RECLAMATION

Managing Water in the West

A High-Level Class I Inventory of Cultural Resources for the Yakima River Basin Storage Study in Benton, Kittitas, and Yakima Counties, Washington

A component of
Yakima River Basin Water Storage Feasibility Study, Washington

Technical Series No. TS-YSS-24

U.S. Department of the Interior
Bureau of Reclamation
Upper Columbia Area Office
Yakima, Washington

January 2008

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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U.S. Department of the Interior
Bureau of Reclamation

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PREFACE

The Congress directed the Secretary of the Interior, acting through the Bureau of Reclamation, to conduct a feasibility study of options for additional water storage in the Yakima River basin. Section 214 of the Act of February 20, 2003 (Public Law 108-7), contains this authorization and includes the provision "… with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock Reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply."

Reclamation initiated the Yakima River Basin Water Storage Feasibility Study (Storage Study) in May 2003. As guided by the authorization, the purpose of the Storage Study is to identify and examine the viability and acceptability of alternate projects by: (1) diversion of Columbia River water to a potential Black Rock reservoir for further water transfer to irrigation entities in the lower Yakima River basin as an exchange supply, thereby reducing irrigation demand on Yakima River water and improving Yakima Project stored water supplies; and (2) creation of additional water storage within the Yakima River basin. In considering the benefits to be achieved, study objectives are to modify Yakima Project flow management operations to improve the flow regime of the Yakima River system for fisheries, provide a more reliable supply for existing proratable water users, and provide water supply for future municipal demands.

State support for the Storage Study was provided in the 2003 Legislative session. The 2003 budget included appropriations for the Washington State Department of Ecology (Ecology) with the provision that the funds ". . . are provided solely for expenditure under a contract between the department of ecology and the United States bureau of reclamation for the development of plans, engineering, and financing reports and other preconstruction activities associated with the development of water storage projects in the Yakima river basin, consistent with the Yakima river basin water enhancement project, P.L. 103-434. The initial water storage feasibility study shall be for the Black Rock reservoir project." Since that initial legislation, the State of Washington has appropriated additional matching funds.

Storage Study alternatives were identified from previous studies by other entities and Reclamation, appraisal assessments by Reclamation in 2003 through 2006, and public input. Reclamation filed a Notice of Intent and Ecology filed a Determination of Significance to prepare a combined Planning Report and Environmental Impact Statement (PR/EIS) on December 29, 2006. A scoping process, including two public scoping meetings in January 2007 identified several

concepts to be considered in the Draft PR/EIS. Those concepts have been developed into “Joint” and “State” Alternatives.

The Joint Alternatives fall under the congressional authorization and the analyses are being cost-shared by Reclamation and Ecology. The State Alternatives are outside the congressional authorization, but within the authority of the state legislation, and will be analyzed by Ecology only. Analysis of all alternatives will be included in the Draft PR/EIS.

This technical document and others explain the analyses performed to determine how well the alternatives meet the goals of the Storage Study and the impacts of the alternatives on the environment. These documents will address such issues as hydrologic modeling, sediment modeling, temperature modeling, fish habitat modeling, and designs and costs. All technical documents will be referenced in the Draft PR/EIS and available for review.

Contents

INTRODUCTION

The United States Bureau of Reclamation (Reclamation) has been authorized to conduct a Yakima River Basin Water Storage Feasibility Study in order to evaluate water storage options that are proposed to improve Yakima Project water supply during dry years, improve anadromous fish habitat, and address future municipal water supply issues. This Storage Study is designed to identify a potentially feasible water storage option to analyze further in an Environmental Impact Study (EIS). The alternatives proposed for the current study are known as the Black Rock Reservoir, the Wymer Reservoir, and a pipeline connecting the Yakima Basin with the Columbia River.

These three proposed alternatives would impact a relatively large area. The Black Rock Reservoir would inundate an area of 9,225 acres with an associated inflow tunnel from a pumping plant at Priest Rapids Dam that would be 11.8 kilometers (km) (7.3 miles [mi]) long and cover an area of 11,345.75 acres. In addition, an outflow tunnel would stretch 28.6 km (17.8 mi) from the reservoir to the Roza Canal, while covering an area of approximately 24,730.3 acres. The Wymer Reservoir would inundate an area of 1,390.1 acres, while the pipeline connecting the Yakima Project to the Columbia River would stretch approximately 123.6 km (76.8 mi) and cover an area of approximately 24,335.46 acres.

Reclamation has contracted with Archaeological Investigations Northwest, Inc. (AINW), to conduct a High Level Class 1 Inventory of the proposed Yakima River Basin Storage Study alternatives. This inventory includes an overview of the prehistoric, historic, and ethnographic contexts of the area around the Yakima Basin as well as an assessment of previously recorded cultural resources located within the boundaries of the proposed water storage alternatives study areas. What follows is a synopsis of this research and an assessment of the potential impact that the Yakima River Basin Storage Study alternatives would have on cultural resources in the area.

CULTURAL SETTING

Prehistory

In archeological terms, the Yakima River Basin falls within the southern portion of the Columbia Plateau. The earliest evidence for prehistoric humans in this region is marked by the presence of stemmed or shouldered projectile points associated with the Windust phase (11,000 to 7000 B.C.). In addition to the projectile points, the Windust phase is characterized by large bifacial knives, edge-ground cobbles, and expedient tools. Animals procured in the Windust phase included deer, elk, rabbit, birds, and beavers. The presence of grinding implements indicates that plant collecting also occurred during this early period (DePuydt 1990:15; Galm et al. 1981:91).

The Windust phase is followed by the Vantage phase (8000 to 4500 BP). Tool assemblages of the Vantage phase include lanceolate "Cascade Points," scrapers, atlatl weights, needles, bone awls, lanceolate and triangular knives, atlatl spurs, side-notched points, and a microblade industry (Ames et al. 1998; Chatters and Pokotylo 1998; DePuydt 1990:16; Galm et al. 1981:58). Faunal remains recovered indicate that elk, deer, antelope, rabbit, beaver, fish, and perhaps bison were procured during this period. Net weights and salmon bones found during this period of time also indicate an increased importance of fishing (DePuydt 1990:16).

Subsistence strategies appear to shift after about 5000 B.C., as evidenced by new forms of projectile points and a greater abundance of large milling stones found at sites in the region. Faunal assemblages that include fish and freshwater mussels reflect an increased reliance on riverine resources. After 3200 B.C., the presence of pithouses is indicative of increased sedentism and the repeated re-occupation of specific locations for salmon harvesting (Ames et al. 1998; Chatters and Pokotylo 1998).

Sedentism and a riverine-oriented subsistence economy became increasingly apparent after 1900 B.C. Populations increased and large villages were established along the Columbia River. Larger pit-houses with less regular floor plans also appeared as villages grew. Bow and arrow technology was adopted and assemblages contained smaller arrow points and a greater abundance of expedient tools in comparison to previous periods. An increased reliance on salmon is evidenced by faunal assemblages dominated by salmon remains and tool assemblages reflecting an expanded fishing technology that included fish

hooks and harpoons. Continued hunting of land mammals, both large and small, also continued as did the exploitation of plant resources, evidenced by the presence of pestles and milling stones (Adams and Ozbun 2007; Aikens 1993; Ames et al. 1998).

By at least 1000 A.D., ethnographically-documented lifeways that included large winter villages and seasonal rounds established to exploit salmon runs and plant resources were in place in the south-central Columbia Plateau. The large winter villages of this time had semi-subterranean pithouses and larger longhouses that were the precursor to the later surface communal longhouses documented ethnographically. Extensive trade networks are indicated by assemblages of marine shell beads and other ornaments, while small arrow points and expedient tools continue to dominate stone tool assemblages (Adams and Ozbun 2007; Aikens 1993; Ames et al. 1998). The introduction of horses in the 1700s by way of trade with groups in the Southwest greatly increased mobility, resulting in more inter-group contact and wider subsistence networks (Haines 1938).

Euroamerican History

The first documented Euroamerican encounter with native groups in the vicinity of the project areas occurred on Lewis and Clark's expedition in 1805-1806, when they reportedly came across a group of Yakama at Celilo Falls and the Wanapum at the confluence of the Snake and Columbia rivers (DePuydt 1990; Smith 1982:39). Later, David Thompson traveled through the area representing the Montreal based North West Fur Company in 1811. The first known Euroamerican trader to travel to the Kittitas valley was Alexander Ross of the Pacific Fur Company and later the North West Fur Company, who went to the valley to acquire horses. Ross described the summer gatherings of tribes at Chelohan (*c'laxin*) near Kittitas in his reports (Spaulding 1956:22-28).

Missionary activity began in the region by the 1830s, with Marcus Whitman and Henry Spaulding establishing a mission near present-day Walla Walla at Waiilatpu. William Gray unsuccessfully attempted to set up a mission at the confluence of the Yakima and Columbia rivers in 1840 (DePuydt 1990:24). Jesuit Father Desmet began to proselytize in central Washington in the 1840s and the French Oblates Richard, Pandosy, Chirouse, and Verney began working in the Yakima area in 1847.

Relations between Euroamericans and Native Americans in the region became particularly hostile when the Cayuse attacked the Waiilatpu mission in November of 1847 and killed Marcus Whitman and 13 others. This attack was fueled by speculation that Whitman was actively poisoning the Cayuse, who were suffering

greatly from the measles, scarlet fever, and small pox (DePuydt 1990:25; Richard 1976:76). The years that followed this incident were characterized by fighting between Euroamericans and Native Americans that culminated in the Yakima Wars of 1855-58.

The Yakima Wars broke out in the wake of treaties between the Plateau groups, including the Yakama, and Isaac Stevens, Governor of the territory and Superintendent of Indian Affairs. The treaties called for the cessation of native land to white settlers and the removal of natives to reservations. These treaties were actually designed to accommodate the Federal Government's Donation Land Act of 1850, which designated a certain amount of land for any settler wishing to establish a homestead on open lands in the region (Schuster 1975:209). Going against his promise to prevent white settlement on native lands until the treaty with the Yakama was ratified by Congress, Isaac Stevens opened all areas east of the Cascade Mountains to white settlement prior to congressional ratification of the treaty. White settlers and miners, heading to gold strikes further north, then began passing through the area in greater numbers (DePuydt 1990:25; Glauert and Kunz 1967:93). Open warfare between the U.S. Government and the Yakama began after members of the Yakama killed a group of miners as well as Indian agent A. J. Bolon. U.S. Army forts at Walla Walla and Simcoe, in the Yakima drainage, were subsequently established and a group of volunteers were sent from The Dalles to attack the Yakama (DePuydt 1990:25). The fighting ended in 1858, after a series of raids against groups of natives suspected of killing miners. All natives were then forced onto their respective reservations (DePuydt 1990:26; Hollenbeck and Carter 1986:147).

Following the Yakima Wars, much of the Euroamerican interest in the area revolved around mining activity. While surveying the Snoqualmie Pass for a potential railroad route, Lt. George McClellan reportedly found gold in the Kittitas Valley in 1853 (Glauert and Kunz 1976:153). This was followed by the announcement of gold near Fort Colville in 1854, which brought many miners through the Yakima area from The Dalles on their way to the prospecting areas further north (Glauert and Kunz 1976:151, 153). In 1857, reports of gold in British Columbia and the Wenatchee area brought a further influx of prospectors into the area from as far away as California. Priest Rapids became a major jumping off point for the traveling miners during this time period (DePuydt 1990:26; Harvey 1981:118).

Later gold mining occurred in the Peshastin Creek area to the north of the Kittitas Valley area after 1858 and in 1867, Swauk Creek, a tributary of the Yakima River which flows into the Kittitas Valley was being mined for gold (DePuydt 1990:26-27; Hodges 1976:168). Prospectors began mining at Gold Creek north of Keechelus Lake in 1898 (Prater 1981:39). The mining area that had perhaps the

most long-term significance was the Cle Elum coal fields. These fields were opened in 1886 in order to supply the trains of the Northern Pacific Railway with fuel, resulting in the establishment of the Cle Elum Coal Company and the Roslyn Cascade Coal Company, both located near Cle Elum. These coal fields produced 13,000,000 tons of coal between 1886 and 1964 (DePuydt 1990:27; Yakima-Kittitas Resource Conservation and Development Project 1974:30).

At the same time the area become a hub of mining activity, cattle ranching was an occupation of both Euroamericans and the native groups in the Yakima valley. Cattle first appeared in the Yakima valley in 1840, and they soon became a key component of Yakima and Kittitas subsistence activities by the mid-1800s (DePuydt 1990:27; Schuster 1975 204). However, much of the cattle owned by natives was either killed or stolen during the Yakima Wars by the U.S. military and Territorial volunteers (DePuydt 1990:27).

In the 1860s, cattle ranching in the Kittitas, Yakima, and Klickitat valleys became a profitable business. The demand for cattle was high in the mining areas of British Columbia, Idaho, and Montana. In the Kittitas valley, there were 10 family-owned ranches by 1870 (DePuydt 1990:27). Cattle from the area continued to be in demand from the growing population centers around Puget Sound, even while the markets in the mining areas began to decline (Oliphant 1947:194).

Ranching was transformed due to several factors towards the end of the nineteenth century. The establishment of the North Pacific Railroad through the area prevented the need for drives as cattle could now be shipped by rail. Harsh winters in 1880-1881 and 1889-1890 also prompted ranchers to keep their cattle in shelters during the winter. The increase in homesteaders coming into the area by way of the railroad in the late 1800s resulted in the fencing off of much of the open range (including watered areas) land previously used for ranching (Benson et al. 1987:17; DePuydt 1990:28). This ultimately led to the decline of cattle ranching in favor of sheep herding, which could be accomplished on grazing land considered too marginal for cattle (DePuydt 1990:28; Meinig 1968:291).

Agriculture gained a foothold in the region between the late 1860s and the 1880s. Wheat was the main crop cultivated, an activity facilitated by the excavation of irrigation ditches in stream and river valleys. Large irrigation works were established along the Yakima River in the 1890s and 1900s (DePuydt 1990:28; Kittitas County Centennial Committee 1989:24). The Bureau of Reclamation was established by Congress in 1902, which resulted in the construction of several dams and canals in the Yakima Basin area during the first half of the twentieth century. The more extensive irrigation enabled farmers to grow a wider variety of crops, including potatoes, hay, pea, alfalfa, and seed (DePuydt 1990:28; Kittitas

County Centennial Committee 1989:26-30). Among those involved in agriculture in the area, were the Yakama, who were farming more than 50,000 acres of their reservation land by 1913 (McWhorter 1913:5, 6).

Traditional Ethnographic Context

The ethnographically documented groups that were living within the project areas historically include the Sahaptin (*sə'hăptĭn*) speaking Yakama, Kittitas, and Wanapum. In aboriginal times, the Yakama and neighboring groups were made up of small, politically autonomous, yet closely related, bands. These bands lived in permanent winter villages located on major water courses (Griffin and Churchill 1998:12). The villages were essentially autonomous, although each group as a whole shared a common culture, maintained inter-village kinship ties, shared subsistence resources, and were engaged in frequent social interaction with one another (Ray 1939:9; Schuster 1998:327).

According to Ray (1939:10-13), the traditional arrangement of autonomous villages was altered to a certain degree with the introduction of the horse in the 1700s, which gave the people greater ability to access more distant resources and interact with more distant groups, including people living in the Plains region. As a result of this interaction with Plains groups, the Yakama and related peoples adopted tipis, Plains clothing styles, and a Plains-like pattern of social organization by establishing a war chief and an incipient tribal framework in which villages became more closely aligned.

Settlement and Subsistence

Settlement revolved around winter villages located in sheltered areas along the shores of rivers. The largest of these villages among the Kittitas and Yakima could have as many as 500 residents housed in circular-shaped houses with conical roofs. One village of the Lower Yakima, known as *tsíkik* 'spring,' was typically inhabited by about 2,000 people (Shuster 1998:329). From these villages, subsistence forays were made into the surrounding areas to fish, gather, and hunt. The foods processed from these subsistence activities were stored at the villages for the winter. In addition to residential structures, villages also contained menstrual huts, sweat huts, food caches, and burial grounds (DePuydt 1990:20; Ray 1939:135).

The main occupation of villages was in winter, while groups dispersed in other seasons for hunting, fishing, and root gathering. During these "seasonal rounds," people lived in smaller, light weight conical huts that could be easily transported, disassembled, and reassembled. The seasonal rounds are described below.

Starting in February, people gathered the *Lomatium grayi* or "first celery" for a "first foods feast" at the winter village. By March, as the salmon reached the interior plateau, people gathered at locations along rivers to fish. Major salmon fishing locales included Celilo Falls and Priest Rapids on the Columbia as well as various spots along the Wenatchee River and the entire length of the Yakima River (DePuydt 1990:20; Schuster 1975:82).

In April, families traveled to root-digging grounds, especially in the hills where bitterroot (*Lewisia rediviva*) and lomatiums thrived on lithosols (DePuydt 1990:20; Galm et al 1981:18-21). In these areas, women collected and prepared roots for storage and men hunted deer in addition to elk, mountain sheep, and mountain goats). People traveled to their riverside fishing locations to take advantage of salmon runs in May and June.

Families returned to upland locations to gather wild plant foods and hunt game in July and by August, people congregated in Kittitas country to gather camas in the large camas grounds of the area and later gathered roots in the Klickitat territory. Because these camas prairies were so localized, it was typical for several groups to converge from throughout the region at these locations, where people also fished for trout, picked berries, traded, and raced horses (DePuydt 1990; Hunn and French 1981:92; Schuster 1998:331). Following this gathering time, families traveled to the high mountains to pick berries and gather nuts in late August.

In the fall, fishing once again commenced in the river valleys. At this time, people also visited relatives and friends in other villages. Families returned to the winter villages in the middle of November, where they took their supply of salmon, roots, and venison that they had accumulated throughout the spring, summer, and fall. During this time at the winter village, men continued to hunt and fish (Schuster 1998:331).

Ritual Activities

In terms of ritual/ceremonial activities, many activities linked to traditional beliefs were centered around what has been referred to as the "guardian spirit complex." The guardian spirit complex is associated with activities such as winter sings, curing, the sweatlodge, and the vision quest. These activities are of particular archaeological interest due to their spatial associations which can include the extended family lodge, upland areas, and special structures (sweatlodges).

Within extended family lodges, the guardian spirit complex traditionally entailed Winter Spirit dances and the work of Shamans (medicine doctor), who would diagnose and cure illnesses with supernatural causes. In order to cure illnesses, the shaman sang power songs, while being accompanied by drummers who beat

long wooden planks. For illnesses caused by a guardian-spirit, a medicine doctor (*twáti*) with specialized knowledge of guardian spirit power was called into a house. The doctor would help the patient bring out the power he or she had received from the guardian-spirit. The patient later performed a "medicine sing" (referred to as a *wánpša*) for five nights to express and honor the power he or she had received (Schuster 1998:342).

Outside of the domestic context, the sweatlodge was a powerful element of the guardian spirit complex. The typical sweatlodge structure was dome-shaped and made from arched willows covered with earth and mats. They were located adjacent to streams, and a fire was set up outside the sweatlodge. Rocks that were heated in the fire were removed and placed in a shallow pit just inside the entrance to the sweatlodge. Water was poured on these hot rocks to create steam that enabled the bather to sweat profusely. While in the sweatlodge, it was typical for the bather to chant as he or she sweated and take periodic plunges into the cold water of the stream outside the sweatlodge (Schuster 1998:341-342).

In addition to being a place of cleansing for both women and men, the sweatlodge was considered a guardian spirit known as *x''yátš*. This guardian spirit was considered a protector who could restore one's physical and spiritual purity as well as cure illnesses. From the sweatlodge, one could also acquire skill and good fortune in activities such as hunting, fishing, and gambling (Schuster 1998:340-341).

The vision quest was an activity undertaken by children in order to gain guardian-spirit power, which was believed to give the child unusual abilities and skills. For a vision quest, a child was typically instructed to go to a remote place, usually in upland or mountain areas. The child usually stayed from one night to several nights in some cases. If the child encountered a spirit, the spirit would teach the child how to express their power in song and dance. The spirit would also show the child the proper way to dress or paint their face and what taboos to observe (Schuster 1998:337).

Apart from the ceremonies and other activities associated with the guardian spirit complex, traditional beliefs were expressed in the Washat or Longhouse religion. The services of the Washat religion took place on Sundays in a community longhouse. Washat prayers accompanied by small drums were sung in the longhouse on these occasions as well as before public celebrations and before and after meals in the community longhouse. The oldest rituals of the Washat religion were associated with the first foods feasts. Washat rites were also performed on the occasion of funerals and on the occasion of memorial celebrations held before annual tribal celebrations. Elements of the Washat religion are still practiced

today and it has incorporated Christian elements over the years, although it is still considered to be indigenous (Schuster 1998:42).

Potential for Project Areas to Contain Traditional Cultural Properties and Sacred Sites

A review of the ethnographic literature of the area indicates that there is a high potential for encountering prehistoric sites within the boundaries of the study areas for the Black Rock Reservoir (including inflow and outflow areas), Wymer Reservoir, and the pipeline. This is not only due to the large amount of land covered in these areas, but also the fact that the reservoirs and the pipeline cover both lowland and upland areas. These two different types of locales are associated with distinct uses that correspond to a wide range of site types that could potentially be encountered in the study areas.

The lowland areas adjacent to rivers and streams covered in the reservoir and pipeline study areas very likely encompass sites related to habitation and fishing. In total, there are nine traditional village locations within 16 km (10 mi) of the proposed reservoir (Black Rock and Wymer) areas and pipeline, including two Wanapum villages (*sháp 'tĭlĭk* and *pná*), one Kittitas village (*síla*), and six Yakama villages (*tsikik, páxutaktyuut, tanáxalu, xúkyimkt, páwankyuut, išíčt* and *sí'*) (Schuster 1998:328). Moreover, the locations of two traditional Wanapum villages (*sháp 'tĭlĭk* and *pná*) appear to be entirely subsumed within the Black Rock Reservoir Inflow 1 Mile Study Area. The village of *pná* was occupied by the Wanapum up through the early part of the twentieth century and the nearby Priest Rapids at the northern end of the Black Rock Reservoir Outflow 1 Mile Study Area was an important traditional fishing area for the Wanapum (Bruce et al. 2001:10.3, 10.4). The .5 Mile Pipeline Study Area also runs within 5 km (3.1 mi) of two known traditional Yakama villages, *tanáxalu* and *sí*.' In addition, any streamside locations within the project areas could potentially hold evidence related to sweatlodge activities. This is particularly relevant for the .5 Mile Pipeline Study Area, which covers a linear stretch entirely within a lowland area near the Yakima River, while crosscutting small streams at various points.

Additional traditional settlements in the area include *Chalwash Chilni* located about 4 km (2.5 mi) north of Priest Rapids, *Chanout* at Hanford, *Tacht* at White Bluffs, and *Kosith* at Pasco. There are also 35 dwelling locales situated between Priest Rapids and Vantage that include villages, fisheries, large multi-tribe camps, and family dwelling sites and caches. At the Wanapum village of *Pná*, there is also a cave known as *Shoptalok*, which is marked by a petroglyph. One mile

downstream from this cave is a cemetery known as Weyounwe, where Smowhala, an influential and charismatic Wanapum religious leader of the mid-late 19th century, was buried (Relander 1956:32, 309, 310). Ray (1936:51) notes the presence of a Wanapum village known as *Waya'nwe* approximately 1 mile upstream from *Shaptalok* as well, in addition to a Wanapum village known as *Tanacsk'uni'skuni* one mile downstream from *Waya'nwe* and a Wanapum village known as *Xa'txamtcanuwi'tac* situated 1 mile downstream from *Tanacsk'uni'skuni*. Other sites of note include the Oblates Saint Rose of Chemna Mission at the Confluence of the Yakima and Columbia Rivers and a vision quest site at Saddle Mountain (Relander 1986:32; Ruby and Brown 1981).

According to affidavit testimony from elders of the Yakama and Wanapum, there were several traditional fishing sites in the general vicinity of the project area (although not falling within the boundaries of any of the study areas) as well. These sites include Wan-A-Wish, Ow-yeh, Wah-wa-tam, Top-tut, and Wy-yow-na. At three of these locales, Wy-yow-na, Wah-wa-tam, and Top-tut, there were reportedly hundreds of people fishing during the fishing season in the past. All of the fishing locations mentioned in the affidavits were typically associated with large camping areas that were occupied during the fishing season and located immediately adjacent to the fishing areas or in the general vicinity. The fishing locations of Oh-Yeh, Wan-A-Wish, and Wy-yow-na were still being used by Native Americans at the time of the affidavit of Columbia Wildman of the Yakama in 1942 (Swindell 1942:246-284).

The upland areas around both the Black Rock and Wymer Reservoir Study Areas have the potential to contain evidence related to the exploitation of upland resources, quarrying lithic material, and vision quest-related activities. Traditional Native American land use in the upland areas continued into the twentieth century. While traditional root-gathering grounds were destroyed by agriculture and livestock grazing (Bruce et al. 2001:10.3; Sharkey 1984:95), roots were plentiful and root gathering was an important activity up until the 1960s (Schuster 1998:331). The Wanapum used the hills in the area west of Priest Rapids (very likely within the Black Rock Reservoir Study Areas) for grazing horses as well (Bruce et al. 2001:10.4). While direct evidence for root gathering or grazing may not leave many material traces on the landscape, the area was used for hunting game traditionally and the lithosols of the uplands were very likely used for quarrying lithic material to make stone tools. Lithic scatters and quarries should thus be expected in these areas. As for evidence of vision quests, these activities could potentially be marked by stacks of rock, as stacking rocks is one of the traditional ways used to mark locations where vision quest spirit encounters took place (Walker 1998).

Previously Recorded Sites and Surveys

AINW has researched previously-recorded sites and previous cultural resource surveys conducted within the boundaries of five areas associated with the Yakima River Basin Water Storage Study: Black Rock Reservoir 1 Mile Study Area (covering 26,145 acres), Black Rock Reservoir Inflow 1 Mile Study Area (covering 11,345.75 acres), Black Rock Reservoir Outflow 1 Mile Study Area (covering 24,730.3 acres), Wymer Reservoir 1 Mile Study Area (covering 12,393.8 acres), and .5 Mile Study Area Pipeline (covering 24,335.46 acres). What follows is a synopsis of the cultural resources and cultural resource studies associated with each of these five Areas of Potential Effect. In addition, tables are provided that list the various surveys that have been conducted in each area and resources that have been documented in these areas.

Black Rock Reservoir 1 Mile Study Area

In the course of previous cultural resource surveys of the Black Rock Reservoir 1 Mile Study Area, 12 historic and pre-contact sites were identified (Tables 1 and 2). These sites include 3 historic refuse scatter/dump sites, 1 pre-contact cairn, 1 historic agriculture/lithic material site, and 7 pre-contact lithic material sites. All of these cultural resources were recorded as part of surveys for which AINW has been unable to access reports from the State of Washington Department of Archaeology and Historic Preservation (DAHP). These unavailable reports include a 1989 project by Boaz, Inc. (the specific location is not clear from the associated site form) (for site 45BN411), a 1977 Bureau of Land Management (BLM) archaeological survey of the proposed Rattlesnake Hills Land Exchange (for sites 45BN243 and 45YK73), a 2005 CH2M HILL archaeological survey of the proposed location of four well sites and associated access roads (for site 45YK73), a U.S. Army Corps of Engineers survey within the U.S. Army Yakima Training Center that appears to have been conducted by Archaeological and Historical Services, Eastern Washington University in 1995/1996 (for sites 45YA574 and 45YA819), and a 1999/2000 Historical Research Associates, Inc., Yakima Training Center cultural resource inventory (for sites 45YA641, 45YA653, 45YA657, 45YA658, 45YA661, and 45YA818). There are no details available concerning the cultural resource study associated with one of the sites (45YK171) recorded within the Black Rock Reservoir 1 Mile Study Area. None of the archaeological sites documented within the Black Rock Reservoir 1 Mile Study Area have been evaluated for State or National Register eligibility.

In addition, there were three other cultural resource surveys for which AINW does have access to complete reports. These include a 1995 cultural resources survey of the Washington State Department of Transportation's SR 24: Quarry Site QS-R-37 by Archaeological and Historical Services, Eastern Washington University (Holstine 1995), a cultural resources survey of the Washington Department of Transportation's SR 241 Realignment Project: MP 20.72 to SR 24 Junction at MP 25.21 by Archaeological and Historical Services, Eastern Washington University (Regan 1999), a 2002 archaeological survey for the proposed Black Rock Dam geotechnical testing by Entrix, Inc. (Wills et al. 2002), and a 2007 cultural resources survey of the Washington State Department of Transportation SR 24/241 Junction to Cold Creek Road Add Passing Lanes Project (Weaver 2007). The total land area within the current Black Rock Reservoir 1 Mile Study Area covered in these surveys includes 28.3 acres for the 2002 archaeological survey for the proposed Black Rock Dam geotechnical testing by Entrix, Inc. The cultural resources surveys of the Washington State Department of Transportation's SR 24: Quarry Site QS-R-37 and the Washington Department of Transportation's SR 241 Realignment Project: MP 20.72 to SR 24 Junction at MP 25.21 by Archaeological and Historical Services, Eastern Washington University covered approximately 2.3 acres and 0.47 acres respectively within the boundaries of the Black Rock Reservoir 1 Mile Study Area, while the Washington Department of Transportation's SR 24/241 Junction to Cold Creek Road Add Passing Lanes Project covered approximately 25.7 acres within the Black Rock Reservoir 1 Mile Study Area.

All of these surveys employed pedestrian survey methods. In only one of the surveys, the Washington Department of Transportation cultural resources survey of the SR 24/241 Junction to Cold Creek Road Add Passing Lanes Project, were any cultural resources within the Black Rock Reservoir 1 Mile Study Area encountered. The site identified by the Washington Department of Transportation for this project was a previously recorded historic refuse scatter (45BN411) that has been deemed to be not eligible for listing in the National Register of Historic Places (NRHP).

Black Rock Reservoir Inflow 1 Mile Study Area

Within the Black Rock Reservoir Inflow 1 Mile Study Area, 42 historic and prehistoric sites have been recorded (Table 1). These cultural resources include 1 pre-contact house pit/depression, 3 historic objects sites, 4 historic refuse scatter/dump sites, 20 pre-contact lithic material sites, 2 pre-contact camp sites, 1 historic bridges site, 1 pre-contact burial, 6 pre-contact talus pit sites, 1 pre-contact petroglyph site, 2 historic structures sites, and 1 historic isolate. Among these resources, 3 pre-contact lithic material sites (45YA653, 45YA657, and

45YA658) also fall within the boundaries of the Black Rock Reservoir 1 Mile Study Area.

The majority of the previously recorded sites within the Black Rock Reservoir Inflow 1 Mile Study Area were identified and recorded as a part of surveys for which AINW does not have access to complete reports. The two previous archaeological studies within the area for which AINW has access to complete reports include a 1997 Yakima Training Center National Register eligibility testing of alluvial sites by Lithic Analysts (Flenniken et al. 1997) and a 2000 cultural resource inventory and road mitigation survey on the Yakima Training Center by Larson Anthropological Archaeological Services (Lewarch et al. 2000) (Table 2).

The 1997 Yakima Training Center National Register eligibility testing of sites conducted by Lithic Analysts was concerned with the subsurface evaluation of 11 previously recorded sites within the boundaries of the U.S. Army Yakima Training Center. These sites were evaluated to determine eligibility for inclusion in the NRHP and to augment and synthesize stratigraphic information for the area. The methods employed in this study included the use of backhoes to clear the faces of stream erosional cuts at alluvial sites to evaluate stratigraphic data and the excavation of 50x50 centimeter (cm) (19.7x19.7 inch [in]) shovel tests and 1x1 meter (m) (3.3x3.3 foot [ft]) test units to evaluate the significance of previously-recorded archaeological sites. Although this study resulted in the recommendation for National Register eligibility of five prehistoric archaeological sites (45KT299, 45KT338, 45YA326, 45YA533, and 45YA579), none of these sites were situated within the Black Rock Inflow 1 Mile Study Area (Flenniken et al. 1997:1, 9, 11, 13, 124). Based on the available data, it is also not clear how much of the area (in terms of acreage) investigated in this project intersects the boundaries of the Black Rock Reservoir Inflow 1 Mile Study Area.

The 2000 cultural resources inventory of the Yakima Training Center by Larson Anthropological Archaeological Services consisted of pedestrian survey and shovel probes (at the locations of sites identified in the survey) in an area that included approximately 984.4 acres within the current Black Rock Reservoir Inflow 1 Mile Study Area in the middle and upper portions of the Selah Creek and upper Cold Creek drainages on the U.S. Army Yakima Training Center. Three sites within the current Black Rock Reservoir Inflow 1 Mile Study Area were recorded for this survey (45YA627, 45YA629, and 45YA632), all of which were lithic material sites (Lewarch et al. 2000:22, 23). However, as is the case with the rest of the previously recorded sites within the Black Rock Reservoir Inflow 1 Mile Study Area, these three resources have not been evaluated for National Register eligibility.

While AINW does not have access to the reports associated with the majority of sites within the Black Rock Reservoir Inflow 1 Mile Study Area, information on the site forms contain some details of the surveys for which the sites were recorded. These surveys include a Grant County Public Utility District's Priest Rapids Hydroelectric Project, Historic Property Inventory: 2001-2002 by Earth Imaging Associates (sites 45GR442, 45YA1087, 45YA1011, 45YA1010, 45YA1009, 45YA1005, 45YA1003, 45YA1001, 45YA1000, 45YA338, 45YA399, 45YA994, 45YA992, 45YA995, 45YA996, 45YA999), an unknown 2002 Historical Research Associates survey (site 45YA860), a 1999/2000 Yakima Training Center Cultural Resource Inventory by Historical Research Associates, (sites 45YA664, 45YA663, 45YA662, 45YA661, 45YA660, 45YA653, 45YA654, 45YA655, 45YA656, 45YA658, 45YA657), an unknown 1996 survey conducted by the Grant County Public Utilities District (site 45YA604), an unknown 1959 survey conducted by the Department of Anthropology at the University of Washington (site 45YA15), an unknown 1958 survey conducted by the Department of Anthropology at the University of Washington (site 45YA124), an unknown 1950 survey conducted by the Department of Anthropology at the University of Washington (sites 45YA1 and 45YA41), and an unknown 1979 survey conducted by Central Washington University (sites 45YA173, 45YA175, 45YA183, 45YA184, 45YA185). One site (45YA344) was not identified as part of a cultural resources survey. Site 45YA344, a pre-contact burial, was identified during army maneuvers at the Yakima Firing Center in 1982. The human remains were removed by archaeologists David Rice and David Munsell and reentered at Wanawish Indian Cemetery, West Richland, Washington (Rice 1982). This site, along with all of the other above-mentioned sites identified from previous surveys within the Black Rock Reservoir Inflow 1 Mile Study Area, has not been evaluated for State or National Register eligibility.

Black Rock Reservoir Outflow 1 Mile Study Area

Previous archaeological surveys within the Black Rock Reservoir Outflow 1 Mile Study Area have identified 17 historic and prehistoric sites (Table 1). These sites include the following: 6 pre-contact lithic material sites; 3 pre-contact camps; 1 pre-contact cairn; 3 historic objects sites; 2 historic hydroelectric sites; 1 historic agriculture/pre-contact lithic scatter site, which also is located within the boundaries of the Black Rock Reservoir 1 Mile Study Area (45YA00171); 1 pre-contact feature; and 6 pre-contact lithic material sites. These sites were identified during the course of four separate cultural resource surveys of the area: a BLM archaeological survey of a proposed Rattlesnake Hills Land Exchange (1977) (for sites 45YK90, 45YK91, 45YK92, 45YK94, 45YK95, 45YK96, 45YK97, 45YK98, and 45YK399), a Yakima Training Center Cultural Resources Inventory conducted by Historical Research Associates (1999/2000) (for sites 45YA647,

45YA803, 45YA807, and 45YA845), a cultural resources survey conducted by Archaeological and Historical Services, Eastern Washington University (1995) (for site 45YA564), and a BLM Rattlesnake Hills Miscellaneous inventory (1982) (for site 45YK350). Unfortunately, these reports were unavailable to AINW when this current report was completed. However, forms for all of these sites were available and reviewed.

Among the sites identified in previous surveys, three (45YA91, 45YA94, and 45YA96) were evaluated by the DAHP and determined to meet the criteria for listing in the NRHP. These sites include two pre-contact lithic material sites (45YA91, 45YA94) and one (45YA96) pre-contact feature. All three of these sites were recorded as part of the BLM archaeological survey of a proposed Rattlesnake Hills Land Exchange. According to the site report available, site 45YA91 is a scatter of a "few C/C flakes," a "unifacial chopper," and a "core." This site is situated on an alluvial terrace on the west bank of an unnamed drainage and measures approximately 30 m (99 ft) (north-south) by 15 m (50 ft) (east-west). Site 45YA94 is also located on an alluvial terrace (on the east bank of an unnamed drainage). This site contains a "thin lithic scatter" and "milling stone." It measures approximately 25 m (83 ft) (north-south) by 25 m (83 ft) (east-west). The pre-contact feature is marked by the presence of a "large hearth/roasting oven" and also includes "flakes," a "chopper," and a "milling stone." Like the lithic material sites, this site is also situated on an alluvial terrace (at the confluence of two unnamed drainages). The site measures 125 m (413 ft) (north-south) by 40 m (132 ft) (east-west).

Apart from the previous surveys conducted within the Black Rock Reservoir Outflow 1 Mile Study Area for which AINW does not have access to complete reports, there is one report available to AINW that covered a portion of this study area (Table 2). This report is from a cultural resources inventory and road mitigation survey for the U.S. Army Yakima Training Center conducted by Larson Anthropological Archaeological Services in 2000. In addition to the portion of this survey within the Black Rock Reservoir Inflow 1 Mile Study Area (see above Black Rock Reservoir Inflow section), this study covered a linear stretch of approximately 0.79 km (0.49 mi) within the Black Rock Reservoir Outflow 1 Mile Study Area. However, there were no cultural resources identified within the Black Rock Reservoir Outflow 1 Mile Study Area during this survey (Lewarch 2000).

Wymer Reservoir 1 Mile Study Area

There are 28 previously-recorded historic and prehistoric sites within the Wymer Reservoir 1 Mile Study Area (Table 1). These sites include 1 pre-contact petroglyph site, 1 historic objects site, 8 pre-contact lithic material sites, 6 pre-

contact camp sites, 9 pre-contact isolates, 1 pre-contact cairn site, 1 pre-contact talus pit site, and 1 historic homestead site. These above-listed sites include those that were recorded as a part of archaeological studies for which AINW has access to reports as well as those that were recorded during surveys for which AINW does not have access to the associated reports.

The surveys (Table 2) within the Wymer Reservoir 1 Mile Study Area for which AINW has access to complete reports include a 1993 archaeological investigations survey on BLM lands by Central Washington Archaeological Survey, Central Washington University (Bicchieri 1999), a 1995 archaeological survey of BLM parcels in the Yakima River canyon and uplands by Central Washington University (McCutcheon and Hungar 1995), a 1997 Yakima Training Center National Register eligibility testing of sites (Flenniken et al. 1997), a 1997 cultural resources survey of the Washington State Department of Transportation's SR 821: Yakima River Canyon Safety Project by Archaeological and Historical Services, Eastern Washington University (Holstine 1997), a 2006 cultural resources site identification survey by the U.S. Department of Agriculture, Natural Resources Conservation Services (Amara 2006), and a 2007 archaeological review and inventory of a proposed Lmumma Creek Area Irrigation Project by Reiss-Landreau Research (Landreau 2007). Of these surveys, only the two Central Washington University investigations and the Yakima Training Center National Register eligibility testing dealt with sites within the boundaries of the Wymer Reservoir 1 Mile Study Area.

In total, approximately 77.1 acres within the Wymer Reservoir 1 Mile Study Area were covered in the Central Washington University Archaeological Survey 1993 archaeological investigations survey on BLM lands. These investigations consisted of pedestrian survey in addition to coring with four-inch metal bucket augers in selected areas. Field investigations were accomplished primarily with students from the 1993 Central Washington University Archaeological Field School. Among the cultural resources identified and documented in the course of this survey, two pre-contact isolates (45KT1611 and 45KT1612) were recorded within the boundaries of the Wymer Reservoir 1 Mile Study Area (Bicchieri 1999:1, 5, 12, 14).

The 1995 archaeological survey of BLM parcels conducted by Central Washington University covered approximately 14.5 acres within the Wymer Reservoir 1 Mile Study Area. This study consisted of a pedestrian survey and collection of surface artifacts that was accomplished primarily by students of the 1995 Central Washington University Archaeological Field School. The survey resulted in the identification and documentation of seven pre-contact isolates (45KT1617, 45KT1619, 45KT1620, 45KT1622, 45KT1623, 45KT1624, and

45KT01640) and one pre-contact cairn (45KT1628) within the boundaries of the Wymer Reservoir 1 Mile Study Area (McCutcheon and Hungar 1995).

The Lithic Analysts National Register eligibility testing investigations conducted in 1997, which also cover a portion of the Black Rock Reservoir Inflow 1 Mile Study area (see above section on Black Rock Inflow 1 Mile Study Area), were concerned with determining NRHP eligibility for previously recorded archaeological sites and augmenting and synthesizing stratigraphic information for the general area. Unfortunately, there are no data available to AINW which indicates the total ground coverage of this project within the boundaries of the Wymer Reservoir or Black Rock Reservoir Inflow Study Areas. The methods employed in this study included the use of backhoes to clear the faces of stream erosional cuts at alluvial sites to evaluate stratigraphic data and the excavation of 50x50 cm (19.7x19.7 in) shovel tests and 1x1 m (3.3x3.3 ft) test units to evaluate the significance of previously identified archaeological sites (Flenniken et al. 1997:1, 9, 11, 13). One of these sites was within the boundaries of the Wymer Reservoir 1 Mile Study Area. This site (45KT338) was a pre-contact camp initially recorded and tested by Central Washington Archaeological Survey, Central Washington University in 1979 (Hartmann and Stephenson 1980). As a result of their additional work, Flenniken et al. (1997:77, 78) recommended that this resource be considered eligible for inclusion in the NRHP. Flenniken et al. (1997:62, 77, 78) excavated a 1x1 m (3.3x3.3 ft) test unit. In this test unit, artifact densities were relatively high, with 529 pieces of debitage/m^3 as well as 1139 bone fragments/m^3. There were also indications from the previous 1979 investigations and the 1997 testing that the site may have been associated with a house floor or other cultural feature (Flenniken et al. 1997:77, 78).

All of the surveys for which no cultural resources within the Wymer Reservoir 1 Mile Study Area were recorded consisted of pedestrian survey investigations. The 1997 Eastern Washington University Archaeological and Historical Services survey of the Washington State Department of Transportation Yakima River Canyon Safety Project covered a linear stretch of approximately 0.16 km (0.1 mi) within the Wymer Reservoir 1 Mile Study Area (Holstine 1997:1, 5, 6). The Natural Resources Conservation Service cultural resources survey covered a linear stretch of approximately 0.92 km (0.56 mi) within the current Wymer Reservoir 1 Mile Study Area) (Amara 2006:1, 4, 5). The archaeological review and inventory of the Lmumma Creek Area Irrigation Project conducted by Reiss-Landreau Research in 2007 consisted of a visual reconnaissance survey and inventory within an area of approximately 4.2 acres, although AINW unfortunately does not have data on how much of this area falls within the Wymer Reservoir 1 Mile Study Area (Landreau 2007:2, 8, 9).

While AINW did not have access to the survey reports for the majority of the sites within the Wymer Reservoir 1 Mile Study Area, most of the forms for these sites contained some information concerning the source survey from which they were recorded. These surveys include an unknown 1967 University of Washington Department of Anthropology survey (for site 45KT209), a 1976 Washington State University archaeological reconnaissance of Yakima and Johnson Canyons (for sites 45KT218, 45KT219, 45KT223, and 45KT224), a Central Washington University survey conducted in 1979 entitled, *Cultural Resources Reconnaissance and Testing on the Yakima Firing Center, Yakima and Kittitas Counties, Washington, Phase II* (Hartmann and Stephenson 1980) (for sites 45KT207, 45KT319, 45KT320, 45KT321, 45KT330, 45KT337, 45KT338, and 45KT345), an unknown 1992 Historical Research Associates survey (for site 45KT947), an unknown 1993 survey (for site 45KT958), an unknown 1998 survey by the Yakama Indian Nation (for site 45KT1732), and an unknown 2000 Historical Research Associates survey (for sites 45KT1759 and 45KT1760).

In terms of significance, none of the previously recorded cultural resources within the Wymer Reservoir 1 Mile Survey Area have been evaluated for listing on the State or National Register, according to the DAHP. Site 45KT338, although subject to previous subsurface evaluation and recommended to be eligible for NRHP listing by Flenniken et al. (1997:77, 78), is included in this group of sites not yet evaluated for State or National Register listing.

.5 Mile Study Area Pipeline

Within the .5 Mile Study Area Pipeline, there are five previously recorded archaeological sites that include one pre-contact lithic material site, one pre-contact isolate, one historic refuse scatter/dump site, one pre-contact burial site, and one historic agriculture site (Table 1). In addition, there are two historic structures listed on the NRHP within the .5 Mile Study Area Pipeline. These structures are the Mattoon Cabin and the Sawyer Mansion, both of which are located on U.S. Highway 12. There is also an archaeological district within the .5 Mile Study Area Pipeline. This district is a National and State Register listed archaeological district known as the Tri-Cities Archaeological District. It consists of approximately 30 historic and prehistoric archaeological sites, including one pre-contact lithic material site (45BN52) site that lies within the .5 Mile Study Area Pipeline.

Three of the previously recorded sites within the pipeline area were recorded during surveys for which AINW has access to complete reports (Table 2). These sites consist of an historic agriculture site (45YA1079), a pre-contact lithic material site (45BN52), and a pre-contact isolate (45BN502). Relevant

information from the reports associated with these resources is summarized below.

A BLM cultural resources survey on BLM lands for a BLM-State DNR land exchange in Benton County, Washington was conducted in 1998. This project consisted of a pedestrian survey of approximately 93 acres within the .5 Mile Study Area Pipeline boundaries. During this survey, there was one pre-contact isolate (45BN502) identified and recorded within the .5 Mile Study Area Pipeline. This isolate was a CCS core (Sharley 1998:1, 2, 7). It has not yet been evaluated for State or National Register eligibility.

In 1999, the Confederated Tribes of the Umatilla Indian Reservation conducted a cultural resource inventory for the McNary Reservoir (Dickson 1999). The area deemed the McNary Reservoir (the section of the river backed by the McNary Dam) covers a long stretch of the Columbia River between the McNary Dam on the border of Oregon and Washington to a point several miles north of the city of Richland, Washington. The inventory conducted by the Confederated Tribes of the Umatilla Indian Reservation consisted of a pedestrian survey of the shore on both sides of the Columbia River along the McNary Reservoir stretch, existing information on previously-recorded sites was updated, and new sites were recorded. Although this survey covered a considerable amount of land, the stretch of area within the .5 Mile Study Area Pipeline boundaries was only 0.82 km (0.5 mi). In the course of the McNary Reservoir project, there were no new cultural resources identified within the boundaries of the .5 Mile Study Area Pipeline. However, a site originally recorded in 1947 as 45BN52 was revisited for this survey and is situated within the boundaries of the Pipeline. This site is a pre-contact lithic material site consisting of a shell midden and lithic scatter (Dickson 1999:1, 26). It has been recorded multiple times for surveys that do not intersect the boundaries of the .5 Mile Study Area Pipeline (see Miller 2000; Steinmitz 2004) and is located within the Tri-Cities Archaeological District. The site itself has not been evaluated for State or National Register eligibility, although the Tri-Cities Archaeological District is a State and National Register-listed area.

In 2006, Archaeological and Historical Services, Eastern Washington University conducted a cultural resources survey for the state of Washington Department of Fish and Wildlife proposed I-82 ponds access roads north of Wapato, Washington. The project consisted of a pedestrian survey and shovel testing (30 cm wide by 50 cm deep [16.7 in wide by 16.7 in deep]) in areas with poor ground surface visibility. In total, 2.1 acres within the .5 Mile Study Area Pipeline were covered in the course of this survey. As a result of field investigations, one historic agriculture site was identified (45YA1079). This site falls within the boundaries of the .5 Mile Study Area Pipeline and consists of a galvanized steel pipe set within a ceramic pipe that was a component of a north/south-oriented

irrigation line that was in use up until 1985 (Engseth 2006:1, 5-7). This site has not been evaluated for State or National Register eligibility.

In addition to these three cultural resources that lie within the .5 Mile Study Area Pipeline is an historical resource which may also be within the boundaries of the pipeline area. A cultural resources survey for a West Richland Sewer Interceptor and South Lagoon decommissioning project in Benton County, Washington was conducted by Archaeological and Historical Services, Eastern Washington University in 2002. This cultural resources investigation consisted of the pedestrian survey covering a linear stretch of approximately 4.2 km (2.6 mi) within the .5 Mile Study Area Pipeline boundaries. In addition, four shovel test pits (the size of which is not clear based on the information in the report) were excavated in an area where an isolated piece of CCS material was found. Among the cultural resources identified and recorded for this study, was one previously recorded historic irrigation canal known as the Columbia Canal (Boreson 1993), a portion of which intersected the boundaries of the survey area. This irrigation canal was constructed from 1890-1892 and has been considered to meet the standards for NRHP listing eligibility under Criterion A by the DAHP. It is not completely clear if a portion of this canal lies within the boundaries of the .5 Mile Study Area Pipeline. Apart from the irrigation canal remnant, there were no cultural resources considered significant identified within the boundaries of the .5 Mile Study Area Pipeline during the course of this survey (Crisson and Komen 2002:1, 5-7).

There are an additional two sites within the .5 Mile Study Area Pipeline boundaries that were recorded as a part of surveys for which AINW does not have access to complete reports. These include an historic refuse scatter/dump site (45BN884) recorded by Rain Shadow Research in 2002 and a pre-contact burial (45YA316) recorded by the Washington Archaeological Center in 1979. The site form for the pre-contact burial indicated that the site was considered disturbed and consisted of a “possible burial and camp” with “burials previously uncovered.” According to the site form, this site was found during construction monitoring. Neither 45YA316 nor 45BN884 have been evaluated for State or National Register eligibility.

Apart from these previously recorded sites and their associated survey reports, there are an additional 26 survey reports that cover areas within the .5 Mile Study Area Pipeline available to AINW (Table 2). None of these surveys resulted in the identification of cultural resources within the .5 Mile Study Area Pipeline. Relevant information for each of these surveys is presented in the following paragraphs.

In 1997, Archaeological and Historical Services, Eastern Washington University conducted a cultural resources inventory for a curve realignment on SR 224 between MP 3.29 and MP 4.11. Pedestrian survey within the project area covered a stretch of approximately 0.6 km (0.38 mi) within the .5 Mile Study Area Pipeline boundaries (Regan 1997).

The U.S. Fish and Wildlife Service conducted a cultural resources study for the Washington State Ecosystems Conservation Program, Olsen Brothers Project, Benton County, Washington in 1997. This project consisted of a pedestrian survey of approximately 0.5 km (0.31 mi) within the .5 Mile Study Area Pipeline Boundary (Valentine 1997:1, 2).

In 1999, Eastern Washington University Archaeological and Historical Services conducted a cultural resources survey for a Washington State Department of Transportation SR 241: Alexander Road to Factory Road Project. This investigation consisted of a pedestrian survey that covered an area of approximately 0.07 acres within the .5 Mile Study Area Pipeline boundaries (Holstine 1999:1, 2).

Archaeological and Historical Services, Eastern Washington University conducted a cultural resources survey of the Washington State Department of Transportation's SR240 - I-182 to Columbia Boulevard Project in Richland, Washington in 1999. Pedestrian survey of a stretch totaling approximately 0.42 km (0.26 mi) within the .5 Mile Study Area Pipeline was undertaken for this project. In addition, 12 backhoe trenches were dug (with an average length of 10 m [33 ft]) to locate evidence for buried archaeological materials in stratigraphic profiles (Hartmann and Holstine 1999:1, 5, 6).

In the following year (2000), the U.S. Army Corps of Engineers, Walla Walla District, conducted a cultural resource inventory for a public road/emergency vehicle turnaround easement within Columbia Park West in Richland, Washington. For this project, a pedestrian survey covering approximately 0.007 acres within the boundaries of the .5 Mile Study Area Pipeline was conducted (Wright 2000:1, 4).

Archaeological and Historical Services of Eastern Washington University conducted a pedestrian survey of an area that included approximately 9.5 acres within the boundaries of the .5 Mile Study Area Pipeline in 2001. This survey was conducted along a section of the Yakima Valley Highway that was slated for road improvements by Yakima County Public Works (Emerson and Axton 2001:1, 5).

Plateau Investigations conducted a cultural resource survey of Cheyne Road in Zillah, Washington in 2001. This project consisted of a pedestrian survey that

covered an area of approximately 0.001 acres within the .5 Mile Study Area Pipeline (Harder 2001:1, 13).

In 2001, Corey Carmack conducted a cultural resource survey for a Kennewick Pump Exchange project. This survey consisted of a pedestrian survey and the excavation of 20 shovel tests (30x30 cm [11.8x11.8 in]). The area covered in this survey included approximately 0.02 acres within the boundaries of the .5 Mile Study Area Pipeline (Carmack 2001:1, 3, 4).

Archaeological and Historical Services, Eastern Washington University conducted a cultural resources survey for the Keene Road Realignment in Benton County, Washington in 2001. This project entailed the pedestrian survey of 29 acres in a stretch extending approximately 1.6 km (1 mi), all of which falls within the boundaries of the .5 Mile Study Area Pipeline (Komen 2001: 1. 5, 6).

URS Corporation conducted a cultural resources inventory of 16 cellular communication tower lease areas in Benton, Chelan, Grant, Kittitas and Yakima Counties in Washington as well as Morrow and Umatilla Counties in Oregon in 2001. This survey consisted of an intense archaeological pedestrian reconnaissance of all 16 tower lease areas, covering a combined approximately 0.7 acres within the .5 Mile Study Area Pipeline (Hale and Kelly 2001:1, 2, 13).

The Confederated Tribes of the Umatilla Indian Reservation performed a cultural resources inventory for a proposed Bonneville Power Administration (BPA) substation near Red Mountain, Benton County, Washington in 2001. For this project, approximately 1.7 acres were covered within the .5 Mile Study Area Pipeline in a pedestrian survey. In addition, 42 shovel test pits (50 cm [19.7 in] in diameter by 120 cm [47.2 in] in depth) were excavated within this area (Jaehnig 2001:1, 4, 5).

Also in 2001, Reclamation conducted a cultural resources survey for a Kennewick and Columbia Irrigation Districts Pump Exchange project (Carmack and DeLeon 2001). Pedestrian survey and the excavation of 15 shovel test pits (40 cm [15.8 in] in diameter by 50 to 80 cm [19.7 to 31.5 in] in depth) were the methods used for this survey, which covered an area of approximately 0.36 acres within the .5 Mile Study Area Pipeline (Carmack and DeLeon 2001:1, 4).

A cultural resources survey for a Kennewick and Columbia Irrigation District Pump Exchange Project was conducted in 2003. For this project, Archaeological and Historic Services, Eastern Washington University were contracted to conduct a 1x1 m (3.3x3.3 ft) test unit excavation near a drill hole drilled for the pump exchange project. The project area officially included an area of approximately 3.8 acres within the boundaries of the .5 Mile Study Area Pipeline (Carmack and DeLeon 2003:1, 6).

The Confederated Tribes of the Umatilla Indian Reservation conducted a cultural resource Survey of the City of Kennewick's Center Boulevard Extension in 2003. This project consisted of the pedestrian survey of approximately 0.55 km (0.34 mi), all of which fall within the .5 Mile Study Area Pipeline boundaries (Steinmetz and Dickson 2003:1, 14).

In 2004, the Natural Resources Conservation Service conducted several cultural resources surveys for the proposed placement of irrigation systems on private land in both Yakima and Benton counties, Washington. Seven of these surveys covered areas within the boundaries of the .5 Mile Study Area Pipeline. A survey conducted for the installation of an irrigation system on a vineyard in Benton County consisted of a pedestrian survey that included 7.9 acres within the .5 Mile Study Area Pipeline (Amara 2004a:1, 4). Another pedestrian survey for the placement of a sprinkler irrigation system on a private vineyard was done by the Natural Resources Conservation Service (NRCS) in Yakima County and covered an area of 10.5 acres within the .5 Mile Study Area Pipeline (Amara 2004b:1, 3, 4). An NRCS cultural resources identification survey was conducted for the proposed installation of irrigation works on privately-owned cropland in Yakima County consisted of a pedestrian survey that covered a linear stretch of approximately 0.61 km (0.38 mi) within the .5 Mile Study Area Pipeline boundaries (Amara 2004c:1, 2, 4). A cultural resources identification survey was conducted by the NRCS for the installation of a sprinkler system on a privately-owned vineyard in Yakima County. This pedestrian survey covered a stretch of approximately 0.03 km (0.02 mi) within the .5 Mile Study Area Pipeline boundaries was undertaken for this project (Amara 2004d:1, 2, 4). The NRCS conducted a cultural resources identification survey for the proposed installation of irrigation sprinklers on a privately-owned vineyard in Benton County. This survey consisted of a pedestrian survey that covered approximately 0.37 km (0.23 mi) within the boundaries of the .5 Mile Study Area Pipeline (Amara 2004e:1, 2, 4). An NRCS cultural resources identification survey for the proposed development of a sprinkler irrigation system on private land in Yakima County consisted of a pedestrian survey that covered a stretch of approximately 0.53 km (0.33 mi) within the .5 Mile Study Area Pipeline boundaries (Amara 2004f:1, 2, 4). A final 2004 cultural resources survey for the proposed development of a sprinkler system on a privately-owned orchard in Yakima County consisted of a pedestrian survey of approximately 0.91 km (0.57 mi) within the boundaries of the .5 Mile Study Area Pipeline (Amara 2004g:1, 2, 4).

In 2006, the BPA conducted a cultural resources survey for the Walla Walla Region 2006 Transmission Line Maintenance Project. The pedestrian survey conducted for this project covered a stretch of approximately 0.58 km (0.36 mi) within the .5 Mile Study Area Pipeline boundaries (Clark 2006).

An archaeological survey of the proposed Steptoe street extension in Benton County, Washington was conducted by the Confederated Tribes of the Umatilla Indian Reservation in 2006 (Dickson 2006). This project consisted of a pedestrian survey of a linear stretch of approximately 0.26 km (0.16 mi) within the boundaries of the .5 Mile Study Area Pipeline (Dickson 2006:1, 15).

Also in 2006, AINW conducted a cultural resource survey for a proposed Williams Northwest Pipeline Sunnyside Irrigation District reroute east of Punkin Corner in Yakima County, Washington. This project consisted of a literature search, pedestrian survey, and the excavation of three shovel test pits dug 50 cm (20 in) deep and 50 cm (20 in) in diameter. The total area covered in the survey consisted of 4.1 acres within the .5 Mile Study Area Pipeline (Boynton and Fagan 2006:1, 4, 5).

In 2007, Plateau Archaeological Investigations conducted a cultural resources survey for the Keene Road Cellular Tower in Benton County, Washington. These investigations consisted of the pedestrian survey of a cell tower foot print that was approximately 3.7 m (12 ft) by 6.1 m (20 ft) and within the boundaries of the .5 Mile Study Area Pipeline (Harder and Hannum 2007:2, 6).

Archaeological and Historical Services, Eastern Washington University conducted a cultural resources survey for the Washington State Department of Transportation SR 241 Safety Improvement Project in Benton and Yakima counties, Washington in 2007 (Komen and Sharley 2007). The pedestrian survey for this project covered a distance of 0.39 km (0.24 mi) within the .5 Mile Study Area Pipeline boundaries. Additionally, 15 shovel tests were excavated. These shovel tests were 40 cm (16 in) in diameter and had an average depth of 72 cm (29 in) (Komen and Sharley 2007:1, 7, 8).

SUMMARY AND RECOMMENDATIONS

Overall, the proposed location of the Yakima Basin reservoirs and pipeline are situated in areas where there is a high potential for both historic and prehistoric resources. In previous archaeological surveys within these areas, there were a total of 102 cultural resources identified and recorded of which 76 are prehistoric, 26 are historic, and one is a site with both prehistoric and historic components. Among these, only five resources have been determined eligible for NRHP listing: an historic structure known as the Mattoon Cabin (45YA360) located within the .5 Mile Study Area Pipeline boundaries, an historic structure known as the Sawyer Mansion (45YA361) located within the .5 Mile Study Area Pipeline boundaries, two pre-contact lithic material sites (45YA91 and 45YA94) located within the Black Rock Reservoir Outflow 1 Mile Study Area boundaries, and one pre-contact feature (45YA96) located within the Black Rock Reservoir Outflow 1 Mile Study Area. In addition to the previously recorded archaeological sites, there is one archaeological district (Tri-Cities Archaeological District) that is within the .5 Mile Study Area Pipeline. This district is National and State Register listed and contains a combined 30 historic and prehistoric sites. One of these sites, 45BN52, is located within the .5 Mile Study Area Pipeline.

While there are only five resources that have been determined eligible for listing in the NRHP, the eligibility status of the majority of cultural resources (97 total) has not been determined. These sites include 11 pre-contact camp sites, 37 pre-contact lithic material sites, two pre-contact burial sties, 10 pre-contact isolates, 1 pre-contact feature site, 3 pre-contact cairn sites, 6 pre-contact talus pit sites, 1 pre-contact house pit/depression site, 2 pre-contact petroglyph sites, 7 historic objects sites, 2 historic hydroelectric sites, 1 historic agriculture site, 8 historic refuse scatter/dump sites, 1 historic bridge site, 2 historic structure sites, 1 historic homestead site, 1 historic isolate, and 1 historic agriculture/lithic material site. It is entirely plausible that at least a portion of these sites would also be eligible for State or National Register listing if evaluated.

Given the abundance of previously recorded resources within the area, the construction of the proposed reservoirs and pipeline could potentially impact significant archaeological sites. This is most apparent in the Black Rock Reservoir Inflow 1 Mile Study Area, where there are a total of 42 previously-recorded historic and prehistoric resources within an area of 11,345.75 acres. This is in sharp contrast to the .5 Mile Study Area Pipeline, which encompasses a total area of 24,335.46 acres and contains a combined seven prehistoric and historic resources in addition to an archaeological district.

The disparity in the numbers of previously recorded archaeological sites within these two areas is very likely a product of the total land area covered in previous surveys. Although there have been a total of 30 archaeological surveys conducted within the boundaries of the .5 Mile Study Area Pipeline, the area covered in these surveys amounts to only 137.9 acres for polygon surveys and 11.9 km (7.4 mi) for the linear surveys. By comparison, the area covered in previous surveys of the Black Rock Inflow 1 Mile Study Area amounts to 984.4 acres in the surveys for which AINW has access to complete reports. In these surveys, only 3 sites within the Black Rock Reservoir Inflow 1 Mile Study Area have been identified. The remaining 39 sites identified within the Black Rock Inflow 1 Mile Study Area were recorded during surveys for which AINW does not have access to complete reports.

The lack of complete survey reports also poses a problem when evaluating the density of sites in relation to surveyed area in the Black Rock Reservoir 1 Mile Study Area, the Black Rock Reservoir Outlfow 1 Mile Study Area, and the Wymer Reservoir 1 Mile Study Area reservoir areas. There have been 12 cultural resources recorded within the 9,225 acre area of the Black Rock Reservoir 1 Mile Study Area, although none of these sites were recorded in the three surveys of the area for which AINW has access to complete reports. In the 24,730.3 acres of the Black Rock Reservoir Outflow 1 Mile Study Area, there have been 17 cultural resources identified in previous surveys for which AINW does not have access to complete reports. At the location of the 12,398.8 acre Wymer Reservoir, there have been 28 cultural resources recorded, 11 of which were part of surveys for which AINW has access to complete reports. Thus while all four of the reservoir areas appear to have a greater potential for archaeological sites than the .5 Mile Study Area Pipeline based on the number of sites recorded within the areas, this could very well be due to the fact that a larger portion of those study areas have been covered in previous surveys.

The impacts that have occurred with land cultivation in the low-lying areas around the location of the proposed pipeline could also account for the paucity of recorded sites along the .5 Mile Study Area Pipeline. Such impacts from the historic period to the present likely have obscured the visibility of prehistoric sites. The denser vegetation cover in these areas in comparison to the upland areas has also likely contributed to the lack of sites found in surveys of the area around the .5 Mile Study Area Pipeline.

This synopsis of previous cultural resources and survey reports indicates that, as a whole, the Yakima River Basin is an area with a high potential for both historic and prehistoric sites. The ethnographic context of the region also indicates that the study areas for the proposed reservoirs and pipeline are situated in locales that have a high potential for containing ethnographic sites. It is AINW's professional

opinion that cultural resource surveys of the Areas of Potential Effect for the Yakima River Basin Storage Study areas will document numerous historic, ethnographic, and archaeological resources.

However, additional investigation is recommended to gain a more detailed picture of traditional land use within the Areas of Potential Effect. Research for this project has included a thorough search of court cases, historic newspapers, on-line library archives, and other on-line resources, including museums and historical societies. While some additional insights have been gained on land use and the location of traditional villages in the vicinity of the project area, little information on the ethnographic relevance of the project area specifically has been ascertained as a result of this research. In order to achieve of a more complete picture of traditional land use within the project area, it will be necessary to consult with individuals from groups, namely the Wanapum and Yakama, whose traditional territories intersect the boundaries of the project areas.

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APPENDIX A – TABLE 1, HISTORIC RESOURCES WITHIN THE STUDY AREAS

SITE NUMBER	SITE TYPE	STATE OR NATIONAL REGISTER ELIGIBILITY STATUS
Black Rock Reservoir 1 Mile Study Area		
45BN411	Historic Refuse Scatter/Dump	Not Evaluated
45YA818	Historic Refuse Scatter/Dump	Not Evaluated
45YA819	Historic Refuse Scatter/Dump	Not Evaluated
45BN243	Pre-Contact Cairn	Not Evaluated
45YA171	Historic Agriculture/Pre-Contact Lithic Material	Not Evaluated
45YA73	Pre-Contact Lithic Material	Not Evaluated
45YA574	Pre-Contact Lithic Material	Not Evaluated
45YA653	Pre-Contact Lithic Material	Not Evaluated
45YA657	Pre-Contact Lithic Material	Not Evaluated
45YA641	Pre-Contact Lithic Material	Not Evaluated
45YA658	Pre-Contact Lithic Material	Not Evaluated
45YA661	Pre-Contact Lithic Material	Not Evaluated
Black Rock Reservoir Inflow 1 Mile Study Area		
45GR41	Pre-Contact House Pit/Depression	Not Evaluated
45GR124	Historic Objects	Not Evaluated
45YA338	Historic Objects	Not Evaluated
45YA995	Historic Objects	Not Evaluated
45GR442	Historic Refuse Scatter/Dump	Not Evaluated
45YA996	Historic Refuse Scatter/Dump	Not Evaluated
45YA1001	Historic Refuse Scatter/Dump	Not Evaluated
45YA1005	Historic Refuse Scatter/Dump	Not Evaluated
45YA173	Pre-Contact Lithic Material	Not Evaluated
45YA183	Pre-Contact Lithic Material	Not Evaluated
45YA184	Pre-Contact Lithic Material	Not Evaluated
45YA185	Pre-Contact Lithic Material	Not Evaluated
45YA1	Pre-Contact Lithic Material	Not Evaluated
45YA653	Pre-Contact Lithic Material	Not Evaluated
45YA654	Pre-Contact Lithic Material	Not Evaluated
45YA655	Pre-Contact Lithic Material	Not Evaluated
45YA656	Pre-Contact Lithic Material	Not Evaluated
45YA657	Pre-Contact Lithic Material	Not Evaluated
45YA627	Pre-Contact Lithic Material	Not Evaluated
45YA629	Pre-Contact Lithic Material	Not Evaluated
45YA632	Pre-Contact Lithic Material	Not Evaluated
45YA658	Pre-Contact Lithic Material	Not Evaluated
45YA660	Pre-Contact Lithic Material	Not Evaluated
45YA661	Pre-Contact Lithic Material	Not Evaluated
45YA662	Pre-Contact Lithic Material	Not Evaluated
45YA663	Pre-Contact Lithic Material	Not Evaluated
45YA664	Pre-Contact Lithic Material	Not Evaluated
45YA860	Pre-Contact Lithic Material	Not Evaluated
45YA15	Pre-Contact Camp	Not Evaluated

SITE NUMBER	SITE TYPE	STATE OR NATIONAL REGISTER ELIGIBILITY STATUS
45YA175	Pre-Contact Camp	Not Evaluated
45YA339	Historic Bridge	Not Evaluated
45YA344	Pre-Contact Burial	Not Evaluated
45YA999	Pre-Contact Talus Pit	Not Evaluated
45YA992	Pre-Contact Talus Pit	Not Evaluated
45YA1003	Pre-Contact Talus Pit	Not Evaluated
45YA1009	Pre-Contact Talus Pit	Not Evaluated
45YA1010	Pre-Contact Talus Pit	Not Evaluated
45YA1011	Pre-Contact Talus Pit	Not Evaluated
45YA604	Pre-Contact Petroglyph	Not Evaluated
45YA994	Historic Structure	Not Evaluated
45YA1000	Historic Structure	Not Evaluated
45YA1087	Historic Isolate	Not Evaluated
Black Rock Reservoir Outflow 1 Mile Study Area		
45YA90	Pre-Contact Camp	Not Evaluated
45YA93	Pre-Contact Camp	Not Evaluated
45YA98	Pre-Contact Camp	Not Evaluated
45YA350	Pre-Contact Cairn	Not Evaluated
45YA97	Historic Objects	Not Evaluated
45YA399	Historic Objects	Not Evaluated
45YA807	Historic Objects	Not Evaluated
45YA803	Historic Hydroelectric	Not Evaluated
45YA845	Historic Hydroelectric	Not Evaluated
45YA171	Historic Agriculture/Pre-Contact Lithic Scatter	Not Evaluated
45YA96	Pre-Contact Feature	Determined Eligible
45YA91	Pre-Contact Lithic Material	Determined Eligible
45YA92	Pre-Contact Lithic Material	Not Evaluated
45YA94	Pre-Contact Lithic Material	Determined Eligible
45YA95	Pre-Contact Lithic Material	Not Evaluated
45YA564	Pre-Contact Lithic Material	Not Evaluated
45YA647	Pre-Contact Lithic Material	Not Evaluated
Wymer Reservoir 1 Mile Study Area		
45KT345	Pre-Contact Petroglyph	Not Evaluated
45KT207	Historic Objects	Not Evaluated
45KT209	Pre Contact Lithic Material	Not Evaluated
45KT319	Pre Contact Lithic Material	Not Evaluated
45KT320	Pre Contact Lithic Material	Not Evaluated
45KT321	Pre-Contact Lithic Material	Not Evaluated
45KT330	Pre-Contact Lithic Material	Not Evaluated
45KT947	Pre-Contact Lithic Material	Not Evaluated
45KT958	Pre-Contact Lithic Material	Not Evaluated
45KT1759	Pre-Contact Lithic Material	Not Evaluated
45KT218	Pre-Contact Camp Sites	Not Evaluated

SITE NUMBER	SITE TYPE	STATE OR NATIONAL REGISTER ELIGIBILITY STATUS
45KT219	Pre-Contact Camp Sites	Not Evaluated
45KT223	Pre-Contact Camp Sites	Not Evaluated
45KT224	Pre-Contact Camp Sites	Not Evaluated
45KT337	Pre-Contact Camp Sites	Not Evaluated
45KT338	Pre-Contact Camp Sites	Not Evaluated
45KT1611	Pre-Contact Isolates	Not Evaluated
45KT1612	Pre-Contact Isolates	Not Evaluated
45KT1617	Pre-Contact Isolates	Not Evaluated
45KT1619	Pre-Contact Isolates	Not Evaluated
45KT1620	Pre-Contact Isolates	Not Evaluated
45KT1622	Pre-Contact Isolates	Not Evaluated
45KT1623	Pre-Contact Isolates	Not Evaluated
45KT1624	Pre-Contact Isolates	Not Evaluated
45KT1640	Pre-Contact Isolates	Not Evaluated
45KT1628	Pre-Contact Cairn	Not Evaluated
45KT1732	Pre-Contact Talus	Not Evaluated
45KT1760	Historic Homestead	Not Evaluated
.5 Mile Study Area Pipeline		
45BN052	Pre-Contact Lithic Material	Not Evaluated
45BN502	Pre-Contact Isolate	Not Evaluated
45BN884	Historic Refuse Scatter/Dump	Not Evaluated
45YA316	Pre-Contact Burial	Not Evaluated
45YA1079	Historic Agriculture	Not Evaluated
45DT41	Tri-Cities Archaeological District	National and State Register
45YA360	Historic Structure (Mattoon Cabin)	National Register Listed
45YA361	Historic Structure (Sawyer Mansion)	National Register Listed

APPENDIX B – TABLE 2, PREVIOUS SURVEYS WITHIN THE STUDY AREAS

AUTHOR AND DATE	PROJECT DESCRIPTION	RESOURCES IDENTIFIED	TOTAL AREA OR LINEAR STRETCH
Black Rock Reservoir 1 Mile Study Area			
Holstine 1995	A Cultural Resources Survey of the Washington State Department of Transportation's SR 24: Quarry Site QS-r-37, Benton County, Washington	None	2.3 acres
Regan 1999	A Cultural Resources Survey of the Washington State Department of Transportation's SR 241 Realignment Project: MP 20.72 to SR 24 Junction at MP 25.21, Yakima and Benton Counties, Washington	None	0.47 acres
Wills et al. 2002	Archaeological Survey for the Proposed Black Rock Dam Geotechnical Testing	None	28.3 acres
Weaver 2007	Cultural Resources Survey, Washington State Department of Transportation SR 24/241 Junction to Cold Creek Road Truck Climbing Lanes, Yakima and Benton Counties	Unknown	25.7 acres
Black Rock Reservoir Inflow 1 Mile Study Area			
Flenniken et al. 1997	Yakima Training Center National Register Eligibility Testing Deep Alluvial sites, Yakima and Kittitas Counties, Washington	None	Unknown
Lewarch et al. 2000	Cultural Resources (Archaeological Site) Inventory and Road Mitigation Survey on the Yakima Training Center, Kittitas and Yakima Counties, Washington	45YA627, 45YA629, 45YA632	984.4 acres
Black Rock Reservoir Outflow 1 Mile Study Area			
Lewarch et al. 2000	Cultural Resources (Archaeological Site) Inventory and Road Mitigation Survey on the Yakima Training Center, Kittitas and Yakima Counties, Washington	None	0.79 km (0.49 mi)
Wymer Reservoir 1 Mile Study Area			
Bicchieri 1999	1993 Archaeological Investigations of Bureau of Land Management Lands in Kittitas County, Washington	45KT1611, 45KT1612	77.1 acres
McCutcheon and Hungar 1995	Pedestrian Survey and Surface Collecting on BLM Parcels in Yakima River Canyon and Uplands	45KT1617, 5KT1619, 45KT1620, 5KT1622, 45KT1623, 5KT1624,	14.5

AUTHOR AND DATE	PROJECT DESCRIPTION	RESOURCES IDENTIFIED	TOTAL AREA OR LINEAR STRETCH
		45KT1628, 45KT1640	
Flenniken et al. 1997	Yakima Training Center, National Register Eligibility Testing, Deep Alluvial sites, Yakima and Kittitas Counties, Washington	45KT338	Unknown
Holstine 1997	Cultural Resources Surveys of the Washington State Department of Transportation's SR 821: Yakima River Canyon Safety Project, Kittitas County, Washington	None	.16 km (.1 mi)
Amara 2006	Natural Resources Conservation Service (NRCS) Jack Eaton & Sons EQIP 2006 Cultural Resources Site Identification Survey in Kittitas County, Washington	None	.92 km (.56 mi)
Landreau 2007	An Archaeological Review and Inventory of a Proposed Lmumma Creek Area Irrigation Project, Kittitas County, Washington	None	4.2 acres
.5 Mile Study Area Pipeline			
Sharley 1998	A Cultural Resources Survey on Bureau of Land management Lands in the BLM-State DNR Land Exchange Project Area, Benton County, Washington	45BN502	93 acres
Dickson 1999	McNary Reservoir Cultural Resources Inventory Report	45BN52	0.82 km (0.5 mi)
Engseth 2006	A Cultural Resources Survey of the Washington Department of Fish and Wildlife's Proposed I-82 Ponds 1 &2 Access Road Project, Yakima County, Washington	45YA1079	2.1 acres
Crisson and Komen 2002	A Cultural Resources Survey for the West Richland Sewer Interceptor and South Lagoon Decommissioning Project, Benton County, Washington	Unknown (see report text)	4.2 km (2.6 mi)
Valentine 1997	Cultural Resource Report for the Washington State Ecosystems Conservation Program, Olsen Brothers Project, Benton County, Washington	None	0.5 km (.31 mi)
Regan 1997	Letter Report DOT97-52; SR224 Ambassador Drive to Red Mountain Road, MP 3.29 to MP 4.11, T9N, R27E, Secs. 10 and 11, Benton County, Washington	None	0.6 km (.38 mi)
Holstine 1999	A Cultural Resources Survey of the Washington State Department of Transportation's SR 241: Alexander Road to Factory Road Project, Yakima County, Washington	None	0.07 acres

AUTHOR AND DATE	PROJECT DESCRIPTION	RESOURCES IDENTIFIED	TOTAL AREA OR LINEAR STRETCH
Hartmann and Holstine 1999	A Cultural Resources Survey of the Washington State Department of Transportation's SR 240: I-82 to Columbia Boulevard Project, Richland, Washington	None	0.42 km (0.26 mi)
Wright 2000	Cultural Resource Inventory Report: Request for Public Road/Emergency Vehicle Turnaround Easement Within Columbia Park West	None	0.007 acres
Emerson and Axton 2001	A Cultural Resources Survey of Yakima Valley Highway Between Donald-Wapato Road and Konnowac Pass Road, Yakima County, Washington	None	9.5 acres
Harder 2001	Cheyne Road Cultural Resource Survey, Zillah, Washington	None	0.001 acres
Carmack 2001	Cultural Resource Survey Kennewick Pump Exchange Feasibility Report Yakima Project-Upper Columbia Area Office Yakima County, Washington	None	0.02 acres
Hale and Kelly 2001	Cultural Resources Inventory of 16 Cellular Communication Tower Lease Areas, Morrow and Umatilla Counties, Oregon and Benton, Chelan, Grant, Kittitas and Yakima Counties, Washington	None	0.7 acres
Jaehnig and Van Pelt 2001	A Cultural Resource Inventory for the Bonneville Power Administration's Proposed Substation near Red Mountain, Benton County, Washington	None	1.7 acres
Carmack and DeLeon 2001	Cultural Resource Survey, Kennewick and Columbia Irrigation Districts Pump Exchange Feasibility Study, Yakima Project-Upper Columbia Area Office Yakima County, Washington	None	0.36 acres
Carmack and DeLeon 2003	Cultural Resources Survey, Kennewick and Columbia Irrigation Districts Pump Exchange Feasibility Study, 2003 Exploratory Drilling, Yakima River Basin Watershed Enhancement Program, Benton County, Washington	None	3.8 acres
Steinmetz and Dickson 2003	A Cultural Resource Survey of the City of Kennewick's Center Boulevard Extension, Benton County, Washington	None	0.55 km (0.34 mi)
Amara 2004a	NRCS Wes Stillwell EQIP 2004 Site Identification Survey in Benton County, Washington	None	7.9 acres
Amara 2004b	NRCS Elsa Bolt EQIP 2004 Site Identification Survey in Yakima County, Washington	None	10.5 acres
Amara 2004c	NRCS CUB Farms EQIP 2004 Site Identification Survey in Yakima County, Washington	None	0.61 km (0.38 mi)
Amara 2004d	NRCS Erasmo Cerda EQIP 2004 Site Identification	None	0.03 km

AUTHOR AND DATE	PROJECT DESCRIPTION	RESOURCES IDENTIFIED	TOTAL AREA OR LINEAR STRETCH
	Survey in Yakima County, Washington		(0.02 mi)
Amara 2004e	NRCS HRP Enterprises EQIP 2004 Site Identification Survey in Benton County, Washington	None	0.37 km (0.23 mi)
Amara 2004f	NRCS Harvey Jones Farm EQIP 2004 Site Identification Survey in Benton County, Washington	None	0.91 km (0.57 mi)
Amara 2005	NRCS Flintrock Properties LLC EQIP 2005 Site Identification Survey in Yakima County, Washington	None	0.53 km (0.36 mi)
Clark 2006	A Cultural Resources Survey for the Walla Walla Region 2006 Transmission Line Maintenance Project, Benton and Franklin Counties, Washington	None	0.58 km (0.36 mi)
Dickson 2006	An Archaeological Survey of the Proposed Steptoe Street Extension, Benton County, Washington	None	0.26 km (0.16 mi)
Boynton and Fagan 2006	Cultural Resources Survey for the Proposed Williams Northwest Pipeline Sunnyside Irrigation District Reroute Project, Yakima County, Washington	None	4.1 acres
Harder and Hannum 2007	Cultural Resource Survey for the Keene Road Cellular Tower	None	5.9 m^2 (240 ft^2)
Komen and Sharley 2007	Cultural Resources Survey for the Washington State Department of Transportation SR 241 Safety Improvement Project, Benton and Yakima Counties, Washington	None	0.39 km (0.24 mi)