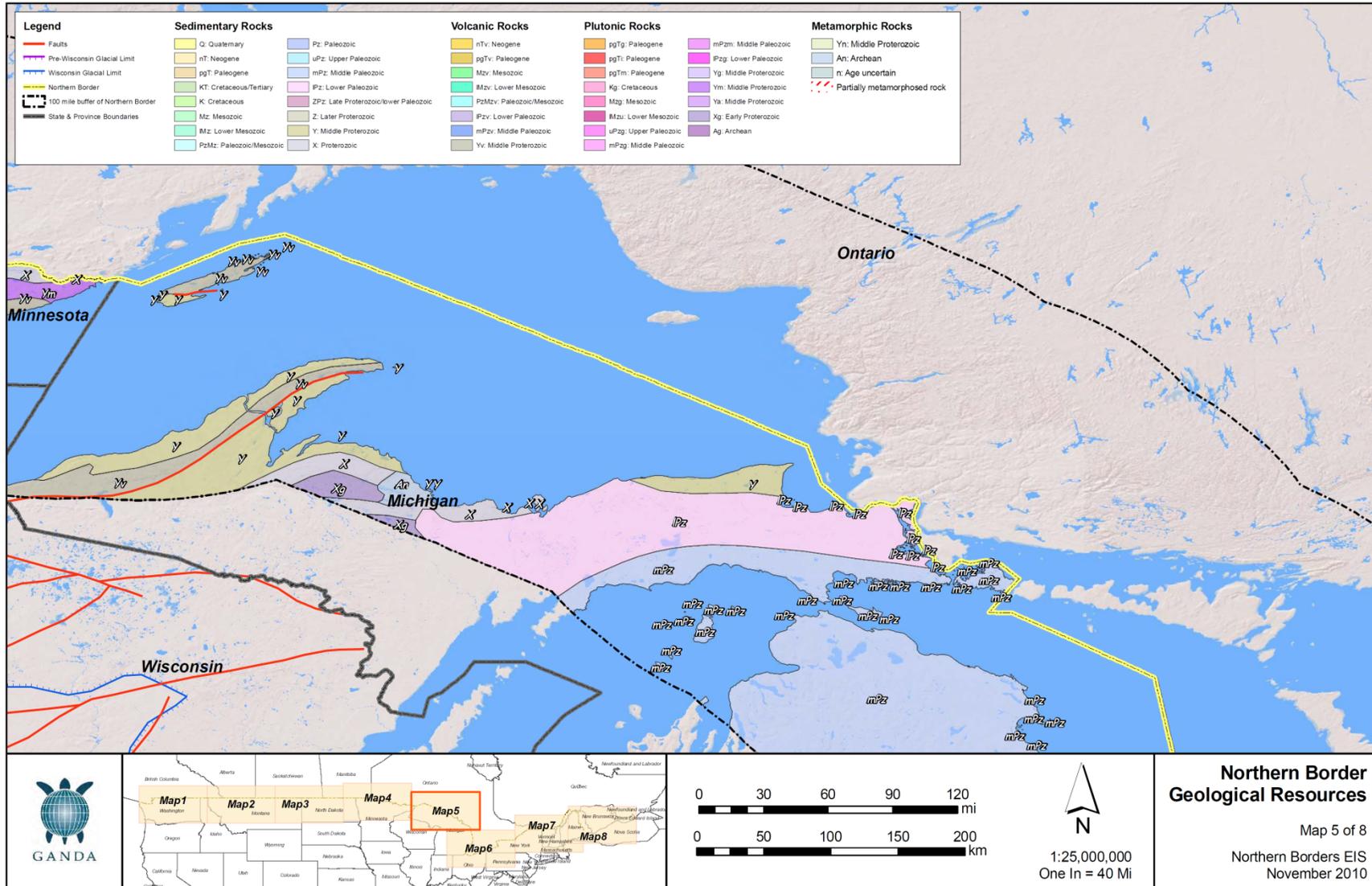


Figure H-18. Geologically Relevant Strata along the Northern Border in Lower Michigan, Ohio, Pennsylvania, and Western New York

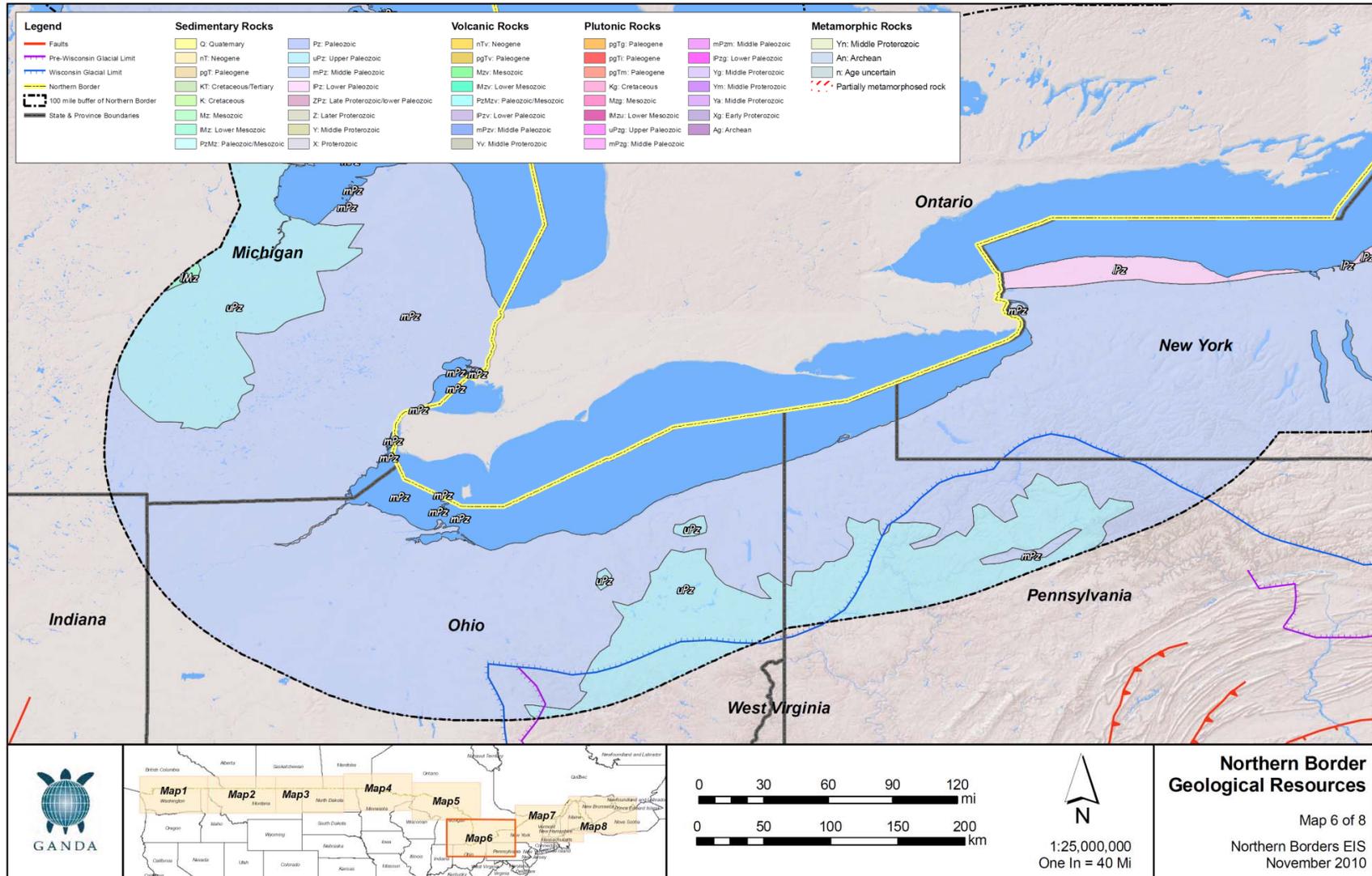


Figure H-19. Geologically Relevant Strata along the Northern Border in Eastern New York, Vermont, New Hampshire, and Western and Central Maine

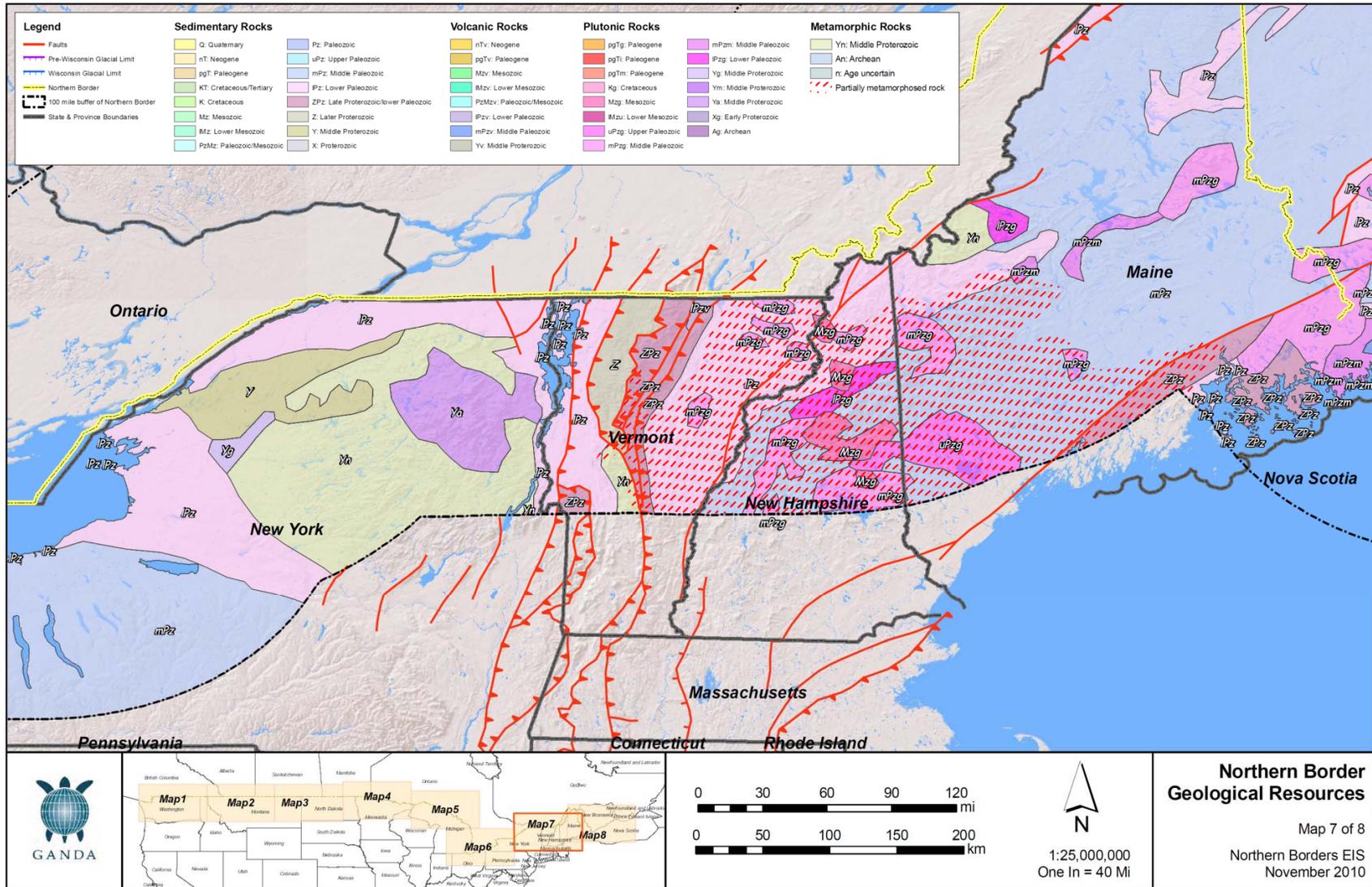
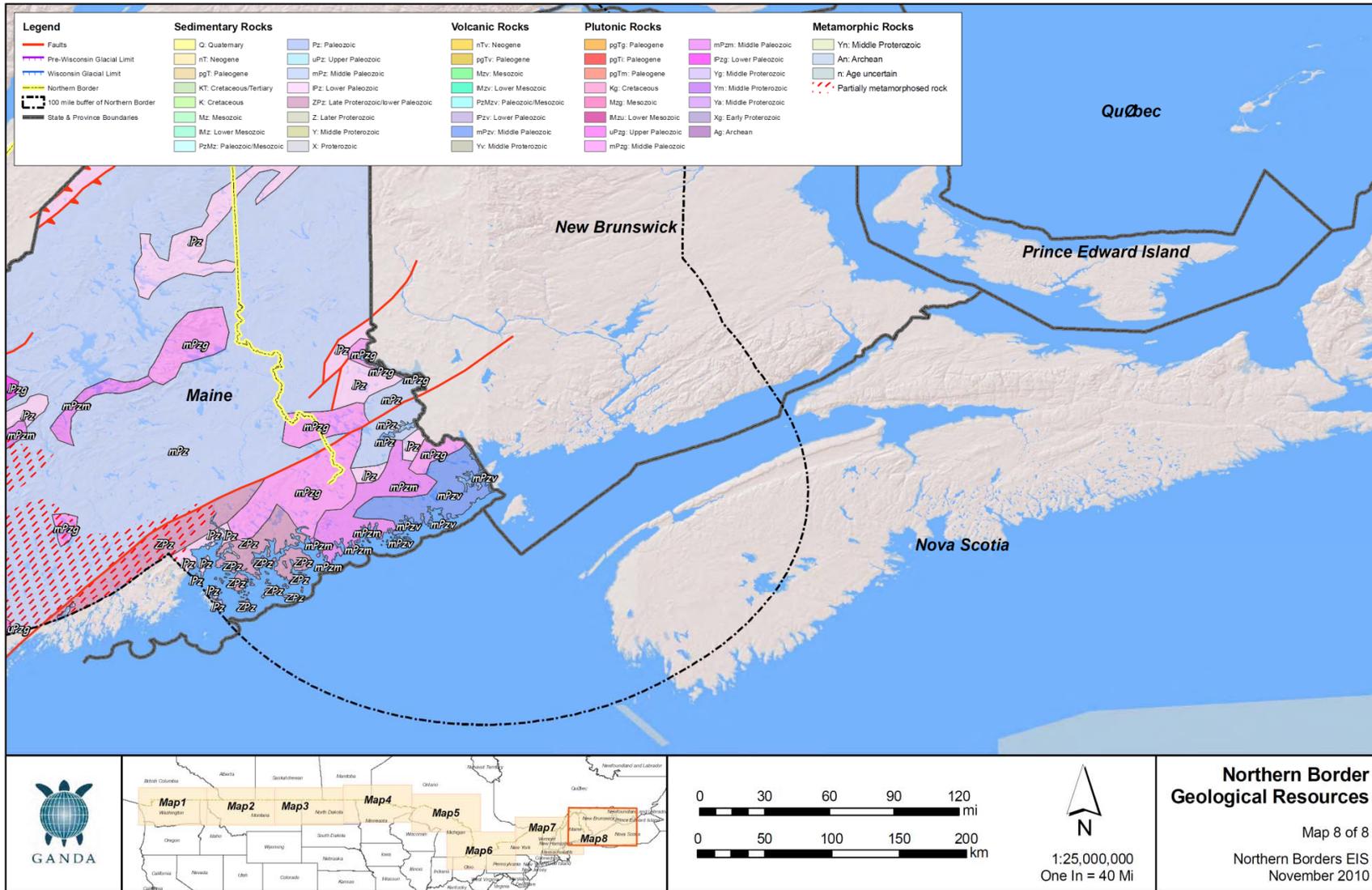


Figure H-20. Geologically Relevant Strata along the Northern Border in Eastern Maine



5 REGULATORY FRAMEWORK GOVERNING THE MANAGEMENT OF CULTURAL RESOURCES

This section lists and describes pertinent laws, regulations, Executive Orders (EO), guidelines, agreements, and treaties for which CBP is responsible as it carries out its mission and programs in the four geographic regions within the 100-mile corridor of the northern border project area. The section first describes the national regulatory framework that governs CBP action across the country and then provides a state-by-state account of the regulatory framework at state and local levels.

5.1 CULTURAL RESOURCES DEFINED

Cultural resources in the broadest sense include tangible elements (e.g., buildings, structures, sites, districts, and objects of significance in American history, architecture, archaeology, and engineering) and intangible elements (e.g., folklore and religious beliefs). Cultural resources may include relatively recent or historic places and items of cultural importance. In the context of this PEIS and CBP's stewardship responsibility, cultural resources refer to historic and prehistoric real property (e.g., buildings, structures, historic districts, ruins, archaeological sites, and traditional cultural and tribal places) and historic personal property (e.g., historic records and archaeological artifacts). The term "historic property" is used in place of "cultural resources" in the National Register of Historic Places (National Register) program, and is used in this PEIS when referring to any cultural resource identified as eligible for, or listed in, the National Register.

5.2 LEGAL SETTING FOR CULTURAL RESOURCES PROTECTION

From a legal perspective, cultural resources are defined in various EOs, Federal laws, DHS Directives System Directive 017-01: Historic Preservation in Asset Management and Operations (Directive 017-01) and DHS Directives System Instruction 017-01-001: Instruction Guide on the Historic Preservation in Asset Management and Operations (Instruction 017-01-001), and state laws.

Congress established the most comprehensive national policy on historic preservation with passage of the National Historic Preservation Act (NHPA) in 1966. One goal of the act is that Federal agencies act as responsible stewards of our Nation's resources when their actions may affect historic properties. CBP must comply with NHPA before issuing any license, permit, or approval, and before expending any funds apart from non-destructive planning activities.

Sections 106 and 110 of the NHPA establish Federal agency responsibilities for historic preservation. Section 106 requires Federal agencies account for the effects of their actions on historic properties—any district, site, building, structure, or object included or eligible for inclusion in the National Register.

Section 110 requires Federal agencies to assume responsibility for all historic properties under their control and integrate historic preservation into their mission and programs. Section 110 also sets out a series of broad preservation responsibilities for Federal agencies and requires them to establish a historic preservation program. By adhering to the requirements of Section 110, CBP will be able to fulfill its responsibilities for Section 106 more effectively and efficiently.

The nature of consultation in Section 106 review is dynamic, as CBP will provide information to others for review and concurrence or comment. It is CBP's position to comply with all applicable Federal laws and regulations.

5.3 CBP REQUIREMENTS

DHS developed Directive 017-01 and Instruction 017-01-001, which establish policy and procedures for appropriate consideration of historic properties and Native American sacred sites in the management and operation of DHS assets. Directive 017-01 and Instruction 017-01-001 establish appropriate DHS roles, responsibilities, and lines of accountability to apply the relevant requirements of historic preservation policy to DHS activities. They have a particular focus on NHPA (16 United States Code [U.S.C.] Sec. 470 *et seq.*) and the implementing regulations of Section 106 of the NHPA at 36 Code of Federal Regulations (CFR) 800, as well as EO 13007, Indian Sacred Sites.

The requirements in Directive 017-01 and Instruction 017-01-001 apply to all DHS components, including CBP. Thus, any CBP-specific policies, procedures, and other guidance must be consistent with Directive 017-01 and Instruction 017-01-001 and serve to supplement and further clarify the requirements laid out in them, as well as in NHPA, when meeting the requirements of Section 106 regulations.

5.4 NHPA AND RELATED LAWS AND REGULATIONS

Federal agencies must comply with several historic preservation laws and EOs. The NHPA along with some of the most common Federal laws dealing with historic and archaeological preservation are described below.

The NHPA promotes historic preservation by ensuring that Federal agencies consider historic properties when planning and making decisions. Among the provisions of the law most relevant to CBP:

- The NHPA created the National Register, an official listing of the Nation's historic properties. It defines a historic property as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register (36 CFR 800.16(l)). Stewardship of historic properties—identifying, evaluating, and protecting them—is the goal of Federal preservation legislation.
- The NHPA established SHPOs and Tribal Historic Preservation Officers (THPOs) with roles for each. CBP regularly communicates and consults with SHPOs and THPOs as part of the Section 106 review process.
- The NHPA authorized the Secretary of the Interior to establish standards for the preservation and treatment of historic properties and professional qualifications for those charged with such tasks. CBP must be familiar with these standards and qualifications when selecting cultural resource specialists and reviewing or developing proposals for preservation and treatment of historic properties.

The NHPA created the Advisory Council on Historic Preservation (ACHP), an independent Federal agency that serves as the primary policy advisor to the government on matters related to

historic preservation. The ACHP oversees the implementation of the regulations guiding Section 106 review and, at times, participates in Section 106 reviews. CBP may be involved with the ACHP in different ways. Under certain circumstances, the ACHP will participate in specific Section 106 reviews and practitioners will need to include them in communications and consultations. CBP must supply the ACHP with documentation of findings of adverse effect and every memorandum of agreement (MOA)—an agreement that commits a Federal agency to carry out the agreed-upon measures to mitigate adverse effects on historic properties—must be filed with the ACHP.

The most relevant sections of NHPA to practitioners are Section 106 and Section 110. These sections specifically set out Federal agency responsibilities for historic preservation with the goal of thoroughly integrating historic preservation priorities into their overall missions and programs.

Section 106 of the NHPA requires Federal agencies to account for the effects of their actions on historic properties before issuance of any license or expenditure of Federal funds on the project. The ACHP must have a reasonable opportunity to comment on any Federal agency undertaking. These provisions form the foundation of Section 106 review, as implemented by the regulations in 36 CFR 800.

The Section 106 regulations establish a four-step process by which Federal agencies account for the effects of their actions on historic properties. Although the regulations do not mandate preservation in all cases, they integrate preservation values into planning and decision-making.

Section 110 of the NHPA contains several provisions that create a framework for Federal stewardship of historic properties. It sets out the broad historic preservation responsibilities of Federal agencies and ensures that historic preservation is fully integrated into the ongoing programs of all Federal agencies. Section 110 includes specific requirements governing agency compliance with Section 106. Its provisions requiring identification and evaluation of historic properties, and consultation with a variety of interested parties are reflected in the regulations implementing Section 106 reviews.

The Antiquities Act of 1906 was the first Federal law to promote preservation of archaeological and historic sites on Federal and Native American lands. It requires Federal agencies to preserve archaeological sites and historic structures on the lands that they manage. It also authorizes the creation of national monuments on Federal land to protect both cultural and natural resources and provided the foundation for later legislation, such as NHPA.

The Historic Sites, Buildings, and Antiquities Act (Historic Sites Act) expanded upon the Antiquities Act. It established a national policy to preserve historic sites, buildings, and objects of national significance for the public good, and organized most Federal preservation activities under the NPS.

The Archaeological Recovery Act of 1974 requires all Federal agencies to provide for archaeological data recovery and recordation of historic data that would otherwise be destroyed due to Federal construction projects or federally licensed activity. Although the salvage approach of this act has been superseded by the planning and consultation approach embodied in

NHPA and 36 CFR 800, it established the principle that Federal agencies are authorized to fund archaeological excavations and other mitigation measures.

The American Indian Religious Freedom Act (AIRFA) of 1978 protects the spiritual beliefs and practices of Native Americans and Native Hawaiians, as guaranteed by the First Amendment of the U.S. Constitution. Although it does not specifically prohibit any physical alteration of sacred sites or guarantee unlimited access to such sites, the law directs Federal agencies to consult with traditional religious leaders to ensure that agency policies and procedures protect and preserve traditional cultural practices, including access to sacred sites and use and possession of sacred objects. Projects with the potential to affect traditional religious or sacred sites will require careful consultation with the THPO or other designated tribal representatives to assure that the sites are not physically harmed and that access and use of the sites are not impeded.

The Archaeological Resources Protection Act (ARPA) of 1979 protects archaeological resources on Federal and Native American land from looting and vandalism. The part of the law most relevant to the practitioner is the requirement that all archaeological excavations on Federal or Native American lands are conducted in accordance with a permit from the land manager, such as the Bureau of Land Management (BLM). For projects involving archaeological field investigations/research, the practitioner must determine whether an ARPA permit is needed, and if so, which land management office issues the permit. If an ARPA permit is required, the practitioner must ensure that contracted cultural resources specialists meet the qualifications for an ARPA permit and that project schedules include the time needed to secure the permit or permits.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 and its implementing regulations (43 CFR 10) ensure the rights of Native American tribes and Native Hawaiian organizations to control the disposition of human remains, funerary objects, sacred objects, and objects of cultural patrimony (collectively referred to as cultural items) held by Federal agencies or found on Federal and tribal lands. NAGPRA requires that Native American tribes or Native Hawaiian organizations be consulted when archaeological investigations on Federal or tribal lands encounter or expect to encounter human remains or cultural items or if such items are unexpectedly discovered on Federal or tribal lands. If human remains are encountered, all work in the area must stop and the appropriate tribe(s) notified and brought in to consult on the disposition of the remains and associated funerary objects. Any excavation or removal of cultural items must be conducted under procedures required by ARPA.

The stipulations of NAGPRA strongly encourage that human remains and cultural items are not excavated or removed, but are preserved in place. To comply with NAGPRA in the course of Section 106 review, practitioners must carefully consult with the appropriate THPO or designated tribal representative, as well as with the SHPO and cultural resources specialists. Practitioners must also review any existing information regarding cultural resources for the project area to determine the likelihood of human remains or other cultural items. This assessment should be made as early as possible in the planning process. The Bureau of Indian Affairs (BIA) and the Department of the Interior (DOI) maintain a list of federally recognized Native American tribes.

5.5 EOS

EO 11593 Protection and Enhancement of the Cultural Environment. This 1971 EO directs Federal agencies to support preservation of cultural resources, identify and nominate historic properties under their jurisdiction to the National Register, and avoid inadvertent transfer, sale, demolition, or substantial alteration of eligible properties. This EO reiterates and emphasizes some of the provisions of NHPA and 36 CFR 800.

EO 13006 Locating Federal Facilities on Historic Properties in our Nation's Central Cities. This 1996 EO directs Federal agencies to use and maintain facilities in historic properties in urban business areas. In planning locations for facilities, agencies must give preference to historic properties within historic districts, make any alterations compatible with the surrounding district, and reduce regulatory barriers that may impede achieving this objective.

EO 13007 Indian Sacred Sites. This 1996 EO directs Federal agencies, to the extent practicable, to accommodate Native American ceremonial use of sacred sites under agency jurisdiction and avoid adverse effects to those sites. This EO emphasizes the importance of protecting both the physical integrity and the ongoing religious use of Native American sacred sites.

EO 13175 Consultation and Coordination with Indian Tribal Governments. This 2000 EO directs Federal agencies to strengthen the U.S. Government's government-to-government relationships with Native American tribes. Agencies must respect Native American tribal self-government and sovereignty and develop accountable processes of consultation to ensure meaningful and timely input from tribes. CBP uses the DHS Plan to Develop a Tribal Consultation and Coordination Policy Implementing EO 13175 as a consultation policy and guidance for meaningful consultation with Native American tribes. The document, developed in consultation with tribal governments, contains a plan of action for meeting goals specified in EO 13175. This plan includes developing a tribal consultation policy and dedicating staff resources to work with tribal governments, including designation of a principal tribal liaison within the Office of Intergovernmental Affairs and regional or local tribal liaisons within individual components including CBP.

5.6 LEGAL SETTING FOR PALEONTOLOGICAL PROTECTION

The Paleontological Resources Protection Act refers to Title VI, Subtitle D – “Paleontological Resources Preservation” of the Omnibus Public Land Management Act (OPLMA) of 2009, Public Law 111-011. Subtitle D (OPLMA-PRP), requires the Secretaries of the Interior and Agriculture to, “manage and protect paleontological resources on Federal land using scientific principles and expertise. The Secretary shall develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. These plans shall emphasize interagency coordination and collaborative efforts where possible with non-Federal partners, the scientific community, and the general public” (16 USC 470aaa, Sec. 6302).

The OPLMA-PRP only applies to Federal lands and does not affect private lands. The act includes criminal and civil penalties for fossil theft and vandalism. However, it also includes provisions for casual collecting which means, “the collecting of a reasonable amount of common

invertebrate and plant paleontological resources for non-commercial personal use, either by surface collection or the use of non-powered hand tools resulting in only negligible disturbance to the Earth's surface and other resources" (16 USC 470aaa, Sec. 6301[1]). Casual collecting is not allowed within national parks or other lands managed by the National Park Service (NPS). Any paleontological excavation beyond casual collecting requires a special permit as proscribed by the OPLMA-PRP.

5.7 STATE LAWS, REGULATIONS, GUIDELINES, AGREEMENTS, AND TREATIES

This section outlines state-level regulations and guidelines that may impact procedures relevant to CBPs cultural resources management compliance process. While there is relative uniformity regarding Section 106 compliance procedures and National Register determinations, other issues, such as access to information or survey permitting, have much greater variation.

5.7.1 NEW ENGLAND REGION

5.7.1.1 Maine

State Cultural Resource (CR) Laws, Statutes, and Regulations

Numerous Federal and state laws, and the regulations and agreements emanating from them, govern the treatment of historic and archaeological resources in Maine. Such laws are generally restricted to the protection of cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Section 106 of the NHPA offers the broadest protection of cultural resources in the United States.

- Chapter 27 of the Maine Revised Statutes Annotated, sections 371-378 (27MRSA § 371-378). This statute is unofficially called "Maine's Antiquities Law": <http://janus.state.me.us/legis/statutes/27/title27ch13sec0.html>
- Regulation concerning Maine cemeteries and burials: <http://janus.state.me.us/legis/statutes/13/title13sec1371-a.html>
- Federal historic preservation laws applicable to Federal projects in Maine: www.cr.nps.gov/history/online_books/fhpl/contents.htm
- Regulations for archaeological work in Maine: www.maine.gov/sos/cec/rules/rules.html

Maine's Site Location of Development Law (Title 38, Chapter 3, §§ 481-490; www.maine.gov/dep/blwq/docstand/sitelawpage.htm#stat).

State Historic Preservation Office

The SHPO for Maine is the Maine Historic Preservation Commission (MHPC). The MHPC:

- Nominates properties to the National Register of Historic Places;
- Reviews and comments on the effect of Federal undertakings on historic properties;
- Assists owners of income-producing properties to obtain Federal and state rehabilitation tax credits;

- Oversees the identification and evaluation of archaeological sites as well as historic buildings, objects and districts; and,
- Promotes historic preservation through planning and public education.

The MHPC website is www.state.me.us/mhpc/index.shtml.

Inventory and evaluation (National Register) procedures:

- The MHPC project review procedures are at: www.state.me.us/mhpc/project_review/index.html.
- For information concerning archaeological survey guidelines, refer to www.state.me.us/mhpc/project_review/archaeological_survey_guidelines.html.
- For information concerning architectural survey guidelines and survey forms for project review, refer to www.maine.gov/mhpc/architectural_survey/index.html.

State preservation plan:

Maine's state preservation plan is entitled: *A Heritage for the Future: A Plan for Preserving Maine's Historic and Archaeological Resources*, found at www.state.me.us/mhpc/preservation_planning/state_plan/index.html.

Resources for identifying locations of cultural resources (GIS, web, database, etc.):

- The cultural architectural resource management archive (CARMA) is an online architectural survey database for Maine's historic above-ground resources that enables architectural historians and survey consultants to submit completed survey projects for Federal or state regulatory project reviews online for preliminary review. All surveys submitted to MHPC in fulfillment of Federal or state regulatory project review requirements must be entered into CARMA. Consultants and firms submitting survey projects must either attend a training session in Augusta, Maine or request a training packet.
- For state rules guiding the conduct of archaeological investigations, refer to www.state.me.us/mhpc/archaeology/professional/rules.html.
- For the Maine Prehistoric Archaeology Reports on File (a list of archaeological reports on file at MHPC and accessible by approved archaeologists), go to www.state.me.us/mhpc/archaeology/professional/mprehist.html.
- For information on Historical Contexts and National Register eligibility standards, refer to www.state.me.us/mhpc/archaeology/professional/contexts.html.

Guidance to Federal agencies for 106 and other compliance:

For MHPC project review procedures, refer to www.state.me.us/mhpc/project_review/index.html.

Special forms for SHPO 106 notification or identified cultural resources:

For above-ground culture resources survey forms, refer to www.state.me.us/mhpc/architectural_survey/survey_forms.html.

Requirements for research reports:

- For archaeological survey guidelines, refer to www.state.me.us/mhpc/project_review/archaeological_survey_guidelines.html.
- For architectural survey guidelines, refer to www.state.me.us/mhpc/architectural_survey/survey_guidelines.html.

Qualifications for cultural resources specialists:

For the approved list of consultants qualified to conduct archaeological and architectural surveys in Maine, refer to www.maine.gov/mhpc/project_review/arc_consultants.html.

Permit or other requirements for archaeological investigations:

None required.

Tribal statutes and treaties

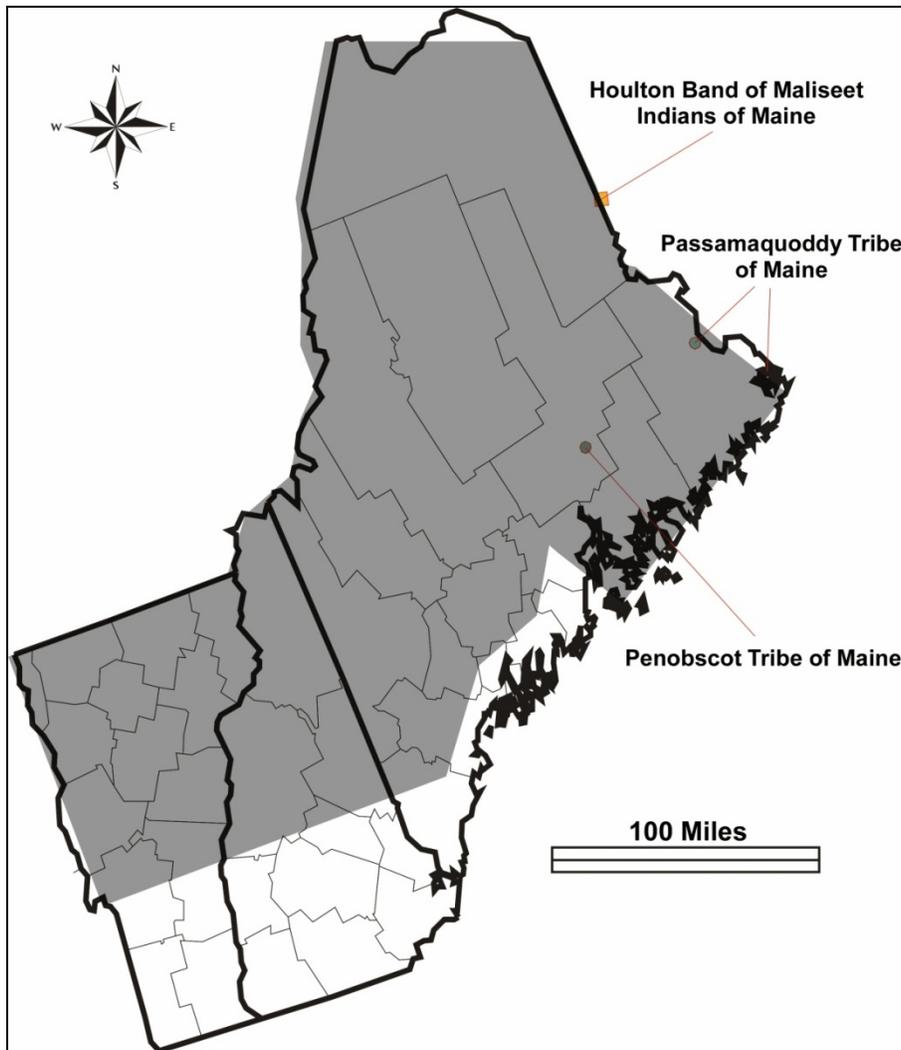
Special Agreements between the Maine SHPO and Maine Tribes

The MHPC currently has two agreements with Maine tribes. An agreement between the MHPC and the Penobscot Nation outlines that the Penobscot THPO will deal with cultural resource matters, including both archaeology and standing structures on Penobscot reservation and trust lands. Cultural resource issues on Penobscot fee land are commented on by both the MHPC and the THPO. A similar agreement exists between the MHPC and the Passamaquoddy Tribe with the Passamaquoddy THPO dealing with archaeological issues on reservation and trust lands and the MHPC handling standing structures on Passamaquoddy reservation and trust lands. Cultural resource matters on Passamaquoddy fee lands falls under the jurisdiction of both the MHPC and the THPO.

Federal lands and agencies

Maine has three federally recognized Native American tribes (Figure H-21). In 1980, with the aid of the United States, the Penobscot and the Passamaquoddy reached a compromise with the State of Maine resulting in the Maine Indian Land Claims Act signed by President Carter. A third tribe—the Houlton Band of Maliseet Indians—had not filed suit but was represented by counsel and was later included in the compromise. In 1991, the Aroostook Band of Micmacs Settlement Act settled all claims of the Aroostook Band of Micmacs resulting from the band's omission from the Maine Indian Claims Settlement Act of 1980.

Figure H-21. Native-American Lands within the 100-mile PEIS Corridor of Maine, New Hampshire, and Vermont



5.7.1.2 New Hampshire

State Historic CR Laws, Statutes, and Regulations

Numerous Federal and state laws—along with the regulations and agreements emanating from them—govern the treatment of historic and archaeological resources in New Hampshire. Such laws are generally restricted to protection of cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Section 106 of the NHPA offers the broadest protection of cultural resources in the United States.

- New Hampshire Revised Statutes Annotated 227-C:9, Directive for cooperation in the protection of historic resources as implemented by state administrative rules. Refer to <http://maisonbisson.com/nhrsa/rsa/227-c-9-directive-for-cooperation-in-the-protection-of-historic-resources/>.

- Cultural resource laws for New Hampshire (up to 2001) are also listed on the Indian burial and sacred grounds watch website, www.ibsgwatch.imagedjinn.com/learn/newhampshirelaw.htm.
- Several recent legal decisions recognize New Hampshire's Native Americans in ways that may affect northern border project consultation. The New Hampshire Recognition Bill HB1610 passed and was signed by Governor Lynch on July 10, 2010. This act established a New Hampshire commission on Native American affairs and recognized the Abenaki and other American Indian residents as a minority population in the state.

State Historic Preservation Office

The SHPO for New Hampshire is the New Hampshire Division of Historical Resources (NHDHR). The NHDHR preserves and enhances the state's historic and cultural heritage by:

- Assisting organizations and individuals in their efforts to preserve the state's heritage;
- Surveying and inventorying the state's archaeological and historical resources;
- Bringing Federal preservation programs, such as Preservation Tax Incentives and the National Register, to New Hampshire's residents;
- Offering several grant programs focused on historic preservation; and,
- Working with local governments and Federal and state agencies to preserve historical resources in their care;
 - Reviewing all Federal undertakings in the state to identify and protect historical resources; and,
 - Providing services of the state archaeologist and state architectural historian.

The NHDHR website is www.nh.gov/nhdhr/.

Inventory and evaluation (National Register) procedures:

For NHDHR inventory and review procedures, refer to www.nh.gov/nhdhr/review/106intro.html.

State preservation plan:

New Hampshire's 5-year preservation plan is entitled *Points of Interest and Touring Map* at: www.nh.gov/nhdhr/programs/documents/nh_preservation_plan2011to2015.pdf.

Resources for identifying locations of cultural resources (GIS, web, database, etc.):

GRANIT data mapper website.

Guidance to Federal agencies for 106 and other compliance:

- To initiate Section 106 review in New Hampshire, a completed request for project review form (RPR) must be submitted to NHDHR. The RPR must be submitted by mail (project submissions will not be accepted via fax or e-mail). The NHDHR submits its comments

to project proponents in writing, not by telephone or e-mail. For more information, refer to www.nh.gov/nhdhr/review/documents/rpr_manual.pdf.

- For the RPR and instructions for completion, refer to www.nh.gov/nhdhr/review.
 - For state rules on archaeological standards and guidelines, refer to www.nh.gov/nhdhr/review/documents/arch_standard_guidelines.doc.
 - Archaeological consultants can refer to the NHDHR archaeology report requirements chart (www.nh.gov/nhdhr/review/documents/arch_report_chart.doc) for clarification on report submission requirements. NHDHR survey requirements are at www.nh.gov/nhdhr/review/documents/arch_standard_guidelines.doc.
 - For a list of NHDHR-qualified archaeological consultants, refer to www.nh.gov/nhdhr/consultants_archaeology.html.
 - For guidelines regarding the curation of artifacts, refer to www.nh.gov/nhdhr/review/documents/curation_guidelines.doc.
 - For state rules on completion of architectural history surveys and the list of qualified consultants, refer to www.nh.gov/nhdhr/review/architectural_history.htm.
- Special forms for SHPO 106 notification or identified cultural resources:

- To initiate Section 106 review in New Hampshire, a completed request for a project review form (RPR) must be submitted to NHDHR. The RPR must be submitted by mail (project submissions will not be accepted via fax or e-mail). NHDHR submits its comments to project proponents in writing, not by telephone or e-mail. For more information, refer to www.nh.gov/nhdhr/review/documents/rpr_manual.pdf.

For the RPR and instructions for completion, refer to www.nh.gov/nhdhr/review.

Requirements for research reports:

- To streamline the project review process, the NHDHR has altered the Phase IA archaeology survey report requirements. If a Phase IA survey does not identify any archaeological sites or areas of archaeological sensitivity within the project area, a Phase IA "Short Report" can substitute for a full Phase IA report. The short report form has been grouped with the bibliography form to eliminate redundancy between the two submissions. For the combined bibliography form and short report, refer to www.nh.gov/nhdhr/review/documents/rpr_manual.pdf.
- Consultants can refer to the NHDHR archaeology report requirements chart for clarification on report submission requirements at www.nh.gov/nhdhr/review/documents/arch_report_chart.doc. Refer to the NHDHR's archaeological standards and guidelines for detailed report writing requirements at www.nh.gov/nhdhr/review/Archaeology.htm.

Qualifications for cultural resources specialists:

A consultant must request to be listed by the NHDHR and must provide documentation showing that recommended minimum standards (36 CFR 61) have been met.

Permit or other requirements for archaeological investigations:

It does not appear that a permit is required for archaeological investigations. For NHDHR survey requirements, refer to www.nh.gov/nhdhr/review/documents/arch_standard_guidelines.doc.

Tribal statutes and treaties

Native American Organizations with Geographical/Cultural Interests in New Hampshire at www.nh.gov/nhdhr/review/tribal_list.htm

Federal lands and agencies

New Hampshire contains Federal lands and reserves, but no Native American reservations. The NPS administers the partnership as well as the Saint-Gaudens National Historic Site in Cornish, New Hampshire, and the Appalachian National Scenic Trail through Vermont and New Hampshire.

Undertakings might also require consultation with certified local governments (CLGs) in New Hampshire. Information about CLGs in the state is available from their respective state historic preservation offices.

5.7.1.3 Vermont

State Historic Cultural Resource Laws, Statutes, and Regulations

Numerous Federal and state laws—and the regulations and agreements emanating from them—govern the treatment of historic and archaeological resources in Vermont. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Section 106 of the NHPA offers the broadest protection of cultural resources in the United States.

- Act 250 (Title 10 of Vermont Statutes Annotated [VSA], Chapter 151);
- The Vermont Historic Preservation Act (22 VSA, Chapter 14);
- 30 VSA, Chapter 5, Section 248 (Public Service Board's Certificate of Public Good); and,
- State laws that protect burial sites (13 VSA, Chapter 81, Sections 3761, 3764, and 3765; and 18 VSA, Chapter 107, Sections 5201 and 5212).

Act 250 controls development proposed on a relatively large scale or in sensitive areas. The Act 250 process protects Vermont's environment and gives neighbors, municipalities, local and regional planning commissions, and other interested parties the opportunity to participate and express concerns. Development and land subdivision proposals that fall under the act's jurisdiction must apply for a land use permit. This permit can be granted, denied, or granted with conditions by one of Vermont's nine district environmental commissions made up of laypersons appointed by the governor. District commission decisions can be appealed to the Natural Resources Board.

A document on Vermont burial laws is at www.sec.state.vt.us/municipal/Digging_Deep.pdf. This document covers recent legislation concerning unmarked and ancient burials.

State Historic Preservation Office

The SHPO for Vermont is the Vermont Division for Historic Preservation (VDHP). It serves as advocate for historic and prehistoric properties in the state (www.historicvermont.org/).

Inventory and evaluation (National Register) procedures:

For VDHP's role in project review, refer to
www.dhca.state.vt.us/DHP/programs/regulatory.html

State preservation plan:

Vermont's preservation plan is entitled *Using Vermont's Past to Build a Better Future: Vermont's State Plan for Heritage Stewardship, 2011-2015*. It can be found at www.historicvermont.org/VDHP_plan_FINAL%20March%201%20for%20web.pdf

Resources for identifying locations of cultural resources (GIS, web, database etc.):

For Vermont's environmental predictive model of archaeological site locations, refer to www.historicvermont.org/programs/model.pdf.

Guidance to Federal agencies for 106 and other compliance:

For state guidelines governing the conduct of archaeological investigation, refer to http://efotg.sc.egov.usda.gov//references/public/VT/guidelines_for_conducting_arch.pdf.

Special forms for SHPO 106 notification or identified cultural resources:

- Completed forms are required for archaeological sites identified during an investigation. Go to www.historicvermont.org/programs/APP%20I-%20VAI%20FORM.pdf.
- For the required form submitted summarizing the cultural resources report, refer to www.historicvermont.org/programs/APP%20K%20report%20database%20instructions.pdf.

Requirements for research reports:

For guidelines detailing the elements required for cultural resources reports, refer to www.historicvermont.org/programs/APP%20H-Phase%20I%20guidance.pdf.

Qualifications for cultural resources specialists:

For the state qualifications for cultural resources specialists, refer to www.historicvermont.org/programs/APP%20B%20consultants%20process.pdf.

Permit or other requirements for archaeological investigations:

- For the requirements and application to receive a digging permit under the Vermont Historic Preservation Act (22 VSA, Chapter 14), refer to www.historicvermont.org/programs/APP%20F-%20permit%20app-info.pdf.
- In addition, an Act 250 permit is required for certain kinds of development, for example, construction for commercial or industrial purposes on more than 10 acres (except for

farming or forestry). Some other situations require an Act 250 permit. An Act 250 district coordinator should be contacted to determine whether a permit is required. For information on Act 250, refer to www.nrb.state.vt.us/lup/index.htm.

Tribal statutes and treaties

Several recent legal decisions recognize Vermont's Native Americans in ways that may affect northern border project consultation. On May 3, 2006, Vermont's Governor Douglas signed S.117, a statute recognizing the Abenaki people and all other Native Americans living in the state as a minority population. The Abenaki Missisquoi band was denied Federal recognition in 2007. On May 14, 2010, Governor Douglas signed S. 222, an act relating to state recognition of Native American tribes in Vermont. This legislation reinterpreted S.117 in a way that may garner Federal approval for granting recognition to Vermont's Native American tribes and bands. The bill conferred official state recognition on four bands of the Abenaki Tribe and it allowed other bands to petition for state recognition in the future. The bill recognized the Abenaki Nation of Missisquoi St. Francis Sokoki Band comprising the Missisquoi, St. Francis, and Sokoki Bands (www.abenakination.org/); the Koasek Traditional Band of the Koas Abenaki Nation based in Newbury, Vermont (www.koasekabenaki.org/); the Nulhegan Band of the Abenaki Nation, also known as the Northern Coosuk/Old Philip's Band in northeastern Vermont; and the ELNU Abenaki Tribe of the Koasek (www.elnuabenakitribe.org/index.html).

Federal lands and agencies

Vermont contains Federal lands and reserves, but no Native American reservations. The Champlain Valley National Heritage Partnership area also exists within the northern border project area, but contains no Federal land. The NPS administers the partnership as well as the Marsh-Billings-Rockefeller National Historic Park in Woodstock, Vermont, and the Appalachian National Scenic Trail through Vermont and New Hampshire.

5.7.2 GREAT LAKES REGION

5.7.2.1 New York

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, the state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in New York. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. New York's cultural resources regulatory framework that may be relevant to CBP's mission and program are as follows:

- The New York State Historic Preservation Act of 1980, Section 14.09:

<http://nysparks.state.ny.us/shpo/environmental-review/preservation-legislation.aspx>

The New York State Historic Preservation Act of 1980 was established as a counterpart to the NHPA and declares historic preservation to be the public policy and in the public interest of the state. The act created the New York State Register of Historic Places—the

official list of sites, buildings, structures, areas, or objects significant in the history, architecture, archeology, or culture of the state, its communities, or the Nation.

- State Environmental Quality Review Act (SEQRA) (6 New York Code of Rules and Regulations [NYCRR] Part 617):

<http://nysparks.state.ny.us/shpo/environmental-review/preservation-legislation.aspx>

The State Environmental Quality Review Act (SEQRA), 6NYCRR Part 617 of the New York State Environmental Conservation Law establishes a set of uniform regulations by which all state, county, and local governmental agencies incorporate environmental impact considerations into their planning, review, and decision-making processes. Impacts to historic resources, such as buildings listed on State or National Registers of Historic Places and archaeological sites, should be taken into account. To accomplish the goal of the act, SEQRA requires that all governmental agencies determine whether the action they directly undertake, fund, or approve may have a significant impact on the environment. If an action poses potential significant adverse impacts, agencies must prepare or request an environmental impact statement. The SEQRA applies to projects undertaken or permitted by county and local governments; consequently, many thousands of projects statewide that fall outside the purview of the state and national historic preservation acts are reviewed. New implementing regulations for SEQRA went into effect in 1996. Under this act, municipalities may request that a project be reviewed by the SHPO. All SHPO comments under this review are advisory only.

Federal historic preservation laws applicable to Federal projects in New York:
www.cr.nps.gov/history/online_books/fhpl/contents.htm

Regulations for cultural resources work in New York:

Requirements/standards for cultural resources investigations in New York State are described in four documents:

- The New York Archaeological Council's (NYAC) Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York State Standards for Cultural Resource Investigations, 2000, available online at www.nyarchaeology.org/mainpages/about/standards.htm;
- NYAC's Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State, 1994, available online at www.nyarchaeology.org/mainpages/about/standards.htm;
- New York State Historic Preservation Office (SHPO) Phase I Archaeological Report Format Requirements, 2005, available online at www.nysparks.com/shpo/; and,
- *Recommended Standards for Historic Resources Surveys*, 2010, available online at www.nysparks.com/shpo/survey-evaluation/

State Historic Preservation Office

The New York SHPO works to raise awareness of historic preservation issues, encourage community revitalization and heritage tourism, and instill in state citizens a sense of pride concerning its unique history. Towards these ends, it:

- Maintains the New York State Register of Historic Places;
- Consults with Federal and state agencies concerning the impacts of undertakings on historic properties; and,
- Promotes historic preservation through planning and public education.

The New York SHPO website is <http://nysparks.state.ny.us/shpo/>.

Inventory and evaluation (National Register) procedures:

Procedures for identification, inventory, and evaluation of National Register-eligible properties in New York State follow those outlined in the ACHP guidelines for the protection of Cultural and Historic Properties (36 CFR Part 800) and Part 427 of Section 14.09 of the New York State Historic Preservation Act. In New York State, the State Board for Historic Preservation reviews nominations to the State Register of Historic Places. All historic places listed on or nominated by the commissioner of Parks, Recreation, and Historic Preservation for inclusion on the National Register are also listed on the State Register. Additional information concerning inventory and evaluation procedures is available online at <http://nysparks.state.ny.us/shpo/>.

State preservation plan:

The New York State Office of Parks, Recreation, and Historic Preservation (NYS OPRHP [New York SHPO]) prepared *Historic Preservation at a Crossroads: The 2009–2013 New York State Historic Preservation Plan* to assist all New Yorkers interested in identifying, protecting, enhancing, and promoting the state's historic and cultural resources. The preservation plan is available online at the New York SHPO website, <http://nysparks.state.ny.us/shpo/preservation-plan/>.

Resources for identifying locations of cultural resources (GIS, web, database etc.):

GIS database files that include most National Register-listed properties in New York State are available online from the New York State GIS Clearinghouse at www.nysgis.state.ny.us/gisdata/inventories/member.cfm?OrganizationID=588. The file is also available through an online interactive tool at www.oprhp.state.ny.us/nr/main.asp. However, the database includes neither archaeological sites nor properties that are National Register-eligible, but not yet been listed. A visit to the New York SHPO is typically necessary for identifying all known cultural resources.

Guidance to Federal agencies for 106 and other compliance:

General 106 guidance is available online at www.nysparks.com/shpo/environmental-review/preservation-legislation.aspx and www.nysparks.com/shpo/national-register/.

Special forms for SHPO 106 notification or identified cultural resources:

New York SHPO employs a series of inventory forms for maintaining and updating its catalog of known cultural resources. The inventory form for historical buildings and structures is online at www.nysparks.com/shpo/surveyevaluation/documents/HistoricResourceInventoryForm.pdf.

Templates for inventory forms for prehistoric and historical archaeological sites may also be obtained by contacting the SHPO.

Qualifications for cultural resources specialists:

Principal investigators for cultural resources investigations conducted in New York State are required to meet the minimal qualifications described in 36 CFR Part 61.

Permit or other requirements for archaeological investigations:

The New York SHPO does not require a permit for archaeological investigations.

Tribal statutes and treaties

From 1777 to 1871, relations between the United States and Native American tribes were conducted through treaties. The Six Nations rights to lands in Central and Western New York were established through a series of treaties, such as the 1794 Treaty of Canandaigua, the 1797 Treaty of Big Tree, and the 1842 Buffalo Creek Treaty. The 1796 Treaty of New York City established the St. Regis Mohawk Reservation in the extreme northern part of the state. Following rejection of the 1934 Indian Reorganization Act by the reservation's inhabitants, it was reestablished in the 1960s and 1970s (e.g. http://srmt-nsn.gov/government/culture_and_history/; <http://gallica.bnf.fr/ark:/12148/bpt6k276283.image>).

Two tribes in New York State have THPOs: the St. Regis Mohawk Tribe and the Seneca Nation of Indians (www.nathpo.org/THPO/state_list.htm#NewYork). No special agreements exist between the THPO and the New York SHPO.

Federal lands and agencies

Three Federal agencies possess land in the project area in the New York State: the Department of Defense (DOD), including Army Corps of Engineers lakes, (Fort Drum, Mount Morris Lake, the Seneca Army Depot [closed], Plattsburgh Air Force Base [closed], Air Force Plant No. 38, the Camden Test Annex, Griffiss Air Force Base [closed], Hancock Field [owned by the Air Force], and a U.S. Marine Corps Reserve Training Center); the U.S. Fish and Wildlife Service (USFWS)(the Iroquois and Montezuma National Wildlife Reserves); and the U.S. Forest Service (USFS) (Finger Lakes National Forest) (www.nationalatlas.gov).

5.7.2.2 Pennsylvania

State Historic Cultural Resources Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Pennsylvania. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Pennsylvania's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- The Constitution of the Commonwealth of Pennsylvania
http://sites.state.pa.us/PA_Constitution.html

Historic resources are addressed in Article 1, Section 27 of the Constitution of the Commonwealth of Pennsylvania, which states that, “The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

- The Pennsylvania History Code (Pennsylvania Consolidated Statute, Title 37, Historical and Museums)

www.portal.state.pa.us/portal/server.pt/community/historic_preservation/3741/laws___regulations/418109

The Pennsylvania History Code was established as a counterpart to the National Historic Preservation Act. Along with Article 1, Section 27 of the Constitution of Pennsylvania, it declares historic preservation to be the public policy and in the public interest of the state. The act created the Pennsylvania Register of Historic Places, the official list of sites, buildings, structures, areas, or objects significant in the history, architecture, archeology, or culture of the state, its communities, or the Nation.

State Historic Preservation Office

The SHPO for the Commonwealth of Pennsylvania is the Bureau for Historic Preservation (BHP), which is part of the Pennsylvania Historical and Museum Commission (PHMC). The BHP:

- Maintains Pennsylvania’s cultural resource inventory;
- Prepares the state preservation plan;
- Nominates historic properties to the National Register;
- Reviews state and Federal actions for their effects on cultural resources;
- Assists in certifying historic building rehabilitation projects that seek tax incentives;
- Conducts archaeological investigations and surveys for other cultural resources;
- Oversees designations of historic districts under municipal ordinances;
- Advises local governments concerning preservation issues;
- Provides grants for restorations of historic buildings; and,
- Aids certified local governments with historic preservation programs.

The BHP website is www.portal.state.pa.us/portal/server.pt/community/historic_preservation/3741.

Inventory and evaluation (National Register) procedures:

Procedures for identification, inventory and evaluation of National Register-eligible properties in Pennsylvania follow those outlined in the ACHP guidelines for the protection of Cultural and Historic Properties (36 CFR Part 800) and Chapter 5 of the Pennsylvania History Code. Pennsylvania also has a “Request to Initiate Consultation Form,” which they

require prior to an agency's consultation with the BHP. Additional guidance, along with a downloadable copy of the form is online at www.portal.state.pa.us/portal/server.pt/community/review_process/5071 and www.portal.state.pa.us/portal/server.pt/community/review_process/5071/section_106_of_nh_pa/414261. In Pennsylvania, the Historic Preservation Board reviews and recommends nominations of properties to the National Register and advises the PHMC on the inclusion of properties on the PRHC.

State preservation plan:

PHMC is currently developing its third statewide preservation plan. The initial plan (2000–2005) was completed in 1999. The second plan, *Pennsylvania's Historic Preservation Plan 2006–2011*, is available for download at www.portal.state.pa.us/portal/server.pt/community/preservation_plan/20240.

Resources for identifying locations of cultural resources (GIS, web, database etc.):

A map-based interactive inventory of historical and archaeological sites and surveys is available online through the BHP's Cultural Resources Geographic Information System (CRGIS). Access to historic resource data is open to the public and archaeological site information is password protected. Additional information, as well as online access to the CRGIS, is at www.portal.state.pa.us/portal/server.pt/community/crgis/3802.

Guidance to Federal agencies for 106 and other compliance:

Guidance related to the Section 106 review process in the state is online at www.portal.state.pa.us/portal/server.pt/community/review_process/5071.

Special forms for SHPO 106 notification or identified cultural resources:

BHP employs a series of inventory forms for maintaining and updating its catalog of known cultural resources. Forms are online at www.portal.state.pa.us/portal/server.pt/community/recording_resources/3683.

Requirements for research reports:

Requirements/standards for cultural resources investigations in Pennsylvania are described in three documents, available online at www.portal.state.pa.us/portal/server.pt/community/project_review_under_section_106_and_pa_history_code/3787/guidelines/415082:

The BHP's Guidelines for Archaeological Investigations in Pennsylvania, 2008;

Site Identification Criteria, Pennsylvania Archaeological Site Survey Files, 2001; and

PHMC's Curation Guidelines: Preparing Archaeological Collections for Submission to The State Museum of Pennsylvania, 2006.

Qualifications for cultural resources specialists:

Principal investigators for cultural resources investigations in Pennsylvania are required to meet the minimal qualifications described in 36 CFR Part 61.

Permit or other requirements for archaeological investigations:

The BHP does not require a permit for archaeological investigations.

Tribal statutes and treaties

There are no federally recognized Indian tribes in Pennsylvania. All of the commonwealth that includes the project area was ceded to the United States by the Six Nations of New York (i.e., the Iroquois Six Nations) by the 1784 Treaty of Fort Stanwix.

Federal lands and agencies

Three Federal agencies possess land in the project area in the Commonwealth of Pennsylvania: the DOD, including the Army Corps of Engineers lakes (Woodcock Creek Lake, Shenango Lake, Tionesta Lake, the Allegheny Reservoir, and the East Branch Clarion River Lake); the USFWS (the Erie National Wildlife Reserve); and the USFS (Allegheny National Forest and Allegheny National Recreation Area) (www.nationalatlas.gov).

5.7.2.3 Ohio

State Historic Cultural Resources Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing management of cultural resources, state laws (and the regulations and agreements emanating from them) govern \ treatment of historic and archaeological resources in Ohio. Such laws are generally restricted to the protection of cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Ohio's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- Chapter 149.30, Title 1 of the Ohio Revised Code
- <http://codes.ohio.gov/orc/149>
- Chapter 149.30 of Title 1 of the Ohio Revised Code enumerates the public functions of the Ohio Historical Society (OHS). Although the legislation does not have its legal basis in the NHPA, it is closely related. Of the public functions of the OHS enumerated in the revised code that most closely relate to the NHPA is establishment of an "inventory, in cooperation with the Ohio arts council, the Ohio archaeological council, and the archaeological society of Ohio, of significant designated and undesignated state and local sites and keeping an active registry of all designated sites within the state." Chapter 149.301 of Title 1 created the Ohio Historic Site Preservation Advisory Board, members of which are appointed by the governor. The board's responsibilities include encouraging "the designation of suitable sites on the National Register of Historic Places and under related Federal programs. The advisory board shall provide general advice, guidance, and professional recommendations to the state historic preservation officer in conducting the comprehensive statewide survey, preparing the state historic preservation plan, and carrying out the other duties of the state historic preservation office."

State Historic Preservation Office

In Ohio, the Ohio Historic Preservation Office (OHPO), which is part of the OHS, serves as the SHPO. Unlike in other states in the project area, Ohio's SHPO is not a state agency, but acts on behalf of the state through a non-profit organization (the OHS). According to Chapter 149.30, Title 1 of the Ohio Revised Code, the OHS promotes "a knowledge of history and archaeology, especially of Ohio." Its public functions (<http://codes.ohio.gov/orc/149>) include:

- Creating and maintaining a system of state memorials for public use;
- Making alterations and improvements, marking, and protecting monuments and earthworks in its care;
- Serving as the archives administration for the state and its political subdivisions;
- Administering the state historical museum;
- Establishing a marking system to identify all designated historic and archaeological sites within the state;
- Publishing materials about history, archaeology, and natural science;
- Conducting research in history, archaeology, and natural science;
- Collecting, preserving, and making available all manuscript, print, or near-print library collections and all historical objects, specimens, and artifacts which pertain to the history of Ohio and its people;
- Promoting the development of county and local historical societies;
- Providing assistance to local societies for the preservation and restoration of historic and archaeological sites;
- Taking inventory of significant designated and undesignated state and local sites and keeping an active registry of all such designated sites within the state; and,
- Contracting with the owners or persons with an interest in designated historic or archaeological sites or property adjacent or contiguous to those sites, or otherwise acquiring easements in those sites or in property adjacent or contiguous to those sites, in order to control or restrict the use of those historic or archaeological sites, or adjacent or contiguous property.

The website for the OHPO is www.ohiohistory.org/resource/histpres/etcetera/about.html.

Inventory and evaluation (National Register) procedures:

Procedures for identification, inventory, and evaluation of National Register-eligible properties in Ohio follow those outlined in the ACHP guidelines for the protection of Cultural and Historic Properties (36 CFR Part 800) and Chapter 149 of the Ohio Revised Code. In Ohio, the Ohio Historic Site Preservation Advisory Board (OHSPAB) advises the OHPO and the Ohio Historical Society on matters of historic preservation.

State preservation plan:

The OHPO Statewide Historic Preservation Plan, *A Future for Ohio's Past: A Historic Preservation Plan for Ohioans 2010–2014*, is available for download at www.ohiohistory.org/resource/histpres/toolbox/ppl/ppl-02.html.

Resources for identifying locations of cultural resources (GIS, web, database, etc.):

A map-based interactive inventory of historical and archaeological sites and surveys is available online through the OHPO's online mapping system. A paid subscription is required. Online access is at www.ohpo.org/gis/login.jsp.

Guidance to Federal agencies for 106 and other compliance:

Guidance related to the Section 106 review process in the state is online at www.ohiohistory.org/resource/histpres/services/s106-02.html.

Special forms for SHPO 106 notification or identified cultural resources:

The OHPO employs a downloadable application for reporting on identified cultural resources. The application, as well as instructions and links to other online resources, is online at www.ohpo.org/iform/.

Requirements for research reports:

Requirements/standards for cultural resources investigations in Ohio are described in *Archaeological Guidelines*, published by the OHPO in 1994. The guidelines are not available for download, but can be purchased online at www.ohiohistorystore.com/Archaeology-Guidelines-P7338C26.aspx.

Qualifications for cultural resources specialists:

Principal investigators for cultural resources investigations in Ohio are required to meet the minimal qualifications described in 36 CFR Part 61 or be certified by a professional archaeological association.

Permit or other requirements for archaeological investigations:

According to Ohio Revised Code §149.54, permits issued by the Director of the Ohio Historical Society are required for archaeological investigation “on any land that is owned, controlled, or administered by the state or any political subdivision of the state, or at any archaeological preserve, dedicated under section 149.52 of the Revised Code, or at any state archaeological landmark registered under section 149.51 of the Revised Code.” Otherwise, the OHPO does not require a permit for archaeological investigations.

OHPO is not a government agency:

Unlike in other states, the SHPO in Ohio (i.e., the OHPO) is not a state agency. It is administered by the OHS, which acts in partnership with the state and performs duties related to historic preservation on the state's behalf.

Tribal statutes and treaties

Most important was the Treaty of Greenville (1795), which ceded the southern two-thirds of Ohio to the United States. The treaty, which followed the Indian defeat at Fallen Timbers, was signed by representatives (chiefs and headmen) of the Wyandot, Delaware, Shawnee, Ottawa, Chippewa, Potawatomi, Miami, Wea, Kickapoo, and Kaskaskia. General "Mad Anthony" Wayne represented the United States. No federally recognized Native American tribes or reservations exist in Ohio.

Federal lands and agencies

Three Federal agencies possess land in the project area in Ohio: the DOD, including the Army Corps of Engineers lakes (Charles Mill Lake, Mosquito Creek Lake, Pleasant Hill Lake, Beach City Lake, Berlin Lake, Mohawk Reservoir, Atwood Lake, Leesville Lake, and Ravenna Arsenal); the USFWS (the Ottawa and Cedar Point National Wildlife Refuges); and the NPS (Cuyahoga Valley National Park) (www.nationalatlas.gov).

5.7.2.4 Michigan

State Historic Cultural Resource Laws, Statutes, and Regulations

In Michigan, state regulations/standards related to cultural resources have their legislative basis in Federal law, specifically Section 106 of the NHPA. Such laws are restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. The governor appoints the Michigan SHPO.

State Historic Preservation Office

The Michigan SHPO is part of the Michigan State Housing Development Authority (MSHDA) of the Department of Energy, Labor and Economic Growth. Prior to 2009, the SHPO was part of the Department of History, Arts, and Libraries. The SHPO's functions include (www.michigan.gov/mshda/0,1607,7-141-54317-53069--,00.html):

- Providing assistance to local communities to identify and protect historic resources in the state; and,
- Administering Federal and state tax incentive and grant programs.

Michigan's MSHDA website is www.michigan.gov/mshda/0,1607,7-141-54317-53069--,00.html.

Inventory and evaluation (National Register) procedures:

Procedures for identification, inventory and evaluation of National Register-eligible properties in Michigan follow those outlined in the ACHP guidelines for the protection of cultural and historic properties (36 CFR Part 800). In Michigan, the Michigan State Historic Preservation Review Board is responsible for reviewing and approving nominations to the National Register.

State preservation plan

Michigan's current (2007–2012) state historic preservation plan, *Preservation Shore to Shore: Making Michigan Competitive Through Historic Preservation*, is available for download at www.michigan.gov/mshda/0,1607,7-141-54317_54760_27123---,00.html.

Resources for identifying locations of cultural resources (GIS, web, database, etc.)

A map-based interactive partial inventory of above-ground historical resources is available through the Michigan Historical Center's historic sites online database at www.mcgi.state.mi.us/hso/map.asp. A visit to the SHPO or the Office of the State Archaeologist (OSA) is typically necessary for identifying archaeological sites and recently inventoried above-ground properties.

Guidance to Federal agencies for 106 and other compliance:

Guidance related to the Section 106 review process in the state is online at www.michigan.gov/mshda/0,1607,7-141-54317_54371-98336--,00.html and at <http://mishporehab.wordpress.com/archaeology/>.

Special forms for SHPO 106 notification or identified cultural resources:

As of June, 2011, the Michigan SHPO was revising its system of inventory forms for recording cultural resources. Updated forms are available by contacting the SHPO online at www.michigan.gov/mshda/0,1607,7-141-54317-97306--,00.html.

Requirements for research reports:

Requirements/standards for cultural resources investigations in Michigan are described in the SHPO's *Manual for Historic and Architectural Surveys in Michigan*, published in 2001. The manual is available for download at www.michigan.gov/mshda/0,1607,7-141-54317_20901--,00.html.

Qualifications for cultural resources specialists:

Principal investigators for cultural resources investigations in Michigan are required to meet the minimal qualifications described in 36 CFR Part 61.

Permit or other requirements for archaeological investigations:

The SHPO does not require a permit for archaeological investigations.

Tribal statutes and treaties

There are six Native American Reservations and other lands in the study area in Michigan, all of which were established by treaty and agreements with the U.S. government in the nineteenth and twentieth centuries. The Onontagon and L'Anse Reservations of the Keweenaw Bay Indian Community and the Lac Vieux Desert Band of Lake Superior Chippewa Indians was established by the Treaty of La Pointe, Wisconsin of 1854; the Bay Mills Indian Community of the Ojibwe and the Hannahville Community of the Potawatomi were organized with the Indian Reorganization Act of 1934; and the Isabella Reservation was established by a pair of treaties in

1855 and 1864 and was subsequently reorganized under the 1934 Indian Reorganization Act (<http://gallica.bnf.fr/ark:/12148/bpt6k276283.image>; www.law.cornell.edu/uscode/325/usc_sec_25_00001300---j000-.html).

Four tribes in Michigan have THPOs: the Keweenaw Bay Indian Community; the Lac Vieux Desert Band of Lake Superior Chippewa Indians; the Pokagon Band of Potawatomi Indians; and the Bay Mills Indian Community (<http://mishporehab.wordpress.com/?s=THPO>). No special agreements exist between any of the THPOs and the SHPO.

Federal lands and agencies

Four Federal agencies possess land in the project area in Michigan: the DOD (including the Army Corps of Engineers lakes) (K. I. Sawyer Air Force Base [closed], Camp Grayling Military Reservation, Wurtsmith Air Force Base [closed], and Selfridge Air Force Base); the USFWS (the Shiawassee, Michigan Islands, and Seney National Wildlife Refuges); the USFS (Hiawatha, Ottawa, and Huron National Forests and the Upper Peninsula Experimental Forest), and the NPS (Isle Royale National Park and Pictured Rocks National Lakeshore) (www.nationalatlas.gov).

5.7.2.5 Wisconsin

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Wisconsin. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Wisconsin's cultural resources regulatory framework that may be relevant to CBP's mission and program are:

- Subchapter II of Chapters 44.30 to 44.48, Wisconsin Statutes and Annotations, 1987:

<http://legis.wisconsin.gov/statutes/Stat0044.pdf>

Subchapter II of Chapter 44 of the Wisconsin Statutes and Annotations establishes the state's Historic Preservation Program as a counterpart to the NHPA and declares historic preservation to be the public policy and in the public interest of the state. The statute created the Wisconsin Inventory of Historic Places, the official list of sites, buildings, structures, areas, or objects significant in the history, architecture, archeology, or culture of the state, its communities, or the Nation.

Federal historic preservation laws applicable to Federal projects in Wisconsin:
www.cr.nps.gov/history/online_books/fhpl/contents.htm.

State Historic Preservation Office

The SHPO for the State of Wisconsin is the Wisconsin Historical Society (WHS). The WHS:

- Maintains inventories of historic properties;
- Administers grants;
- Conducts and supports archaeological research;

- Provides technical assistance to local governments and owners of historic properties;
- Administers Federal and state tax credit programs for the rehabilitation of historic properties;
- Catalogs burial sites (including Native American mounds) and prehistoric sites and structures;
- Administers the Wisconsin Historical Markers Program;
- Administers the Certified Local Government Program; and,
- Nominates sites to the State and National Registers of Historic Places;

The WHS website is www.wisconsinhistory.org/hp/about.asp.

Inventory and evaluation (National Register) procedures:

The Wisconsin SHPO project review procedures are at www.wisconsinhistory.org/hp/protecting/106_intro.asp.

State preservation plan:

Wisconsin's state historic preservation plan is entitled *Wisconsin Historic Preservation Plan 2006–2015* and is at www.wisconsinhistory.org/hp/docs/plan.pdf.

Resources for identifying locations of cultural resources (GIS, web, database etc.):

- For state rules guiding the conduct of archaeological investigations, refer to www.wisconsinhistory.org/archaeology/osa/index.asp.
- For state rules guiding the conduct of architectural and historical investigations, refer to www.wisconsinhistory.org/hp/survey-manual/.
- The Wisconsin Historic Preservation Database provides information on historic structures, archaeological sites and burials within the state for registered users. For information on access to the WHPD, refer to www.wisconsinhistory.org/hp/whpd/.
- For information on Architectural and Historic Inventory, refer to www.wisconsinhistory.org/ahi/.

For information on other historic research databases pertinent to Wisconsin, refer to www.wisconsinhistory.org/hp/professionals.asp.

Guidance to Federal agencies for 106 and other compliance:

- For SHPO project review procedures, refer to www.wisconsinhistory.org/hp/protecting/106_intro.asp.

Special forms for SHPO 106 notification or identified cultural resources:

- For forms required to initiate the 106 process in Wisconsin, refer to www.wisconsinhistory.org/hp/protecting/instructions.asp.

- For forms related to the conduct of archaeological investigations in Wisconsin, refer to www.wisconsinhistory.org/archaeology/archaeologists-consultants/arch-resources/forms.asp.

Requirements for research reports:

- For archaeological survey guidelines, refer to www.wisconsinhistory.org/archaeology/osa/index.asp.
- For architectural survey guidelines, refer to www.wisconsinhistory.org/ahi/.

Qualifications for cultural resources specialists:

- For the approved list of consultants qualified to conduct archaeological surveys in Wisconsin, refer to www.wisconsinhistory.org/archaeology/preserve/pdf/arch-consultants.pdf.
- For the approved list of consultants qualified to excavate burials, refer to www.wisconsinhistory.org/hp/burialsites/about/bs_burialexcavation.pdf
- For the approved list of consultants qualified to conduct architectural and historical surveys, refer to www.wisconsinhistory.org/hp/docs/architecture-history-consultants-list.pdf.

Permit or other requirements for archaeological investigations:

- For the procedures and forms to conduct archaeological investigations on public lands, refer to www.wisconsinhistory.org/archaeology/archaeologists-consultants/public-lands.asp.

Tribal statutes and treaties

Three Native American reservations and other lands exist in the study area in Wisconsin, all of which were established by treaty and agreements with the U.S. government in the nineteenth and twentieth centuries. The lands of the Bad River and Red Cliff Bands of Lake Superior Chippewa were established by the 1854 treaty of La Pointe and the territories of the Forest County Potawatomi Community of the Potawatomi were organized by the Indian Reorganization Act of 1934, although the community began acquiring the Forest County land as early as 1913 (<http://witribes.wi.gov/docview.asp?docid=21285&locid=57>; <http://gallica.bnf.fr/ark:/12148/bpt6k276283.image>). Wisconsin also shares an atypical government-to-government relationship with the Indian Nations within its boundaries; EO #39, issued in 2004, established the State-Tribal Consultation Initiative. “The goal of this Initiative will be greatly improved communications allowing for any potential issues to be corrected early on or avoided entirely on both sides. Through the Initiative, valuable state and tribal resources are put to more effective use delivering government services in a more streamlined, coordinated and economically efficient manner” (<http://witribes.wi.gov/section.asp?linkid=283&locid=57>).

Eight tribes in Wisconsin have THPOs: the Bad River Band of Lake Superior Chippewa Indians, the Ho-Chunk Nation, the Lac Courte Orielles Band of Lake Superior Chippewa Indians, the Lac du Flambeau Band of Lake Superior Chippewa Indians, the Menominee Indian Tribe of Wisconsin, the Oneida Nation of Wisconsin, the Red Cliff Band of Lake Superior Chippewa

Indians, and the Stockbridge-Munsee Community Band of Mohican Indians (see www.wisconsinhistory.org/hp/protecting/106_issues_2.asp). The Wisconsin SHPO does not have “review or consultative authority” in cases in which undertakings will be entirely inside one of these Nations or tribal territories (www.wisconsinhistory.org/hp/protecting/106_issues_2.asp). No special agreements exist between any of the THPOs and the SHPO.

Federal lands and agencies

Two Federal agencies possess land in the project area in Wisconsin: the USFS (Chequamegon and Nicolet National Forests) and the NPS (Apostle Islands National Lakeshore) (www.nationalatlas.gov).

5.7.3 EAST OF THE ROCKIES REGION

5.7.3.1 Minnesota

State Historic CR Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Minnesota. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Minnesota's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- Minnesota Statutes, Chapter 138 designates the director of the Minnesota Historical Society (MHS) as the SHPO (MS 138.081) and places responsibility for Minnesota's historic preservation program with the MHS. Other sections pertaining to historic and archaeological resources are:

Minnesota Field Archaeology Act (MS 138.31-138.42) establishes the office of the State Archaeologist; requires licenses to engage in archaeology on non-Federal public land; establishes ownership, custody, and use of objects and data recovered during survey; and requires state agencies to submit development plans to the state archaeologist, the MHS, and the Minnesota Indian Affairs Council for review when known or suspected archaeological sites exist in the area.

Minnesota Historic Sites Act (MS 138.661-138.669) establishes the State Historic Sites Network and the State Register of Historic Places, and requires that state agencies consult with the MHS before undertaking or licensing projects that may affect properties on the network or on the State or National Registers of Historic Places.

Minnesota Historic Districts Act (MS 138.71-138.75) designates certain historic districts and enables local governing bodies to create commissions to provide architectural control in these areas.

- Minnesota Statutes 471.193 enables local units of government to establish heritage preservation commissions.
- Minnesota Private Cemeteries Act (MS 307.08) protects all human burials or skeletal remains on public or private land.

State Historic Preservation Office

Minnesota's SHPO was created by state statute in 1969 to provide statewide leadership. The director of the MHS serves as SHPO. The mission of the Minnesota SHPO is to:

- Identify, evaluate, register, and protect Minnesota's historic and archaeological properties;
- Encourage development of local history organizations and activities; and,

Assist government agencies in carrying out their historic preservation responsibilities.

The agency's web address is www.mnhs.org/shpo/.

Inventory and evaluate (National Register) procedures:

The SHPO runs an ongoing statewide survey program that has recorded more than 50,000 historic structures and approximately 16,500 archaeological sites representing every county in Minnesota. Nearly 7,000 National Register properties exist in Minnesota, including individual properties and historic districts.

State preservation plan:

The Minnesota State preservation plan is entitled *Gaining Ground: A Preservation Plan for Minnesota's Historic Properties 2006–2010*, which assesses the progress made by all of Minnesota's preservation partners during the previous 5-year planning period and provides direction for the future. The current plan (2006) is accessible at: www.mnhs.org/shpo/planning/preservationplan_2006.pdf. The plan provides a framework for the ongoing work of historic preservation—resource identification, evaluation, registration, and protection—by all of Minnesota's preservation partners. The plan discusses Minnesota's three-tiered historic context framework:

- Broad statewide patterns encompassing three periods: Pre-Contact (9500 B.C.–A.D. 1650), Contact (1650–1837) and Post-Contact (1837–1945);
- Specific themes, identified as needed, to evaluate properties best understood in a framework smaller than statewide patterns; and

Contexts developed by a particular city or other local area for use in local planning, discussing six primary goals and objectives.

The goals of the Minnesota Plan include:

1. To create statewide awareness of and appreciation for the value of Minnesota's historic and archaeological resources;
2. To make historic preservation an integral part of all levels of planning to enhance the quality of life in Minnesota;
3. To strengthen the statewide network of organizations and individuals engaged in historic preservation;
4. To promote historic preservation as an economic development tool and provide economic incentives to encourage preservation;

5. To expand and enhance efforts to identify, evaluate, and designate historic and archaeological resources; and,
6. To encourage appropriate management and treatment of historic resources.

Resources for identifying locations of cultural resources (GIS, web, database etc.):

The Minnesota SHPO maintains architecture-history and archaeological databases in Microsoft Access. Various types of cultural resource searches can be requested by e-mail. The SHPO also maintains a reports database for both architecture and archaeology. The database is not accessible online; SHPO staff conduct searches upon request.

Guidance to Federal agencies for 106 and other compliance:

Guidance for review and compliance are contained in the Guidelines for History/Architecture Projects in Minnesota (2010) and the SHPO Manual for Archaeological Projects in Minnesota (2005).

Special forms for SHPO 106 notification or identified cultural resources:

Requirements for research reports in Minnesota are contained in the guidance cited above. Special forms include an archeological site form and architectural site form. Both can be downloaded from the agency website.

Qualifications for cultural resources specialists:

- The Minnesota SHPO maintains a list of individuals and firms who have expressed an interest in undertaking contract archaeology in Minnesota. The SHPO reserves the right to reject contract reports if the principal investigator or other contract personnel do not meet certain minimal qualifications standards listed in 36 CFR Part 61.
- The Minnesota Office of the State Archaeologist (OSA) requires that applicants for state archaeological licenses (see below) meet certain professional qualifications standards. These standards meet or exceed both 36 CFR Part 61 and Minnesota SHPO standards.

Permit or other requirements for archaeological investigations:

Separate licenses are required for each phase of archaeological investigation on non-Federal public land.

Tribal statutes and treaties

Numerous treaties with various Minnesota tribes were executed throughout the 1800s. These treaties, however, were all with the Federal Government. Ten reservations are associated with five tribes within the CBP 100-mile operational corridor: the Red Lake Band of Chippewa Indians (three non-contiguous reservation areas); the White Earth Band of Minnesota Chippewa; the Leech Lake Band of Chippewa Indians; the Boise Forte Band of Chippewa Indians (Deer Creek); the Boise Forte Band of Chippewa Indians (Nett Lake); the Boise Forte Band of Chippewa Indians (Vermilion Lake); the Fond du Lac Band; and the Grand Portage Band of Lake Superior Chippewa.

Federal lands and agencies

Several Federal agencies administer or maintain lands within the CBP 100-mile border corridor in Minnesota, including DOD, USFWS, USFS, and NPS.

5.7.3.2 North Dakota

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in North Dakota. Such laws are generally restricted to protection of cultural resources that may be threatened by Federal, state-funded, or state state-permitted projects. North Dakota's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- North Dakota Century Code 55-03-01 requires permits to investigate, evaluate, or mitigate adverse effect on cultural resources, historic buildings, structures, or objects under Section 106. It also requires permits to conduct investigations on state land.
- North Dakota Century Code 55-10-11 created the SHPO.
- North Dakota Century Code 23-06-27 protects unmarked human burials and establishes treatment procedures.
- North Dakota Century Code 55-02-07 protects prehistoric and historic sites on state land and restricts access to location data.
- North Dakota Century Code 55-02-09 establishes an emergency impact mitigation fund.

State Historic Preservation Office

The North Dakota State Historic Preservation Office (SHPO) is a division of the State Historical Society of North Dakota (SHSND). The duties of the North Dakota SHPO are to:

- Locate, survey, investigate, register, identify, preserve, and protect historic, architectural, archaeological and cultural sites, structures, and objects worthy of preservation;
- Evaluate historic properties for significance and nominate them to the National Register of Historic Places;
- Review all Federal undertakings permitted, funded, licensed or otherwise assisted;
- Administer Federal tax incentives for the preservation of historic buildings;
- Assist Federal and state agencies in their responsibility to identify and protect historic properties and archaeological sites that may be affected by their projects; and
- Provide preservation education, training, and technical assistance to individuals and groups as well as local, state, and Federal agencies and tribes.

The agency's web address is <http://history.nd.gov/>.

Inventory and evaluation (National Register) procedures:

The Archaeology and Historic Preservation Division (AHPD) of the SHSND maintains the database for cultural resources sites in North Dakota. Verified sites are indexed according to the Smithsonian Institution Trinomial System. This information does not appear to be available electronically or online.

State preservation plan

The North Dakota State preservation plan is entitled *Historic Preservation in North Dakota, 2010–2015: A Statewide Comprehensive Plan* and serves as a guide for preservation efforts at the state and local levels. The current plan (2010) is accessible at:

<http://history.nd.gov/hp/PDFinfo/ND2009CompHPPlan.pdf>. It presents an overview of historic and prehistoric themes and discusses six primary goals and objectives, including:

1. To provide financial and non-financial incentives for participation in historic preservation efforts and program activities;
2. To increase awareness of the presence and value of cultural resources;
3. To increase the effectiveness of the state's preservation network;
4. To promote programs to identify, record, evaluate, and preserve significant cultural properties;
5. To increase appropriate treatment of historic properties; and
6. To increase regular inclusion of historic preservation concerns in the planning and decision-making processes of agencies, organizations, and individuals whose activities have a potential to affect significant cultural resources.

Resources for identifying locations of cultural resources (GIS, web, database, etc.):

The database of information for cultural resources sites in North Dakota (the NDCRS) is maintained by the AHPD of the SHSND. Verified sites are indexed according to the Smithsonian Institution Trinomial System.

Guidance to Federal agencies for 106 and other compliance:

Guidance for review and compliance are contained in the North Dakota SHPO Guidelines Manual for Cultural Resource Inventory Projects (2006).

Special forms for SHPO 106 notification or identified cultural resources:

Requirements for research reports in North Dakota are contained in the guidance cited above. Special forms include the archeological site form, the architectural site form, and the historic site form. Forms can be downloaded from the agency website.

Qualifications for cultural resources specialists:

All activities performed under a permit issued pursuant to North Dakota Century Code chapter 55-03 must be conducted by or under the direct supervision of a professionally qualified individual. The listed standards mirror the Federal standards in 36 CFR Part 61. A standard for paleontology has been added to these state standards.

Permit or other requirements for archaeological investigations:

Permits are required.

Tribal statutes and treaties

Several treaties with various North Dakota tribes were executed in the mid to late 1800s. These treaties, however, were all with the Federal government. Three reservations exist within the CBP 100-mile operational corridor: the Turtle Mountain Band of Chippewa Indians of North Dakota; the Three Affiliated Tribes of the Fort Berthold Reservation (Mandan, Arikara, and Hidatsa); and the Spirit Lake Tribe (Sioux).

Federal lands and agencies

Several Federal agencies administer or maintain lands within the CBP 100-mile border corridor in North Dakota, including the BLM, Bureau of Reclamation, DOD, USFWS, USFS, and NPS.

5.7.3.3 Montana

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Montana. Such laws are generally restricted to the protection of cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Montana's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- Montana Antiquities Act, as amended (1995) addresses the responsibilities of the SHPO and other state agencies regarding historic and prehistoric sites including buildings, structures, paleontological sites, or archaeological sites on state-owned lands.
- Montana Human Skeletal Remains and Burial Site Protection Act (1999) provides legal protection to all unmarked burial sites regardless of age, ethnic origin, or religious affiliation by preventing unnecessary disturbance and prohibiting unregulated display of human skeletal remains. The Act created a 13-member Burial Preservation Board that determines the treatment and final disposition of any discovered human remains and associated burial materials.

State Historic Preservation Office

The Montana SHPO is a division of the Montana Historical Society. The duties of the Montana SHPO are:

- Preparing and implementing a statewide Historic Preservation Plan;
- Conducting and maintaining a statewide survey to identify and document historic buildings and archaeological sites;
- Evaluating historic properties for significance and nominating them to the National Register of Historic Places;
- Assisting local governments in development of local historic preservation programs;

- Administering Federal tax incentives for the preservation of historic buildings;
- Assisting Federal and state agencies in their responsibility to identify and protect historic properties and archaeological sites that may be affected by their projects; and,
- Providing preservation education, training, and technical assistance to individuals and groups as well as local, state, and Federal agencies and tribes.

The agency's web address is <http://mhs.mt.gov/shpo/>.

Inventory and evaluation (National Register) procedures:

The Montana SHPO maintains an inventory of more than 50,000 historic and archaeological site records, which is available to agencies for research and evaluation of potential project effects on cultural resources.

State preservation plan:

The Montana State preservation plan is entitled *Preserve Montana—The Montana Historic Preservation Plan, 2008–2012* and serves as a guide for preservation efforts at the state and local levels. The current plan (2008) is accessible at: <http://mhs.mt.gov/shpo/surveyplanning/HistPresPlan.asp>. It presents an overview of historic themes and discusses numerous goals and objectives.

Resources for identifying locations of cultural resources (e.g. GIS, web, database, etc.):

The Montana Antiquities Database contains cultural resource information on known historic and archaeological sites, previously conducted cultural resource inventories, National Register site status, and cultural resource management project information. The database consists of three parts, including the cultural resource information system (CRIS), which provides information on historical and archaeological sites; the cultural resource annotated bibliography system (CRABS), which contains information on previous surveys; and Project, Eligibility, and Effect Report, which includes information on the eligibility of sites and effects.

- Guidance to Federal offers guidance for consulting at both the state and Federal levels.

Special forms for SHPO 106 notification or identified cultural resources:

Requirements for research reports in Idaho are contained in *Guidelines for Documenting Archaeological and Historical Surveys*, which provides requirements and guidance for completing reports and forms, including:

- File Search Request Form
- Site Form Request
- CRIS Form
- CRABS Form
- Historic Property Record Form
- Isolated Find Form

Paleontological Form

Montana PaleoIndian Point Data Form

Stone Circle Forms

Forms can be downloaded from the agency website.

Qualifications for cultural resources specialists:

Montana maintains a list of contractors, but does not guarantee that they meet professional standards

Permit or other requirements for archaeological investigations:

Not required

Tribal statutes and treaties

Several treaties with various Montana tribes were executed in the mid-1800s. These treaties, however, were all with the Federal Government. There are five reservations within the CBP 100-mile operational corridor, including the Chippewa-Cree Indians of the Rocky Boy's Reservation; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; the Blackfeet Tribe of the Blackfeet Indian Reservation of Montana; Confederated Salish & Kootenai Tribes of the Flathead Reservation; and the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation.

Federal lands and agencies

Several Federal agencies administer or maintain lands within the CBP 100-mile border corridor in Montana. These agencies include the BLM, Bureau of Reclamation (BOR), DOD, USFWS, USFS, and NPS.

5.7.4 WEST OF THE ROCKIES REGION

5.7.4.1 Idaho

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Idaho. Such laws are generally restricted to protecting cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Idaho's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- Idaho Statute 18-7035: Damaging Caves or Caverns;
- Idaho Statute 18-7027: Desecration of grave, cemetery, headstone, or place of burial;
- Idaho Statute 18-7028: Unlawful Removal of Human Remains; and
- Idaho Statute 27-502: Protection of Graves, Prohibited Acts.

State Historic Preservation Office

The Idaho SHPO is a division of the Idaho State Historical Society (ISHS) and functions on a grant from the NPS. The Idaho SHPO operates in six program areas:

- National Register of Historic Places Program;
- State historic and archaeological sites inventories;
- Certified local government (CLG) grants management;
- Preservation planning;
- Tax incentives; and,
- Federal historic preservation project review (Section 106 Review)

The agency's web address is <http://history.idaho.gov/shpo.html>.

Inventory and evaluation (National Register) procedures:

The Idaho SHPO maintains an inventory of more than 50,000 historic and archaeological site records, which are available to agencies for research and evaluation of potential project effects on cultural resources.

State preservation plan:

The Idaho State preservation plan is entitled *A View to the Future* and serves as a general guide for local governments, historical societies, and individuals interested in Idaho's history. The current plan (2008) is accessible at: <http://history.idaho.gov/documents/2008PreservationPlan.pdf>. The plan has ten stated goals that range from conducting inventory surveys to promoting training.

Resources for identifying locations of cultural resources (GIS, web, database, etc.):

Site file searches can be conducted upon application with the SHPO and returned to the applicant via e-mail.

Guidance to Federal agencies for 106 and other compliance:

No additional guidance is provided beyond normal 36 CFR 800 procedures.

Special forms for SHPO 106 notification or identified cultural resources:

Requirements for research reports Idaho are contained in *Guidelines for Documenting Archaeological and Historical Surveys*, which provides requirements and guidance for completing reports and forms including: site report form, archaeology site inventory form; and determination of eligibility form. The forms can be downloaded from the agency website.

Qualifications for cultural resources specialists:

Idaho does not maintain a list of qualified cultural resources specialists.

Permit or other requirements for archaeological investigations:

Permits are not required.

Tribal statutes and treaties

The Idaho State-Tribal Relations Act (Title 67, Chapter 40) is an agreement with the Coeur d'Alene Tribe, the Kootenai Tribe of Idaho, the Nez Perce Tribe, the Shoshone Bannock Tribes of the Fort Hall Reservation, or the Shoshone-Paiute Tribes of the Duck Valley Reservation. The Act created a Council on Indian Affairs, which includes tribal members. The purpose of the Council is to monitor and review legislation and state policies that impact state-tribal relations in the areas of jurisdiction, governmental sovereignty, taxation, natural resources, economic development, and other issues in which state government and tribal government interface as well as to advise the governor, legislature, and state departments and agencies on these issues. The Kootenai Tribe of Idaho has a reservation within the CBP 100-mile border corridor.

Federal lands and agencies

Several Federal agencies administer or maintain lands within the CBP 100-mile border corridor in the state. These agencies include the BLM, DOD, USFWS, and NPS.

5.7.4.2 Washington

State Historic Cultural Resource Laws, Statutes, and Regulations

In addition to the Federal regulatory framework governing the management of cultural resources, state laws (and the regulations and agreements emanating from them) govern the treatment of historic and archaeological resources in Washington. Such laws are generally restricted to the protection of cultural resources that may be threatened by Federal, state-funded, or state-permitted projects. Washington's cultural resources regulatory framework that may be relevant to CBP's mission and programs are:

- EO 05-05 requires state agencies with capital improvement projects to integrate the Department of Archaeology and Historic Preservation (DAHP), the Governor's Office of Indian Affairs (GOIA), and concerned tribes into their capital project planning process.
- Revised Code of Washington (RCW) includes provision for the protection of historic cemeteries (RCW 68.60 as well as RCW 27.44) and outlines the treatment of discovered human remains.
- RCW 43.51A established the Office (now Department) of Archaeology and Historic Preservation and the establishment of a state ACHP.

State Historic Preservation Office

The SHPO for the State of Washington is the DAHP. The DAHP is a cabinet-level agency managed by a governor-appointed director. The DAHP:

- Advocates for the preservation of Washington's significant and irreplaceable historic and cultural resources, including buildings, structures, sites, objects, and districts;
- Reviews and comments on the effect of Federal and state undertakings on historic properties;

- Oversees the identification and evaluation of archaeological sites as well as historic buildings, objects, and districts; and,
- Promotes historic preservation through planning and public education.

The DAHP web address is www.dahp.wa.gov/.

Inventory and evaluation (National Register) procedures:

WAC 25-12-060 outlines procedures for the nomination and designation of historic properties to the State or National Register.

State preservation plan:

The Washington State preservation plan is entitled *Sustaining Communities through Historic Preservation—the Washington State Historic Preservation Plan 2009–2013* and can be downloaded from the DAHP website. The plan has six primary goals:

- 1) To enhance the effectiveness of Historic Preservation efforts;
- 2) To strengthen the connections between historic preservation and sustainability;
- 3) To strengthen the role of historic preservation in local planning and community revitalization;
- 4) To boost promotion of heritage tourism;
- 5) To improve the identification and protection of archeological sites and cultural resources; and;
- 6) To increase the diversity of participation in historic preservation.

Resources for identifying locations of cultural resources (e.g. GIS, web, database, etc.):

DAHP uses the Historic Property Inventory Management System (2010) and GIS-Washington Information System for architectural and archaeological records data WISAARD, accessed at <https://fortress.wa.gov/dahp/wisaard/>.

Guidance to Federal agencies for 106 and other compliance:

No additional guidance is provided beyond normal 36 CFR 800 procedures.

Special forms for SHPO 106 notification or identified cultural resources:

The Washington State Standards for Cultural Resource Reporting (2010) provides requirements and guidance for completing reports and forms, including: cultural resources survey cover sheet (must accompany all reports); archaeology site inventory form; archaeology isolate inventory form; submerged historic archaeological resource registration form; cemetery inventory form; and historic property inventory form. The forms can be downloaded from the agency website. All reports must be submitted electronically as pdfs.

Qualifications for cultural resources specialists:

Washington does not maintain a list of qualified cultural resources specialists

Permit or other requirements for archaeological investigations:

Chapter 25-48 WAC establishes application and review procedures for issuance of archaeological excavation and removal permits.

Tribal statutes and treaties

There are 29 federally recognized tribes in Washington with 3 having reservations over 500,000 acres: Colville, Yakima, and Quinault. The state has numerous agreements with many tribes primarily concerned with health and welfare, and taxes. The Governor's Office of Indian Affairs maintains a list of treaties as well as a tribal directory (www.goia.wa.gov/). Most of the early land treaties were signed from 1854 (Treaty of Medicine Creek) to 1856 (Quinault Treaty).

Federal lands and agencies

Several Federal agencies administer or maintain lands within the CBP 100-mile border corridor. These agencies include the BLM, BOR, DOD, U.S. USFS, USFWS, and NPS.

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