Chapter 3 – Historical Conditions

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Historical Conditions

Introduction And Methodology

This chapter provides an overview of historical conditions for the Pringle, Glenn-Gibson, Claggett, and Mill Creek watersheds. The purpose of this chapter is to provide insights into how each watershed appeared from the time of the early inhabitants up to the present. With a better understanding of the watershed's natural history and cumulative land-use changes, this information can be used to help guide future restoration actions. Historical information was collected and written by members of the Pringle, Glenn-Gibson, and Mill Creek Watershed Councils and Friends of Mill Creek, using the guidelines outlined in the *Oregon Watershed Assessment Manual.*

Pringle Creek Watershed

History of Pringle Creek Watershed

By Wendy Kroger

Introduction

Long before the population of the City of Salem had grown to nearly 140,000 people, and before 40,000 vehicles crowded downtown's Front Street every day, and before a public debate raged about whether to build a fountain in Riverfront Park, citizens of our fair town could watch ice skaters as they swooped across the Willamette Slough and see ferries loading tons of high quality flour -- locally produced flour from wheat grown in the immediate vicinity -- from docks owned by Salem Flouring Mills at Front and Trade Streets (Becktel 2001).

A short walk south, at Bush's Pasture Park near the Bush Barn where thousands of art lovers now gather each year during the Salem Art Fair, is a grove of oak trees that probably are the progeny of another stand of oak trees -- in the exact same spot -- that were flourishing when Columbus discovered America (Chapman 1995).

And before there was a community hospital straddling Pringle Creek, or a major electronics industry pumped out gallons of ground water daily from beneath its building alongside Pringle Creek, thick riparian forests flanked the banks of the streams that emptied into the Willamette River. Back then, settlers coming up the Willamette would have seen mighty Oregon white oaks, big-leaf maples and scatterings of Douglas

fir dotting the savannas (Marion County Public Works 2000). In a June long gone, when the ship *Lausanne* -- the Mayflower of the Pacific -- came to Chemeketa Plains, sailors en route to our area would have seen upland prairies awash with waving perennial grasses and envisioned wheat fields (Rutledge 1957). They would have spotted plump salmonberry growing in the seeps and swales and along the wet slopes of ravines that cut swaths through the numerous forests. They might also have noted red huckleberry in shrub swamps and brush prairies along the way and, in the upland forest areas, thickets of thimbleberry. They certainly would have seen meadows of camas exactly as described by explorer Meriweather Lewis: "resembling a lake of fine clear water" (Lewis 2001).

Before there was a sea of parking lots, streets and roofs in downtown Salem, the spot now occupied by the intersection of State and Commercial Streets at one point of geologic history was under 243 feet of water and the land where Hilfiker Lane is now in the southeast part of town, all the way around to the grounds of West Salem's new high school, was lakefront property. The waters from the massive "Lake Missoula Floods" are thought to have crested about 400 feet above sea level here, and the last of those gigantic cataclysms -- of which there were perhaps 40 that broke loose from glacial dams in Northern Idaho -- generated walls of water 200 feet high which contained 800 times the energy of the 1980 eruption of Mt. St. Helens. Kalapuya native legends include a description of a "water beast" which once roamed the Willamette Valley floor (Jacobs 1945).

Natural History

F*loods*. Forty million years ago, all of Marion County was under water. In the next ten million years, volcanic activity set the Cascade Mountains into upward motion and Oregon climbed out of the water. The uplift of the South Salem Hills happened about the same time. Weather exposed and decomposed the topmost peaks of those hills, leaving them capped with bauxite, the most common aluminum ore. World War II shortages caused the nation's eyes to glance at those hills and interested parties to secure reserves. In the last million years the Ice Age came to North America, but glaciers did not cover the Willamette Valley. Instead, over time, gigantic glaciers covering much of the rest of the Northwest began to melt, their droplets becoming walls of water -- the Lake Missoula Floods -- which poured southward into the Valley, creating a huge, freshwater lake, called by some a "Willamette Sound." Icebergs in Central Washington broke loose and ended up floating on the new lake. Chunks of rock came with the icebergs and were left stranded when the ice melted. One ended up in front of Collins Hall at Willamette University. For many years after the disappearance of the Valley lake, seasonal floods surged from the Willamette River to the eastern and western borders of the Valley. As the water overflowed the banks of the river, its velocity was greatly reduced so that much of its load of sand and silt settled to the bottom near the river, with only the finest mud remaining to drift farther

out before settling. Thus the valley floor was built highest near the river in the form of broad natural levees. These natural levees along the river and its streams are only slightly higher than the surrounding flood plain. In a result that questions logic and sometimes causes confusion, upland plants are more likely to grow close to the streams on the drier levees, while wetland plants often grow farther away on the flood plain (Clark 1957; Guard 1995).

E*arly Life*. Active current anthropological research in Woodburn indicates humans lived in the Valley approximately 12,000 years B.P., based on human hairs recovered from undisturbed marshland clay deposits. DNA testing has not been completed, but early indications point toward a conclusion that the hairs belong to "a much older and unrelated population in North America than any that are currently known." Carbon - 14 tests on stone artifacts discovered at the same location add weight to the conclusion that humans were in the area as long as 12,700 years ago. They are the earliest dated artifacts yet to be found in the Willamette Valley (Hibbs pers. comm.).

The Curator of the Condon Museum of Fossils at the University of Oregon has identified numerous Pleistocene and post-Pleistocene fauna fragments from strata at the Woodburn site including ground sloth, mastodon, dire wolf, bear, possibly sabre-toothed cats, big-horn sheep, horses and the largest known Pleistocene bird, the *teratorn* with a 14-16 foot wingspan, and the first to be found north of the La Brea tar pits archeological site in Los Angeles. Twelve thousand years ago, horses, camels, mammoths, bison, deer, bear, panthers, tigers and lions roamed the Willamette Valley. Thousands of birds, including giant condors, hawks, eagles, geese and ducks nested in the area (Hibbs pers. comm.; Allen and Burns 1986).

L*ocation and Climate*. Salem sits in the north-central part of the Willamette River Valley basin and straddles the east and west banks of the Willamette River. At an elevation of approximately 150 feet above sea level, Salem rests in a natural basin formed by the westward Eola Hills rising between 900 and 1,000 feet, the Waldo Hills to the east between 500-600 feet, and to the south the volcanic South Salem Hills rising 600-700 feet. The Willamette River does something unique in Salem: it is the only place along its entire length where it does not flow across wide expanses of flat floodplain but instead pinches between two sets of bedrock hills: South Salem and Eola. Midway between the North Pole and the Equator, the Willamette Valley has a climate described as Northwestern Mediterranean: dry summers and wet winters, warm summer days with cool nights. Average rainfall in Salem is 39.16 inches a year, and according to local weather and climate records, the average date fall rains begin is October 18th. The only day on which no measurable precipitation has ever occurred is July 12 (City of Salem 2001a; Bell pers. comm.).

S*oils*. The last and largest floods formed the major geologic features of the Willamette Valley including the rich deposits of alluvial soils upon which Salem sits

today. The Salem area has soils ranging from "first rate clay loam to first rate sand or alluvial, stony and gravelly," according to an 1851 report of the Surveyor General. Much of downtown Salem north of Pringle Creek sits on well-drained Woodburn soil along creek corridors and on broad valley terraces. Lower Pringle Creek to its mouth is Clackamas gravelly loam (C-K). Salem's Civic Center is grounded on Columbia River Basalt, but the builders of Fire Station #1 at the corner of Liberty and Trade searched downward 30 feet before they found bedrock, and a pond was noted at Liberty and Trade in 1890. A potential "soil creep zone" parallels the bank line of the Willamette River and Slough approximately a half-block west of Commercial (City of Salem 2001a and 2001b; Marion Soil and Water Conservation District 1971; City of Salem Urban Renewal Agency 1972; Moore pers. comm.).

Three geological zones meet in the general area of City Hall, Pringle Plaza and the downtown fire station. One is basalt rock, but the other two are alluvial gravels and sediments. This mixed area can pose problems for the structural stability of large buildings. East of Church Street and above Pringle Creek's immediate riparian zone, geophysical characteristics are primarily that of Linn Gravel Formation (QLg): surface soils which are a mix of silty clay ranging in depth from one to ten feet underlain by 40 to 120 feet of medium to fine alluvial gravels which in turn overlie basalt rock or sedimentary deposits. Moving upstream and out toward the ancient volcanic South Hills is a great diversity of soils, mostly Courtney (Cu), Nekia (NeB slope 2-7%), Nekia (NeC slope 7-12%), Nekia (NeD slope 12-20%), McAlpin (MaA slope 0-3%) and Silverton (SuC slope 2-12%) (City of Salem Urban Renewal Agency 1972; Marion Soil and Water Conservation District 1971).

S*treams*. It is believed that in ancient times the North Santiam River emptied into the Willamette River by flowing from Stayton through what is now downtown Salem rather than flowing south of the city as it does today (City of Salem 2001c). Early pioneers may not have realized that when they cut through the gravel bar at Stayton and brought Santiam River water via the "Salem Ditch" to Mill Creek in 1855, their success was due to a former watercourse (Salzmann 1984). While Salem boosters celebrated the wall of muddy water that arrived in Salem in 1855, folks living in Jefferson and along the Santiam mourned this turn of events.

Maps depicting Salem through the last 150 years show a bewildering array of streams threading, tumbling, wending and meandering their way through South Salem, sometimes changing course from season to season. Kalapuyas and settlers alike sought out and made use of springs, seeps, rivulets, and changing stream courses. The settlers' redirecting of streams only added to the natural confusion.

For example, in about 1864, the first Waller Dam (named after Reverend Waller on whose land the dam was built) was constructed at 20th and State Streets to split Mill Creek. The southern split became the millrace, which ran along Ferry Street to about 14th, through Willamette University, after which it rode in a flume along Trade Street to Liberty where it was used to produce power for Salem Flouring Mills. Later, it was

buried under several industrial buildings, surfacing downstream at a City generating station at Liberty and Trade. In the fullness of time, actually in 1971, urban renewal arrived, resurrecting, refurbishing and redirecting South Mill Creek (or the millrace/flume) so that today it brings the enjoyment of a burbling waterway in Pringle Plaza to a public in need of diversion from urban speeds and sounds. A couple of blocks downstream it joins Pringle Creek at Mirror Pond near the City Center complex (Salzmann 1984). On the 1878 Illustrated Atlas Map, Pringle Creek is joined at Church Street by Shelton Ditch and a stream of mystery which split south from the Mill Race, beginning between 12th and 13th, Mill and Trade Streets, flowing north of and roughly parallel to Mill Street until it turned almost 90 degrees south along Church Street, crossing Bellevue. Two earlier writers note this stream. According to landscape architect Elizabeth Lord writing a description of Pringle Park, "...There was Pringle Creek meandering through Bush Pasture, the Shelton Ditch in natural state, very attractive trees on the bank and the third, Mill Creek, all three joining hands under the Church Street bridge..." (Lord 1983). Dan J. Fry, an early settler who grew up in Salem, notes in his story that "...a small stream ran along Church Street into Mill Creek (now called Pringle Creek) which was very clear and a good fishing stream..." (Fry 1998a).

There appears to be agreement about the general locations of Mill and Pringle Creeks. Discrepancies arise over their forks and tributaries. It got more complicated after settlers began damming the creeks for waterpower, creating millraces and flumes, digging ditches, splitting creeks, "straightening" channels, and finally filling in and paving over entire streams.

Some streams never had names; some were spoken of pejoratively because they were "muddy," or just plain in the way. The banks of many were used as trash dumps --- out of sight, out of mind -- a practice that continues today. What will future anthropologists think of us as they go through our middens? A Volkswagen has become part of the bank riprap, nose-down into Pringle Creek near Berry Street SE. In the year 2000, 10,740 pounds of trash were taken from Pringle Creek, and that's good news: In 1999, more than 12,000 pounds were pulled out of the creek.

Other streams just faded away. Where is Arbor Creek? Where is Railroad Creek? Did Shelton Ditch begin as a 1930s Great Depression work project to tame Mill Creek flood waters? Maps show another Shelton Ditch (or Creek) in the mid-1800s coming off Mill Creek east of Airport Road, curving "in natural state, very attractive trees on the bank," crossing a corner of the Post Office property on 25th, and traveling along Shelton and Mission Streets for several blocks (Chapman 1995). The Depot Addition Historic Landmark Nomination indicated that the ditch was built on an earlier alignment of Turner Road, which was abandoned in 1931.

According to a City of Salem Public Works memo regarding the Shelton Ditch/Winter Street Bridge Flood Mitigation Project, "Shelton Ditch was 'constructed' generally along the existing Shelton Creek alignment..." (Lambert 1998). Is South Mill Creek really Pringle Creek, or is it the old Shelton Ditch, or is it the old flume? To complicate matters further, Mill Creek overflows during flood conditions to both the East and Middle forks of Pringle Creek.

*M*ost people today cannot follow the course of Pringle Creek, its forks and tributaries, in and out of pipes and culverts and people's backyards from their various points of origin in the South Hills. Confusion about where these streams originate is not new. For example, while it now skirts Gilmore Field, Clark Creek used to meander diagonally across Judson's cow pasture and Lewis E. Judson remembers catching "big rainbow trout" in the stream more than 70 years ago. Where the bench rises near 12th Street, seeps still run (Smith pers. com.).

During the 1960s and early '70s, South Salem High students conducted many natural and environmental science studies on the hillside next to Clark Creek at Gilmore field. Other youth recall building forts on the hill next to seeps (Crawley pers. comm.). They were probably unaware that the Chemeketa Indians had been there before them. In other early reports, Clark Creek joins Pringle Creek near Hines Street at about the same place that a stream, now gone, traveled north through the Depot Addition area to join Shelton Ditch (Salzmann 1984). Before the mid-1970s, South Salem High School biology students observed frogs, small stream animals and dragonflies in the riparian area of the braided, meandering channel behind the school (Smith pers. comm.).

Today Clark Creek is ditched at right angles, travels in and out of pipes, and shares space with trash and blackberries in a straight, narrow, unshaded concrete sluice box between the ball fields of South High and neighbors' backyards. Its latest improvement is one provided in the summer of 2001: a 48" pipe carrying stormwater and street and parking lot runoff flows underground from several blocks west, runs under the school to Howard Street, coming to light a few feet above, and perpendicular to, where the concrete-lined channel of Clark Creek goes underground for good. An eternal optimist could find something good about Clark Creek spending the rest of its life underground in a pipe: because Clark Creek is out of the sun, its water temperatures are several degrees cooler (thus affording one of the few places cutthroat trout have been observed recently) when it meets Pringle Creek near where it flows between Deepwood and Bush's Pasture Park (Andrus 2001).

Earlier drainage patterns appear to have provided their share of runoff to Pringle Creek. Portions of Ferry and Trade were chronically under water most of the year. Dan Fry speaks of much of Ferry Street being built on stilts to avoid standing water in the street (Fry 1998a). Even today, chronic surface flooding and storm drainage surcharging occur at Mission and Liberty Streets. A proposed but as yet unfunded storm sewer project is planned in 2002 to address the situation there.

*G*ravity, seeps, springs, and seasonal rain and runoff feed the many forks, tributaries and diversions of Pringle Creek as it travels through much of southeast Salem on its way to the Willamette River, falling its last 30 feet over a weir dam under Commercial Street, then past Boise Cascade to the Willamette Slough at the south end

of Riverfront Park. The complex system drains 13.3 square miles, almost all of which is within the Urban Growth Boundary.

T*he Paths of Pringle Creek*. The West Fork begins with springs near Liberty and Boone Roads, flows through Cannery Park, dives in and out of culverts and under streets and a few homes, daylighting in people's backyards above and below the open areas of Judson Middle School, Carson Springs Natural Area, Woodmansee Park, and the Pringle Creek Nature Preserve. Short tributaries such as Alder Brook and Stagecoach Brook are now piped to join the West Fork on the west side of Commercial Street. But in 1910, Alder Brook, a small branch of Pringle Creek and fed by Maple Spring, was photographed meandering through Woodmansee Park (Duniway 1987a).

Meanwhile, Clark Creek begins near Idylwood just east of Liberty Road and flows diagonally across the Faye Wright Neighborhood under Browning, through Hidden Lakes, under Madrona and Commercial, buried under the Fred Meyer store, coming to light in Clark Creek Park, traversing back yards to where it skirts Gilmore Field, then on to South Salem High where it is reduced to a concrete sluice box at the eastern edge of the ball fields, then buried once again under backyards and the lower Lefelle parking lot until it surfaces for the last time to join Pringle Creek in Bush's Pasture Park.

Back upstream, the West Fork of Pringle Creek crosses under Commercial near the 12th Street intersection in a large reinforced concrete box culvert measuring five feet wide by five feet high by 230 feet long which Oregon Department of Transportation reports show was in the ground in 1968 and now assumed to prevent fish passage upstream (Downs pers. comm.). The West Fork daylights again and flows through another patchwork of open stream and closed pipes to Leslie Middle School and Fairview Training Center. After Fairview Training Center, it splits its flow with the West Fork diversion at the Middle Fork near Madrona Avenue; both ultimately incorporate the Middle Fork and carry it forward to where the East Fork meets the West Fork at 14th and Oxford.

The West Middle Fork continues on, capturing flows from the area around Pringle School and north along Reed Road, gathering in flows from Hillcrest and along Strong Road, continuing in mitigated meanders on both sides of Fairview Industrial Drive, eventually joins the Middle Fork near the southwest side of the Union Pacific Railroad tracks which follow the northern boundaries of Mitsubishi Silicon America (now SumcoUSA) and Yamasa. Having built in a wetland, SumcoUSA daily pumps gallons of cold, clear water from springs under its building into the West Middle Fork. The old Hillcrest Ditch, which drained agricultural fields prior to industrialization, was mitigated with a created meander between SumcoUSA and Yamasa. Planting projects continue in this area in an attempt to shade this part of the West Middle Fork.

The Middle and East Forks drain farm fields south and east of I-5, skirting or flowing out of wetlands around Fairview Industrial Park. Some 40+ acres of complicated wetland mitigation projects continue with varying success in this area. The Middle and East Forks share waters via a double culvert on the west side of I-5

under the Union Pacific Railroad trestle and roughly parallel one another for a time -- one on each side of the UP Railroad tracks -- flowing northwest through flat, flood-prone areas interspersed with rail road tracks and manufacturing plants. At the meander, they go their separate ways: the Middle Fork moving on to meet the West Fork and the East Fork flowing north by the airport, past Spinnaker a.k.a. Webb Lake, crossing McGilchrist and more heavily industrialized properties, the City shops, through Walling Pond to its meeting with the West Fork at 14th and Oxford by the Union Pacific Rail yards. Contrary to popular belief, Pringle Creek does not normally flow into or out of Spinnaker a.k.a. Webb Lake. It skirts it -- unless there is a flood.

Pringle Creek, all its forks now together, picks up Clark Creek at Bush's Pasture Park immediately south of Deepwood. From there, the main stem of Pringle Creek flows between Bush's Pasture Park and Deepwood, crossing under Mission, flowing between Salem Cardiology and Oregon School for the Blind on the south side of the stream and Salem Hospital and Pringle Park on the north. Pringle Creek flows under, and during flood conditions, into Salem Hospital. Shelton Ditch flows on the north side of Salem Hospital and Pringle Park while Pringle Creek edges the park on the south. They come together just west of the Church Street bridge, flowing ever northwest along and through Pringle Plaza, under Liberty Street to Mirror Pond where they are joined by the Millrace. From there, they flow under Commercial Street and Boise Cascade to the Willamette Slough.

Chemekatas and Chemawas

It is likely that in the winter of 1839, the winter before Jason Lee bargained with local Native Americans for a site on which to build his saw mill and grist mill, Chemeketa and Chemawa Indians came together as they always did at the place of meeting and formed their winter camp on Chemeketa prairie where Salem now stands. The Chemeketa and Chemawa were clans of the Kalapuya tribe. (Some researchers indicate that the Chemeketa and Chemawa were part of the Santiam Tribe which, in turn, was part of the Kalapuyan Indian Family). While the Chemeketas lived in the Salem area, the Chemawas lived about ten miles down river from Chemeketa prairie, near the Methodist Mission, and circulated from the Willamette River to the Cascade Mountains, going no further north than the Molalla River. The trail the Native Americans followed between Chemeketa and the mountains to the east became a road when traveled by white settlers. With very little change in location it is now known as State Street (Strozut undated; Gilsen 1998; Oregon Department of Transportation 1984; *Capital Journal* 1972; Clark 1957).

Native Americans made their seasonal encampments near springs. In the Salem area there were large springs near the present site of Boise Cascade downtown, in the area of the Yew Park subdivision between Hines/Mission and 12th/13th and along the creek banks between Bush School and the railroad station. Because of these springs, Indians made their winter encampments at these locations, generally called "Chemeketa," which, according to one pioneer, meant "our home." Ancient

sweathouses, used to cure sickness by the Kalapuya, were often near springs also (Marion County Historical Society (b); Salzmann 1984; Clark 1957; Strozut 1951; *Capital Journa*l 1972).

Existing today on the bench land south and southeast of the South Salem High School, are but the slightest traces of pits used by the Native Americans during at least part of their many centuries of dominance of this region. These pits, eleven in number, were evidently in use when Jason Lee and his party arrived in the Willamette Valley. The northern most of these pools (or pits) was located near what is now the southwest corner of Bennett Field where football is now played. The southernmost pit was increased in size to become the basement of a house on Summer St. SE in Salem. The westernmost was located near the center of the block surrounded by Rural, Electric, Church and Cottage Streets; the easternmost was somewhat east of the center of the block surrounded by Summer, Raynor, Electric and Hoyt Streets. All that remains of any trace of these pits at the present time is but the slightest trace of two of them. One trace is a slight settling of the west curb in Cottage Street a short distance south from Rural. The other trace is a place in the north curb of Electric Street a short distance east of Winter Street. "..The pits were kept full of water channeled in from springs higher on the hills. These springs almost completely disappeared when the forests were removed from them. Those remaining have long since been drained" (Judson 1971).

According to Lewis E. Judson, grandson of Lewis H. Judson who surveyed Salem in 1850, he used to play in an "Indian sweathole" located directly back of (old) Leslie School, on the south side of the school grounds. When Leslie School, now Howard Charter School, and the playground (Bennett Field) were constructed, all traces of the sweat hole were obliterated, even though Judson said he begged the construction superintendent to save it for posterity (Strozut 1951). Bennett Field was named for Captain Charles Bennett (1811-1855), Salem area entrepreneur, builder of posh Bennett House in 1850 and the steamship *Canemah* in 1851, reputedly a co-discoverer of the California gold fields and killed in the Yakima Indian wars (Marion County Historical Society (b)).

Judson also noted that at the time of the initial development of the South Salem High School grounds, "considerable trouble was experienced" in controlling the flow of water from a spring near what was then the corner of Winter and Oxford Streets (*Capital Journal* 1972). Now Clark Creek has been "improved" so that it flows around South Salem High in a concrete ditch. "Strange that the schools teach ancient Greek mythology and history of other nations, while at the same time destroying our own," Judson said (Strozut 1951).

Pringle Creek was the scene of "almost yearly" flooding, and before "relief measures were affected," many Indian relics were found in the 12th and Mission Streets area. Farther south along the creek, there was evidence of "much hunting, arrowheads of good quality, scrapers for treatment of animal skins, and both good and broken

mortars and pestles... There were at least fifty plants with edible roots in this area, but the most important were the camas and the wapato" (Tompkins 1964).

Members of a Chemeketa band usually included five to ten families and in the summer they stayed in a summerhouse. The remnants of one such house was found at 2600 Pringle Road SE, according to retired Willamette University sociology professor John A. Rademaker. This home was 80 feet long and accommodated four families. Family members slept on tule mats laid over gathered moss on a shelf built for sleeping around the top of a fire pit. The thatched roof had a long hole in it from 12 to 14 feet above the fire to let the smoke out. Winter homes were built using wedges and hammers made from obsidian to split boards from logs. After ridging and grooving the edges to interlock, the Indians used the planks for siding and sometimes for the roof (*Capital Journal* 1972).

Chief Quinaby, who was reported to have died both in 1878 and 1883 and is reportedly buried under the trees at the corner of Mission and University inside Bush School grounds, told historian Henry Brown that he distinctly remembered the first white man who settled in the Willamette Valley. It was Joseph Gervais, a member of the 1805 Lewis and Clark party who returned in 1809 and settled on French Prairie. Quinaby's mother was a Chemawa and his father was a Chemeketa. When the missionaries moved the Indian Mission Manual Labor School to Chemeketa prairie in 1840, they found Quinaby among the Indian residents. Quinaby's Salem area home is said to have been in the brush near Bush School, a spring, a stream and the Salem passenger depot (Brown 1878; Marion County Historical Society 1974).

Estimates of the number of Kalapuya in the Willamette Valley vary widely. One report states that, at their peak, as many as 80,000 Kalapuya are thought to have lived in the Willamette Valley. Lewis and Clark estimated a Native American population in the Willamette Valley of 9,000 in 1803. Outbreaks of smallpox prior to 1803, probably spread by trappers and other explorers, wiped out a third of the population, so the pre-1803 estimate would be approximately 13,500 (Marion County Historical Society (c); Boyd 1986).

According to State Archeologist Dr. Leland Gilsen, the Willamette Valley drainage basin consists of 12 sub-basins. Of these the Santiam basin is the largest and most complex, and it includes the Calapooia Creek system and the larger watersheds on the east side of the valley draining the Cascades. The correlation between language groupings and drainage basins strongly suggests that river sub-basins were the basic social, economic and political units of Kalapuya groups. Archeological evidence suggests that each drainage basin or watershed was an economic unit containing all of the resources needed for support of the groups living within it (Gilsen 1998).

The economic seasonal round based on gathering and hunting followed the movement of ripening plants up the valleys. Lower elevations are warmer than higher ones, so plants reach maturity at slightly different times of the year as spring and summer warm their way up the valleys. Gatherers are dependent on wild plants as their primary source of food. As valued plants mature and produce edible crops, the groups would move camps to exploit their seasonal availability.

For the Willamette Valley groups, the key plants were bulbs (camas), seeds (tarweed), berries, and nuts (acorns). These four plant foods supplied a seasonably abundant and predictable plant food base for the native economies. Three of the four plant groups benefited from a fire regime. Studies of fossilized pollen have determined that the oak-savanna wetland environment has dominated the Willamette for over 6,000 years (Hansen 1942).

About 3,500-3,000 years ago, the Kalapuya began to practice "pyroculture" -- systematically burning portions of the Willamette Valley. This reduced the climax forest into an open grassland/forest mosaic where fire-resistant oaks dominated and camas and tarweed moved into the grasslands. Burning removed competing plants and encouraged the re-growth of tarweed, camas and filberts. Fires "are generally lighted in Sept. for the purpose of drying the seeds of the [blank] (sunflower). Which is then gathered and forms a large portion of their food" (Wilkes 1845). Another reference indicates that "it was the custom of these Indians, late in the autumn, after the Tarweed (also known as wild wheat or *lamoro sappolil*) was fairly ripe, to burn off the whole country. The grass would burn away and leave the sappolil standing, with the pods well dried and bursting. Then the squaws both young and old, would go with their baskets and bats and gather in the grain" (Applegate 1914).

The wet forests along the streams and river resisted the burns, forming linear gallery forests. The edge habitat of either mosaic or grassland, oak forest and riverine forest, was a rich place for berries to grow and perfect habitat for deer and elk. Evidence indicates "ownership" of valued areas of production. Tarweed patches were so valued that they were "owned" by specific groups. Camas patches also appear to have been "owned" by groups, and multiple campsite locations clustered around valued camas patches. The same place was probably not be used year after year, but one of a group of places was used each year. Rotation of camps allowed nature to cleanse and compost previous camps (Gilsen 1998).

Camps were located to take advantage of camas patches and placed near gallery forests or oak forests for a ready supply of wood for camas roasting ovens. Camas roasting ovens used stones and leaves of maple and ash. The most readily available supply of stones in the lowlands were the rivers, and maple and ash are riparian species. Archeological studies along Mill Creek done as part of I-5 and Kuebler Road construction opened up "camas oven after camas oven." Archeological work along the NW Pipeline project down the east side of the valley indicates that sites were clustered on the tributary streams of both the Willamette and its major tributaries along the boundaries of the gallery forests. Testing the sites revealed a camas processing industry concentrated on these streams. Data suggests that exploitation of wood from the forests was leading to stripping out of the gallery forest trees for camas processing, leading to the increasing abandonment of streams because wood was no longer available (North Santiam Watershed Council 2001; Gilsen 1998).

Early observers noted that the Native American men were seldom over five and a half feet tall, and women scarcely above five feet. Both sexes were strong though "loosely built," wintering in puncheon cabins or skin-covered teepees. The Native

Americans were hunters who hunted big game such as deer, elk, bear, ducks, geese and swans, and they were gatherers, harvesting "an abundance of freshwater fish, acorns, seeds, roots and fruits including crabapples, wild cherries, elderberries, huckleberries, salal, several species of wild raspberries, 'luscious' blackberries and strawberries" (Strozut 1951).

What vision unfolded before the Methodist missionaries and settlers who came to the Willamette Valley? One vast oak forest, interspersed with groves of fir undisturbed by fire, which the Indians had found necessary to induce the deer to remain in the valley, dotted undulating hills. The fir groves show that for not less than 1500 years the civilization of the Native Americans had remained practically stationary. In that time, great trees had grown up and other great trees had fallen down. Debris up to three feet deep was found lying in the forests. Through the seasons, Native Americans had harvested acorns from the oaks, hazelnuts, seeds from tarweed, camas bulbs and berries. They had established methods of sustainable harvest and lived well in the Valley (Strozut 1951).

The U.S. exploring expeditions of the 1840s noted, "The Indians had communication with various tribes by runners or canoes, and they always knew when to go somewhere to trade with a number of other tribes" (Strozut 1951). Historian Henry Brown wrote in 1878 that it was the custom of these inland tribes,

> ... (so I was informed in an early day) to purchase all of the dried salmon that they consumed of the Indians who resided at the Willamette Falls, now Oregon City, paying for the same in camas, dried meats and pelts. It is well known to all settlers of the Willamette valley that but very few salmon succeed in surmounting the falls at Oregon City, therefore the Indians living at that place had a monopoly of that highly necessary species of food for the Indians, and at certain seasons a brisk trade was carried on among them (Brown 1878).

Indian mothers taught their babies to swim by taking them and walking out into the water, which was perhaps waist deep, and tossing them in the water. When the baby had kicked around a little and had started choking, the mother picked it up and repeated the swimming lesson. It was found that after about four times the baby could swim; by the time they could walk, the children could also swim (Strozut 1951).

The Native Americans often went naked: "Jason Lee required that whenever an Indian came to the Mission or to a white's home, he must be at least partially dressed because he usually wore only his 'birthday suit' in his own camp" (Strozut 1951).

The Native Americans' situation deteriorated rapidly. "Twenty two years after the arrival of Jason Lee in the Willamette Valley (1856) what was left of the Indians, after the white man's diseases had taken their toll, was removed by treaty from their ancient homes to some of the poorest land in the Valley. They had caught malaria, small pox

and measles from early French fur trappers and American/Europeans who began to visit the Valley. When they moved to the Grande Ronde Reservation in the 1850s, fewer than 1,000 made the journey" (Gilsen 1998). Worse yet, government officials were often purposely lax, and wrongly sold off the Indians' own property (Strozut 1951).

Settlers

Our geographic landmarks are called Lee, Leslie, Judson, Pringle, Quinaby, Bush, Hilfiker, Minto, and Hrubetz. They carry utilitarian names such as Mill, Trade, Ferry, Commercial, and visionary names such as Liberty, Fairview, Mission and Bellevue. They are also named Oak, Yew, Water, Berry, and honor the place called Chemeketa and the river called Walamet. What is behind those names? What ideals and strengths did the settlers bring to their new home?

According to family historian Roy V. Ohmart, Fabritus R. Smith stood in his doorway near Marion Square on Christmas Day, 1846 and watched the arrival of the Pringle family party who had left Missouri the previous April and been among the first immigrants to try the very difficult Southern Road of the Oregon Trail. As their story unfolded, Smith discovered that they had suffered incredible hardships and delays, losing nearly all their belongings and barely surviving (Steaves 1927; Ohmart 1960).

Octavius Pringle was 14 when he came across the Oregon Trail. The number of wagons that joined the family along the way totaled 68. Orus Brown, maternal uncle of Octavius Pringle, was appointed pilot because he had crossed the plains twice before. Pringle wrote, "It was on the 15th day of April, 1846, that a family of nine persons, consisting of father, mother, three sisters and four brothers, left Warren County, Missouri, equipped with two ox teams and provisioned for a six months' journey of over two thousand miles, across the almost unknown, savage wilderness of wild, savage beasts and men, of vast plains of sand and desert wastes and wild and rugged mountains to the then Territory of Oregon, upon the sunset shores of the Pacific Ocean" (Pringle 1847).

Orus Brown started out from Ft. Hall, leading his train down the old emigrant trail. His company arrived in Oregon City in September. But several families were persuaded to take the southern route, including Tabitha Moffett Brown, founder of Pacific University and mother of Orus Brown, and her daughter Pherne Brown Pringle and family. Sixty-six-year old, 96-pound Tabitha Brown wrote, "Our journey was pleasing and prosperous until we passed Fort Hall. Then we were within eight hundred miles of Oregon City, if we had kept on the old road down the Columbia River. But three or four trains of emigrants were decoyed off by a rascally fellow..." (Spooner 1929).

After many months of weary travel, their numbers, supplies and strength exhausted, the settlers who took the Southern Road arrived at the southern edge of the Oregon Territory, still 300 miles from any help and facing streams beginning to swell from cold winter rains. The storm that brought the rainy season to Oregon on October 21 is the same that trapped the Donner Party in the Sierra Nevada. Tabitha Moffatt Brown wrote, "I rode through (the Umpqua Mountains) in three days at the risk of my

life, on horseback, having lost my wagon and all that I had but the horse I was on. Our families were the first that started into the canyon, so we got through the mud and rocks much better than those that came afterward. Out of the hundreds of wagons, only one came through without breaking. The canyon was strewn with dead cattle, broken wagons, beds, clothing and everything but provisions, of which latter we were nearly all destitute.... Some people died without any warning from fatigue and starvation. Others ate the flesh of cattle that were lying dead by the wayside" (Spooner 1929).

Going through Cow Creek Canyon had required fording the icy snow-water-filled creek thirty-nine times. Many waded chest-deep in the water and Mrs. Pringle carried her most precious household goods on her head as she waded the creek. During the Cow Creek Canyon episode, according to Octavius, "The extremity had now come, with famine and starvation staring us in the face." The family sent Octavius on its only horse to find and return with provisions stashed over the next mountain range 125 miles away at a depot established by the Mission at Salem for the relief of immigrants. It took three days to reach the depot. Lashing upon the emaciated mare as much dried peas and wheat graham flour as he thought she could carry, he started back to his family, on a foggy, rainy day (Spooner 1929). After a sleepless night spent in a tree, he came upon an Indian wickiup. Knowing he'd been seen and fearing the worst, he went into the camp and discovered the people came from Jason Lee's mission at Salem. Seeing his condition, they "took care of my things and myself as though I had been a brother" (Pringle 1847). They sent him on his way the next morning with venison for his people. He had been gone for six days.

In another week, the family reached a large Indian camp (about where Eugene is) where most of their oxen died under cold rains and heavy snowfall. While waiting for the roads to harden enough to travel on, Octavius and his father, both accomplished shoemakers, made shoes for Indians in the area in trade for venison. The notation in the diary of Virgil Pringle, 1846 for November 11-13 reads: "Lay by to repair shoes and lay in a stock of meat; get 3 deer and a salmon from the Indians..." (Pringle 1846). Shortly thereafter, provisions again gave out and Virgil Pringle set off on horseback to find help. Many days later, he returned with Orus Brown who had come south to find them, bringing four pack horses and provisions for their relief.

Traveling along the west side of the Willamette, they crossed the Long Tom, Mary's, Luckiamute and Rickreall rivers without benefit of bridges or ferries, and, wrote Octavius Pringle:

> every small, insignificant branch, creek and swell was a swimming river, but, nevertheless, upon Christmas Day we landed at Salem, barefoot, weary and worn out.... When we reached the summit of the Polk county hills just west of Salem, we looked down upon Salem, prairies bordered with grand forests and settlers' cabins and a few buildings clustered around that old mission, called the Oregon Institute, now the Willamette University, and it looked as if a scrap of civilization had made a tremendous leap of three thousand miles and dropped down in this

> beautiful valley. To this hungry, footsore and weary boy it looked like paradise and the end of a long and weary pilgrimage (Pringle 1847).

Then it snowed for three weeks.

The next September, Fabritus R. Smith married Virgilia, the oldest of the Pringle girls. Shortly thereafter, they claimed, settled and began farming 626 acres in South Salem proved up as Donation Land Claim No. 47. Almost a square mile, the Fabritus R. Smith Donation Land Claim's north edge was at what is now McGilchrist and it stretched east from Commercial Street to 12th Street, a short distance west of the stage route to the South via Parrish Gap and Jefferson. Their first home was a log house at the foot of the hill near Gerleon Street. Three children born to them in this house all died of diphtheria.

When gold was discovered in California, many men from Salem, Fabritus R. Smith among them, joined the gold rush. Returning a few months later and a thousand dollars richer, Fabritus Smith went on to become one of the largest landowners and most prosperous farmers in Salem (Ohmart 1960).

In recalling his youth in the 1880s, Lewis E. Judson, grandson of one of Salem's founding fathers Lewis H. Judson, said that Salem was considered a farming town. Most of the farms averaged around 300-325 acres, the largest owned by Mr. Smith, who farmed around 400 acres of wheat, oats, with some sheep and cattle. Usually found on Salem's early farms were houses, barns, chicken coops, potato hills and a smoke house. Smith was a progressive farmer and stock breeder, interested in the latest machinery and methods. He partnered with John Minto to import purebred Merino sheep, Jersey cattle, and fine horses. He served his community as Vice President of the Board of Trustees for Willamette University and as an Oregon legislator in 1876 and 1878 (Strozut 1951; Ohmart 1960).

When the stage road was changed to South Commercial Street, also known as "The Road to Albany" and 99E, the Smiths built a new frame house in 1854 just east of the new road where Waldo Avenue now is. Here three more children were born, surviving to old age. The oldest, Valleda, married Roy V. Ohmart (Ohmart 1960).

In the 1850s, the pioneer era was in full swing. Population and agriculture increased, and a system of roads and ferries was developing. Outside of downtown Salem, there was still much open land and significant modifications had not yet been made on channels and riparian areas. Making their mark were herds of free-range cattle, some being remnants of the Methodist Mission herds, and swine which escaped and lived well in the wild. These roaming herds and wild pigs had to have impacted the meadows and waterways of the Pringle Creek watershed through grazing, trampling, and spreading introduced seed (North Santiam Watershed Council 2001).

Virgil K. Pringle married his wife Phernie Tabitha Brown Pringle a year after emigrating from Connecticut to Missouri. Twenty years later, they brought their family, skills and energy to Oregon. Virgil Pringle had farmed in Missouri, but mostly

he operated a prosperous boot and shoe shop. In his diary, Virgil Pringle wrote on November 25, 1846, after having led the way through the mountains into the Willamette Valley from the south: "Camped on the Willamette, handsomest valley I have ever beheld. All are charmed and think we will be repaid for all our suffering" (Ohmart 1956; Steaves 1927).

Lewis H. Judson concluded that "The choices of some persons arriving early seem strange to later inhabitants. Red rocky hills were often chosen when the best of silt loam was available, but each had his reason for choosing where he did" (Strozut 1951). Fear of malaria was often a guiding influence. Arriving after months on the trail over barren plains, the settlers saw the Willamette Valley as a paradise. Grass and wild lavender-blue flowered pea vines were interwoven to waist or even shoulder height. As one who arrived in the late spring of 1844 described it, "The scene was so beautiful that it seemed almost a sacrilege to ride my horse through it" (Judson 1971).

The Pringle family first took up land near Stayton, but then settled just south of Salem, on the creek that bears the family's name (Steaves 1929). Pringle Creek was described as four miles wide when nearly dry and flowing northeast (Andrus 2001). According to various records, Virgil K. Pringle claimed 633 acres on behalf of himself and his wife under provisions of the Sept. 27, 1850 Donation Land law which created the Office of Surveyor General of the Public Lands, provided for a comprehensive General Land Office (GLO) survey of, and made donations to settlers of, those public lands. Married settlers arriving in Oregon before 1850 were entitled to 640 acres, providing they settled and improved their property with a home, barns and farming (Duniway 1987b). Single men could claim 320 acres.

According to the Donation Land Claim Map (Marion County Assessor's Office undated) Virgil K. and Phernie Pringle's almost square mile of land took up portions of Sections 14 and 23, Township 8, Range 3 of the West Willamette Meridian. Immediately northeast was their son Clark's claim for 640 acres (Marion County Clerk's office undated). Clark Pringle joined the volunteers to put down the Indian uprising resulting in the 1847 massacre (Chapman 1995) at the Whitman mission, and afterward married one of the girls rescued from the Indians, Catherine Sager (Steaves 1927).

Pringle Elementary School was built in 1934 at 4985 Battle Creek Road SE, with the likelihood that two rooms of the structure were built as early as 1914 and subsequently relocated to the current site. The school was named for Clark Pringle, who established a Donation Land Claim in this area in 1873 (Oregon Department of Transportation 1984). Land at the southeastern corner of Virgil's land was claimed by Sam L. Clarke, Oregon Statesman editor from 1869-72. In his description of how Battle Creek got its name, Sam L. Clarke wrote, "South of Salem, a few miles, a creek pours through the beautiful hills, to enter Mill Creek, and there I located my donation in 1853" (Clarke 1905). Octavius Pringle filed a donation land claim for almost 303 acres on Minto Island and later traded it to Sam A. Clarke for his land in South Salem (Marion County Historical Society (f)). The claims of the immediate Pringle family totaled more than 2,250 acres, or approximately three and one-half square miles.

The Pringle lands were gently rolling hills, mostly white oak savanna and upland prairie covered with perennial grasses. Hills rose to the south and east. On higher ground stood open groves of Willamette Valley Ponderosa Pine, remnants of which are quickly disappearing with current development along South Commercial Street. There was an aspen grove near the John Minto Donation Land Claim northwest of the confluence of Waln and Battle Creeks, according to the General Land Office survey maps of 1850-51 (Marion County Public Works Department 2000). One fir tree was noted as being 40 inches in diameter and one white oak was 36 inches in diameter.

Pringle land stretched from a point near Fabry Road midway between Sunnyside Road and Commercial Street SE south to Neakanie, east across I-5 and Battle Creek Road, and north as far as Marietta Street and Reed Road. Much of the southwest corner of Sam Clark's/Octavius Pringle's land was covered by extensive wetlands just upstream from the confluence of Battle and Waln Creeks (Marion County Public Works Department 2000). According to *Oregon Geographic Names,* "Pringle Creek, Marion County... This stream arises in the hills of South Salem, and it flows through the southern part of town. Virgil K. Pringle, who arrived in Salem on December 25, 1846, took up a Donation Land Claim near the stream, which was accordingly named for him" (McArthur 1982).

While the Pringles came overland to Salem, other early settlers had come even earlier to the "Eden of this New World, the beautiful, and fertile Valley of the Willamett," (Judson 1957), traveling by sea and upriver from Oregon City along the Willamette River. Settlers came to the Willamette Valley in the mid-nineteenth century for many reasons: to minister to the Indians; to start new, productive lives; to settle the West with "Americans" to prevent the British from making good on any claims to the territory; to seek opportunity and wealth. Indeed, in an 1843 report on The Oregon Mission and concerned that Jesuit Priests might move into Oregon, David Leslie wrote: "...There is however one portion of this field which more *appropriately* belongs to *us* (the Methodist Mission*),* I speak of the Eden of this New World ...This valley at present embraces what is and is to be the site and center of a civilized population. There are at present about one hundred and sixty white men the most of whom have families. About two thirds of them are Canadians, --The remainder are mostly Americans, Some few English and Irish..." (Judson 1957).

What did the settlers see when they came up the Willamette River? Naturally curious, "...Pioneer children were no different from children everywhere. They first learned the peculiarities of their surroundings. They found raccoon, skunk, grouse, ruffed grouse, and native quail. As spring came on there were the wildflowers, spring beauties, buttercups, johnny-jump-ups, lamb tongues, cat ears, and white lady-slippers... When wild strawberries or blackberries appeared for the table, mother was pleased" (Judson 1971).

Grown-ups saw natural resources waiting to be cut, plowed or caught -- this was a place to build saw mills to take advantage of the area's water power and timber and grist mills to grind high quality flour from wheat which they would grow on the prairies. The town would become a center of commerce: places where wheat was ground into flour, oaks and Douglas fir were turned into lumber, window sashes and doors. Apples became cider, merino sheep provided top grade wool via the Mission Mills, an iron foundry, slaughterhouses, warehouses and mercantile and drug stores served an increasingly prosperous town (Judson 1971).

Central to the mission in Salem was the Indian Mission Manual Labor School. The school, which replaced an earlier one built at Mission Bend, was built on the current site of Willamette University in 1842. It was built apart from the remainder of the mission to try to separate the Indian children from the white community and the diseases they carried (Chapman 1995). "They (the missionaries) wanted to teach the Indians to settle down and eat what they produced instead of what they found" (Strozut 1951).

Ironically, "The settlers were essentially a restless lot, speculators and those looking always for better land. Lewis B. Judson took out his claim on the banks of the Willamette River and by 1878 it belonged to Albert Davidson. Judson had acquired another river front claim to the south... Similarly, John Minto did not stay long on his hilltop farm between Commercial and Pringle Road, but acquired the O.M. Pringle claim which included the north part of Minto Island" (Duniway 1987c).

The Oregon Institute was organized in 1842 to educate the children of the missionaries. Land on Wallace Prairie near the current Oregon State School for the Deaf was purchased for the school. In 1844, the Indian school property was sold to the Oregon Institute. Founders of the Oregon Institute feared claim jumpers would seek to take over the land near the Institute because the school was not incorporated and thus could not hold land in its own name. Four surrounding landowners, W.H. Willson on the north, H.B. Brewer on the east, David Leslie on the south and L.H. Judson on the west all enlarged their land claims to encompass the school grounds and surrounding property. In 1846, Willson became the agent of the Institute and the Institute land was transferred to him and his wife. The area surrounding the Institute was then divided into small lots and sold with the intent of endowing the school with the proceeds. Mrs. Willson refused to relinquish her right to the lands north of State Street; thus, sales from those properties benefitted her, not the Institute (Judson 1957).

Arriving as part of the 1837 "First Reinforcement" dispatched by the Methodist Board of Missions after urgent pleas by Jason Lee were Methodist ministers David Leslie, a student of French who decided at age 39 to become a missionary in Oregon upon becoming friends with Jason Lee, and Lewis H. Judson, a school teacher, wheelwright and cabinet maker who was self-taught in medicine (Strozut 1951). Among the tools Judson brought with him was a magnetic compass -- priceless to the man who would be Salem's first surveyor (Marion County Historical Society 1991). Judson's sister Adelia, who later married David Leslie, came to Salem at the same time.

Judson was the Willamette Mission's cabinetmaker and in 1840 became superintendent of construction for the new grist and saw mills at the place called Mission Mills for the first two years of its existence (Strozut 1951).

Three years later, the "Great Reinforcement" of 52 people came on the *Lausanne* , arriving in June, 1840. The machinery, flour mills, lumber mills, and a stock of goods for sale brought on the Lausanne were destined to play a very important role in the economic progress of the Willamette Valley. (Rutledge 1957). After leading missions of exploration in 1840 and returning to the old mission station that fall, Lee and Leslie agreed that the home station should be "removed to a spot near the Indian village of Chemeketa... There, on somewhat higher ground and slightly back from the river, water power could be developed" (Judson 1957).

In his section on street names in Salem, Judson wrote: "The Street named Chemeketa perpetuated the Indians' name for their village, which was located on the edge of a forested area, extending from the present Liberty Street on the east and Mill Creek and the Willamette River on the north and west and narrowing to a point at Pringle Creek on the south" (Judson 1971).

Judson family stories relate traditions about the name of the town:

> In the many informal gatherings of the women aboard the *Lausanne* in 1839-40, there was much time for talk of the homes which they had left and the speculation as to the place where their new homes would be established. According to what they were told by Jason Lee, the new site was on the bank of a creek at the edge of a pleasant prairie and near a wooded area. They were missionaries, and like the Israelites of old, travelling to an unknown land. Among the unsolved mysteries which lay ahead was a name for the place to which they would ask their people to direct letters. They wished a Biblical name and favored the name Salem as being the last part of the word Jerusalem (Judson 1971).

An unfortunate but immediate need was met with the establishment of Pioneer Cemetery in 1841 on land donated primarily by David Leslie. Life was hard. In 1841, Leslie's wife died leaving him with five daughters. By 1843, he had lost four daughters and a son-in-law. Remarrying in 1844, he built the fourth house in Salem on his land claim lying between what is now Mission and McGilchrist streets and between the east edge of Bush Pasture Park and the Willamette Slough. He cleared the ground and planted a large orchard extending from south of what is now Miller Street to Mission Street and from Commercial Street to his yard fence. He died in 1869 (Judson 1957).

The third house in Salem was built by Lewis Judson in the middle of the block surrounded by Commercial, Court, Liberty, and Chemeketa. Later it was moved up to face Court Street. Among its later inhabitants were the Pacific Christian Advocate and the famous (or infamous) North Star Saloon of "Sandy" Burns (Strozut 1951).

Members of the Mission in the presence of Lewis Judson told of a Fourth of July celebration "held on the south bank of Pringle Creek west of South Commercial Street, near a freely flowing spring which was located north of Bellevue Street and about one hundred feet west of Commercial Street. This probably took place between 1841-1843. One of the women in the group was very susceptible to poison oak and spoke of existence of some nearby. A man who had no fear of the shrub cut it down and burned it. The smoke carried to a number of people in the party and they were severely poisoned" (Judson 1971).

Lt. Neil M. Howison, U.S.N., visited Oregon in 1846 and wrote back to his folks about a sixth spot by the name of Salem, of which, he relates, "too little exists to be worthy of any attempt at description" (Strozut undated).

In the winter of 1847, a year after the Pringles came to town, 400 Chemeketa and Chemawa Indians formed their usual winter camp in Salem. They suffered a great deal that winter. Measles broke out among them which was, according to Henry Brown's report in December 1878, "very fatal from their mode of doctoring the malady. It was simple sweat houses and a plunge in the ice cold water of the creek. There was at least one half of the encampment that died" (Brown 1878).

Where the Chemeketa had previously gathered for generations in winter camps between Mill and Pringle Creeks along the Willamette River, a town sprang up. Where the Chemeketa had for generations laid their dead to rest, commerce took over.

While Mr. Brown reports that the burying ground was "in the flat above the Capitol Lumbering Company Mill," (Brown 1878), other sources indicate "when an Indian died, the body was usually taken to an island in the Willamette River and placed in a part of a canoe, or most usually, it was left on top of the ground. The island always flooded during the winter, and all the bodies floated away. Small children were sometimes placed in boxes which were hung up only in oak trees, never in any other kind of tree" (Strozut 1951). The July 1890 Sanborn Map #1 shows an island at the mouth of Pringle Creek (Marion County Historical Society (g)).

In a 1951 interview Lewis E. Judson said the Indian cemetery was on a small island only a short distance from the east shore of the Willamette River. The island was filled in and used by Capitol Lumbering Company Mill, built in 1866 (Strozut 1951) and located on Front Street between Ferry and Trade Streets. (Westenhouse 1998). By 1878, Capitol Lumbering Company employed 20 men, was powered by two steam engines, and produced 25,000' of lumber a day (Marion County Historical Society (d)). The Capitol Lumber sawmill grew to cut 1,500,000 board feet annually (Maxwell 1957).

Salem Flouring Mills, located at Front to Commercial and Trade Streets, was reported in 1878 to be the largest flouring mill in the state, run by two water wheels with five sets of burrs grinding 500 barrels of flour daily, and employing 25 men (Maxwell 1957). "Steamboats run up to the mill and are unloaded by an elevator. The company annually loads several ships for foreign ports" (Marion County Historical Society (d)). According to Daniel J. Fry, as a boy "... it was fun to watch the wheat going

in there (Salem Flouring Mills) and the flour coming out of the bin, and the boat was landing right there to load the flour aboard to go somewhere.... And the flood conditions were always of interest. One time there was enough floodwater in town for one of the boats to tie up right at the corner of Ferry and High Streets. At that time the street was kind of a swamp arrangement and was covered with water whenever the water was high" (Fry 1998b).

By 1909, the C.K. Spaulding Logging Company was located on the old Capital Lumbering Company site, where it used the "Spaulding Slough" just upstream from the mouth of Pringle Creek for its operations. It continued in operation until 1941. In 1942 the Oregon Pulp and Paper Lumber Division took over the site. The lumber and paper mill enterprises expanded south and encompassed the old Salem Flouring Mills property, as Boise Cascade does today (Strozut 1951). In the mid-twenties, the paper company's warehouse was built over Pringle Creek (Smotherman pers. comm.). In 1890, where Riverfront Park is today, sat piles of lumber, long lines of sawdust piles extending along the river bank, planing and lath mill buildings, warehouses, Salem Wharf and a roadway serving the Oregon Railway and Navigation dock at the foot of Trade Street.

Soon after the first of three stations to occupy the Salem depot site opened in 1870, economics dictated service to Salem's growing industrial area near the Willamette River. O&C Railroad built a spur through the Willamette University campus to Trade Street which served twelve active industries before ending at its Front Street freight house. In 1912, the spur was extended north along Front Street and it became part of Salem's electrified streetcar system (Austin and Dill 1987). "Electric Avenue was a real estate promoter's dream in which was envisioned an electric car line on that east-west street, connecting a line on Commercial Street with one on Twelfth Street and thus forming a loop road" (Judson 1971).

After World War II the number of industries along Trade and Front Streets declined and in 1980 urban renewal resulted in the relocation of one set of tracks along Front Street, with a second set, and those on Trade Street, being lifted altogether (Austin and Dill 1987). The "Acid Ball"-- now called Eco-Earth and soon to be available for viewing by visitors to River Front Park-- was used in the pulp and paper industry. A footbridge and a covered bridge crossed both the Salem Flouring Mills' flume and Pringle Creek (Ladd and Bush Quarterly 1913).

In late 1848, "every able-bodied man went to the California gold fields. After March 1851, there was a good deal of building in Salem, for gold dust in large quantities had been coming from the California mines" (Strozut undated). Rivalry arose between what had been the main business center prior to 1848 at the confluence of Broadway and North Liberty Streets near the Mission Mills, and what became an area of booming expansion near Commercial, Front and Ferry Streets at the mouth of Pringle Creek and along the Willamette (Marion County Historical Society (e)).

Men returning with their gold dust started steamboating on the Willamette River and the main landings were at the foot of Ferry Street. The steamship "Hoosier" arrived from Oregon City carrying mail and passengers. Many of the goods found their way to Salem's first retail stores, but some was ferried west across the Willamette River. When the Hoosier left Salem, it was carrying passengers and outbound freight including agricultural goods, much of which was bound for the California gold fields. An increasing number of homes settled in among the oaks and firs in the central downtown district (Strozut undated). The Fourth of July was celebrated in 1851 with an oration by E.M. Barnum and a great barbecue in the vacant lot east of Commercial between Bellevue and Oak Streets (Brown 1957).

General Joseph Lane, upon assuming the duties of the first Territorial Governor in 1849, proclaimed Oregon's capital to be Oregon City. The legislature disagreed, and, in 1850, passed an act locating the seat of government in Salem. In 1851, the *Oregon Statesman* moved from Oregon City to Salem. Its editor was Asahel Bush. The *Statesman*'s office was in a two-story house belonging to J.W. Nesmith on the corner of Front and Trade Streets, located near where the Salem Flouring Mill was afterward constructed (Brown 1957).

South Salem was first settled in the 1850s, although it was not platted until 1878. The area between Mission Street and Fairmount Hill, Luther Street, the Willamette Slough and Commercial had several interesting nicknames including Sleepy Hollow, Coon Hollow and Starvation Gulch. Logs from Fairmount Hill and others rafted up the Slough went to a sawmill at the foot of Owens Street. As was often the case, a flour mill was also built nearby. By 1865, the mill had been sold and moved to the foot of Ferry Street. The area languished for the next 25 years, until the streetcar line brought suburban living to South Salem out Commercial to Pioneer Cemetery (Duniway 1987c).

In 1855, the area between Commercial Street and the Willamette River was still a "thicket," and creek bottoms afforded a favorite camping place for visiting Indians. In a 1979 study of Salem's riverfront, writers noted that "several existing pedestrian paths have been pioneered through this vegetation to the shore. Despite natural attractions, such as the water and vegetation, use of the river and its bank will be difficult because the riverbank is very steep. The bank continues to recede sharply once it reaches the water" (City of Salem Urban Renewal Agency 1984b). When the legislature assembled in 1855, there were "few accommodations" for its members. It met in the residence of J.W. Nesmith. On December 30, 1855, a suspicious fire destroyed the brand new capitol building. (Strozut undated).

In 1859, Lewis H. Judson's son, Robert, purchased five acres from David Leslie for $75. From this acreage, located near the Willamette River according to Lewis E. Judson , he logged over 2,500 cords of wood. "By 1861 when he was 19 years old, he had five horses, a pig and a cabin full of oats in addition to his acreage" (Strozut 1951). About December 1, 1861, "...the most disastrous flood that every occurred in Oregon was experienced, " (Brown 1957) and in its aftermath Robert lost four of his horses due to

starvation and cold. "The pig was saved, and one horse lived also, but was soon stolen and probably went to work in the mines in southern Oregon. The oats were lost with the cabin which was washed away in the flood" (Strozut 1951). Later he rebuilt. His son, Lewis E. Judson, was born in the house located at 1000 Judson St. SE. He hand-dug his well and got water at 51 feet (Strozut 1951).

In the 1861 flood, the Willamette River swept away every mill, warehouse and dwelling house, from the mouth of the creek on Mill Street (Pringle Creek), north and west of Front. The river covered all of Salem from where the Commercial Street bridge now stands to the corner of Willamette University, and the water was sufficiently deep near the courthouse to swim a horse. There was a broad stream of water extending from west of where Reed's Opera House Mall is today to the corner of G. W. Gray's brick building, which was at the northwest corner of State and High Streets. The flood destroyed a great quantity of property in Salem.

B.M. Durelle's steam sawmill, which had just been rebuilt after burning down in the summer of 1859, washed away; Brown and Rector lost a cider manufactory, and a warehouse containing a vast amount of wheat, apples and other produce was swept away. "Hundreds of horses, cattle and other stock were drowned throughout the Valley, and many persons lost their lives, and entire farms were swept clear of every vestige of improvement" (Brown 1957). Mr. J.G. Wright sketched the first South Commercial Street Bridge in 1853. It was ruined by the flood of 1861 and replaced by a covered bridge, which was removed in 1892 because it collected filth and to build a structure the full width of the street (Ladd and Bush Quarterly 1913).

Prior to the 1861 flood, the Willamette River flowed between Isaac "Whiskey" Brown Island and John Minto's Island, so that Minto Island was on the east bank and Brown Island was on the west bank of the river. After the flood subsided, it was discovered that the river had changed its course to the present location (Waitz 1976).

Lewis E. Judson wrote in 1971, "there were places in Salem where people who respected their reputation did not go" (Strozut 1951). The principal one of these was the block of Ferry Street between Liberty and High Streets which was left to public women. This was known as 'Peppermint Flat' where the houses and walks were built on stilts over a lagoon-like former channel of the Willamette River. A trace of that old channel still exists in the depression centering at the intersection of Ferry and High Streets and the alley through the block southwest of that intersection. That ancient channel ran from a broad front on Pringle Creek between Commercial and High Streets, north on Liberty to Ferry, then east to the center of the block on State Street south of the courthouse. From there on north to Mill Creek was low ground. During the high water of 1861, a steamboat followed this channel and tied up in State Street opposite the courthouse (Judson 1971).

The home into which Daniel J. Fry moved in 1905, called Bright View, had been built in 1859 at 606 High Street -- high enough to have escaped the 1861 flood. He wrote that the floodwaters of Pringle Creek came clear up to the railing on the Church Street bridge. "One winter when we had a siege of extremely cold weather, father was able to walk across the Willamette River just about where the current bridge stands. Skating

was done most of the time, however, on the slough... Ferry Street was a no-no street. It was really all built up on stilts. Water stood in that part of town nearly all summer long. The people who lived on Ferry Street were the gay ladies of that day... There was a very narrow, high walk along Ferry Street over this sunken part of the City.… 'China Town,' when we moved here, was on Liberty, High and Ferry Streets and I don't know how many dozens or hundreds of Chinese who lived in this town" (Fry 1998).

Lewis Judson recalled:

> To the east of the water department office and shops there was a large pond where the water was at the level of the race leading to the paper mill. It was about thirty inches deep and was well gravelled in the bottom. It was arranged so teams and wagons could be driven into it and easily turned around without backing up. There horses were taken for water and wagons to soak their wheels during dry weather and to wash the mud off during the winter. After the water company installed their first pump near the creek just east of Commercial Street, they used power generated by a water wheel at a falls about a block farther east. The power was transmitted by means of an endless rope which was supported by wheels on posts about fifteen or more feet above the water. One pair of posts was in the edge of the pond and some of the horses would become so frightened at the whirling of the wheels that they would not drink and often those in the wagons were in danger of being dumped into the water (Judson 1971).

In 1865, the murder of pioneer Daniel Delaney at his farm south of the Pringles' farms toward Turner shook the entire area. He was commonly rumored to have a fortune stashed at his farm, and two opportunists decided to relieve him of it. During the course of the robbery, they killed him and ransacked the house -- but a witness reported what he saw. Subsequently, the murderers were convicted and hanged at a "place of public execution"-- reported to be a scaffold set up among a clump of oak trees near the bridge over the creek on South Church Street -- at Pringle Park. "A crowd of nearly 1,000 watched this enforcement of the law as they gathered in the area now called Pringle Park" (Judd 1958). A number of school children brought their lunches to the event. Several were reported to have lost their lunches as the event moved to its conclusion. A later description of Pringle Park indicated plans for other, more pleasant gatherings: "Pringle Park will remain a passive center of activity. A more relaxed environment is intended for the Park, with opportunities for strolling, reading, sprawling, and picnicking" (City of Salem Urban Renewal Agency undated).

Ben Maxwell, a reporter, noted, "...By 1870 Salem had a water plant, a gas works, and during the evening of Sept. 28, 1870, the first train bearing mail and passengers chuffed from Portland to the State Fair." But, he asked, what was Salem like in 1869, the "final

year of frontier village life?" He concluded that Salem was "...small, somewhat lacking in gentility, unsanitary by modern standards, self-satisfied and dull. There were those here distinguished for their holier-than-thou piety. Another element whooped it up in the town's numerous saloons, were occasionally seen around Maggie Gardner's place and engaged in fisticuffs, rowdy conduct and undignified displays on the streets on Saturday afternoon. So much for generalities and extremes. An intermediate group was decent, dignified, wore whiskers, plug hats and chewed tobacco..." (Maxwell 1957).

According to Maxwell, in 1869, Salem's downtown streets were unpaved, dimly lighted, and some were so low that water standing in them became ponds for skating in exceptionally cold weather. In 1872, the Salem *Weekly Mercury* pointed out that the $1200 spent annually to illuminate Salem's streets was a waste of money since even in broad daylight no one could discover a single crosswalk in the business section that was not submerged in mud. Further, the *Mercury* went on to say there was scarcely a street or block in the business section that did not have its foul cesspool or pile of filthy rubbish emitting a disgusting stench and disseminating disease in the locality. The city charter of Jan. 1857, did provide for removal of standing water and unwholesome and offensive substances, but the provision "had not been enforced with determination" (Maxwell 1957).

A swale ran from the vicinity of State and Liberty streets southwesterly behind structures of the 1870's still standing in the 300 block of State Street. Charles Bagley, recalling times in the 1860s, remembered that a depression extended diagonally across Liberty Street at Court and that there was a bridge across the swale where A.N. Moores (who built Capitol Lumbering Company) had "a high old time" ice skating during the Civil War (Maxwell 1957). Anecdotal information indicates that over about 70 years, Salem began filling the old Willamette River channel area from State Street south to Pringle Creek (Moore pers. comm.).

The streets had been graveled for their full width with the exception of the sidewalks in the downtown area, but farther out they were dirt or, at best, graveled in the center:

> There were hitching rails on posts or rings in the sidewalks where horses could be tied. Horses tied any length of time would become restless and paw out holes where their front feet stood. These holes would become filled with water and the streets seas of mud in the wintertime. In the summer the dust was kept down by sprinkling. In winter mud would cover the streets to a depth of two or three inches. To remove this mud the city would maintain a crew of men, often city prisoners, who would shovel it into dump carts drawn by a single horse and dump it into some low spot, of which there were many in early day Salem. Keeping crosswalks reasonably free of excessive mud was a constant chore... (Maxwell 1957).

Thomas Cross, "an Englishman, a livestock-raiser, meat dealer and packer, whose imported purebred Berkshire swine were probably the first purebred swine brought to the Oregon country and whose business was conducted east of Bush's Pasture Park gave his name to Cross Street. Howard is named for another livestock man and meat dealer" (Judson 1971).

On May 19, 1869, an ordinance was considered by the city council that would prohibit any person from keeping on private or public property any animal bones, putrid and unwholesome meat, feet or hides. The ordinance was aimed at a "fly-blown abattoir conducted by a prominent Salem meat packer southeast of Salem "(Maxwell 1957) in the same area where, more than 100 years earlier, Native Americans gathered at lively seasonal encampments on this oak savanna near Pringle Creek.

When surveyors later platted Yew Park in the area of Hines and Mission between 12th and 13th, they remarked about the ground in that area being strewn with bleached bones of slaughtered animals. A newspaper ad from May 24, 1889 enthused: "Yew Park Addition (Hines/Mission, 12th/13th) is the only addition to the city having smooth and solid streets with no mud in winter and no dust in summer. Yew Park is the finest residence location with its grassy slopes, beautifully shaded with oak, ash, maple, fir and yew, skirted by the crystal waters of Arbor Creek with springs of cold pure water" (Salzmann 1984).

Even though Yew Park had been rehabilitated, a newspaper investigator reported in 1890 having seen backyards of butcher shops elsewhere in the city with trickling streams of water carrying blood and poultry offal. This organic matter was deposited in the soil, and ultimately washed to Salem's streams. In the 1870s, a slaughterhouse ran full bore south of Mission near 22nd. From the 1890s to 1910, Edwards Tanning and Taxidermist was open for business on 12th Street south of Cross Street (Maxwell 1961; Marion County Historical Society (g)).

On June 1, 1869, the City Council instructed the street commissioner to place four coal-fired street lamps, including one at the covered bridge spanning South Mill Creek (Pringle Creek) on Commercial Street. When publisher S.A. Clarke left the office of the *Unionist* late at night on August 11, 1869, he noticed that some of the street lamps were smoking horribly and that others were extinguished by flies that had entered the chimneys and put out the lantern. Editor Clarke stumbled his darkened way homeward over loosened wooden sidewalks with projecting nail heads (Maxwell 1957).

In 1869, no known Salem home had running water or inside plumbing. By 1870, an adequate supply of city water was becoming an issue. The townspeople generally used shallow wells or river water. One resident, Mr. Lee Tong, delivered river water to homes and businesses in old oil cans. "A candle lighted adventure from the house late on a stormy winter night to an outdoor privy must have been an experience to remember... And all too often this outdoor convenience and the shallow household well beneath the back porch were not far apart" (Maxwell 1957). It would be 1878 before

Asahel Bush moved into his new home, which would include his personal indoor bathroom complete with hot running water piped through the wall from the kitchen wood stove to the copper-lined bathtub which had been constructed in his bathroom. The water came from the cistern built on the roof. The only water used in the house came from rainwater stored in the cistern (Narcum-Perez 2001).

On Jan. 14, 1869, the City Council assembled to consider the spread of smallpox within the city, and in March of 1869 a newspaper report stated that Salem had 1,000 cases of measles though as yet there had been no fatalities. William Graves became Salem's first known undertaker in 1868, but Salem would have no hospital until 1896. In 1896, with life expectancy at 46 years, the first hospital opened its doors in a donated building at 12th and Ferry. Its primary reason for existence: growing recognition among physicians that surgery requires a clean environment. According to a history of Salem Hospital, "That was impossible to provide when surgeons operated on kitchen tables in people's homes with family members watching" (McMillan 1996).

Ben Maxwell reported that:

> Salem in 1870 had 13 saloons, three drug stores that sold liquor and two breweries, one of which advertised to deliver anywhere in town for forty cents a gallon. At John 'Patch-eye' Byrne's Crystal red-eye cost a dime and a black eye came for free. Sandy Burn's North Star featured the only set of hurdy-gurdy girls every brought to Salem. Capitol Saloon advertised 'pig's feet by the thousand and every other luxury in excellent style.' Only E.M. 'Plum' Plamondon's Belvedere appears to have any reputation for gentility. 'Madam' Maggie Gardner conducted a well-ordered bagnio with four or five inmates on the east side of Liberty Street between Court and State. Nor did an Indian camp at the mouth of South Mill Creek (Pringle Creek) add a scintilla of moral tone to Salem's reputation (Maxwell 1957).

The *Oregon Statesman* for Oct. 29, 1869 called the camp "a nuisance where low grade whites consorted with the aborigines and where whiskey seemed to be free. Almost every night the camp was the scene of a drunken riot and such disgraceful orgies as truly made the night hideous. Here, presumably, Joe Hutchins, chief of all Santiams, fell asleep by his campfire on a January night in 1870 and awoke to find his shoes burned off and his feet nearly burned up..." (Maxwell 1957).

Maxwell continues, "During 1869, while one element in Salem staggered, another swaggered. Times were prosperous and a boom was in the making. Speculations in downtown real estate brought quick and easy wealth for more than one investor. Salem's property values had increased from $699,261 in 1863 to $1,250,000 in 1869" (Maxwell 1957). Coincidentally, perhaps, during this same period, several spectacular and totally destructive fires occurred, beginning when John "Patch-Eye" Byrne's saloon burned to the ground along with most of the rest of the city block, at about 3 a.m. on May 10, 1863, "undoubtedly the work of an incendiary" (Brown 1957).

The last big fire of many big fires in Salem during the "flimsy 1860s" blazed a conclusion to 1869 with the destruction of the Capitol Hotel. During the 1860s, many frame buildings housing livery stables, saloons, hotels, stores, homes and several downtown city blocks went up in flames. A number of the losses were saloons and most of those were victims of arson, the perpetrators rarely found since Wiley Chapman appears to have been the town's only police officer except for extra watchmen hired during the State Fair. The intense rivalries between Salem's three volunteer fire companies, Capitol Engine No. 1, Tiger Engine No. 2 and The Alert Hook and Ladder Company, don't appear to have helped the situation. Before 1869, 32 brick stores had been built. In 1869, 13 more brick stores were under construction, among them the Patton block in the 300 block of State, the Ladd and Bush bank building and Reed's Opera House (Maxwell 1957).

As Salem grew, it used drainage courses and creeks and their riparian edges as sewers and trash dumps. For a time the natural system was up to it. The Chemeketas had used areas seasonally, returning to sites only every two years or so to give the natural processes time to heal the land and the creeks. When the first settlers came and scattered to their new farms, the natural system could still accommodate what it was given. And, seasonally, the creeks and the Willamette River could be counted on to flood, thus washing away detritus no longer desired by settlers. But more people kept adding more waste, until the natural system was unable to cleanse and wash away the garbage placed in it. Nowhere and at no time did the limits of ridding the community of its overwhelming waste become more apparent than when Pringle and Mill Creeks and their natural drainage systems were overcome by man-made waste in the late 1800s.

Salem in the 1880s and 1890s was abundant in hovels abandoned by white tenants, many in an area called "Chinatown" which included settlements of "evil repute," bawdy houses, opium dens and bars on the east side of Liberty between Court and State, along Court Street, along Ferry Street and near Commercial and Trade Streets. Intermingling at Chinatown's edges were purveyors of various goods and services aimed at denizens of the dark and frequenters of demimonde establishments (Maxwell 1961).

Ben Maxwell reported that Salem's Chinese laundries in the 1880s were housed in at least two buildings with distinguished pioneer heritage. William Rector's building, erected on Commercial Street in 1851 as a town hall, housed the territorial legislature in 1856. In 1885, it housed Hop Sing and Hop Sing's wash house. A spectacular fire gutted the building, then owned by Oregon's state treasurer, who later became Salem's postmaster. The building had no insurance.

In January 1887, fire flamed from the old Bennett House, built in 1850 and well-known in its day as a leading hostelry. Falling upon hard times after the Civil War, it deteriorated to its final dismal state as a Chinese laundry and "rookery." At the time of the fire, the building belonged to a wealthy Salem businessman -- who had no

insurance on the building. Complaints about these rookeries, and what went on in them, was frequent and constant. Less was said about their prominent and well-to-do owners (Maxwell 1961).

In 1890, the *Capital Journal* published an account of Chinatown headlined, "Death from Dirt, Horrible Filth in Chinese Quarters." The block southwest of the post office, then located near the southwest corner of Commercial and Ferry streets, was the first place visited by the reporter.

> Taking his life in one hand and holding his nose with the other the reporter punched a stick into the plastic scum that formed a kind of a quaking mass under the Chinese wash house in this vicinity. There was a mass of greenish, decomposing slime, the extracted filth from thousands of pieces of dirty underclothes, that gave forth a powerful kind of chemical stench. When stirred it sent up millions of little bubbles of mephitic gases, near which no animal life was possible. A constant stream of grayish-blue water ran out of the rear of the building and leaped into a large cesspool covered with rotted plank and full to the brim of the nauseous mass. ... Wash houses off the alley, on State Street between Liberty and High, were found to be unspeakably foul. The ground on which these structures stood was positively reeking with filth. The trickling streams of wash house slime, the decomposing refuse from Chinese kitchens and the stinking remains of fish and poultry combined to render these places nuisances of a deadly character (Maxwell 1961).

On Ferry Street the investigator found a lake of soap suds and a lethal accumulation of disease-breeding filth over 100 feet in diameter. A sewer drain emptied into this cesspool of filth. All drained toward Pringle Creek or the Willamette River (Maxwell 1961).

The *Capitol Journal* followed its investigation by an interview with a number of Salem physicians. Generally they favored a clean-up and sanitation for the city. A few doctors expressed no interest at all and some were entirely indifferent since they were reported to be booking substantial sums monthly off the existing conditions of disease-spreading filth.

In 1893, in yet another report of conditions in Salem's Chinatown entitled "Chinese Fragrance," the *Capitol Journal* reporter ventured into the alley at the rear of the Chinese "dens" on the east side of Liberty, between State and Court. In this alley, near the fire bell tower and also near a house of prostitution called The Bell Tower, the reporter saw a number and variety of putrid carcasses. At one of the dens along Liberty, slop pails were emptied out a side window into a standing pool of filth.

These exposes, and the concurrent public disgust, eventually seem to have worked: In 1903, a *Statesman* story bid farewell to the old Chinatown which had finally been condemned to destruction by City Council approval of a report by a committee on health and police. The report indicated that the property at Commercial and Ferry

especially was "simply filthy with space between walls filled with decomposed matter of all sorts. Water closets emptied into cesspools and water from sinks flowed into the cesspools or over open ground" (Maxwell 1961). This "run-off" made its way to Salem's creeks and eventually to the Willamette River.

While Salem was expanding and prospering, outlying farm towns were thriving as well. The Liberty Store was the center of the Liberty community for many years. It stood across from the United Growers cannery on Liberty Road when the Liberty post office opened in January 1895. Today, Liberty School, first built in 1908, remains a healthy neighborhood elementary school. It has its own parking lot bioswale, the first in Salem, which is overseen by its Liberty School Environment Club (City of Salem 2001d; Duniway 1987d).

After falling under the early settlers' plow for wheat, much of the upland prairie and oak savanna toward the South Salem Hills became fruit farms near the beginning of the 20th century, having names such as Smith and Ewald. William McGilchrist, a native of Scotland, became a prune grower in the Rosedale section of the Red Hills in 1892. Berry St. was named by Jacob Morlock because of the planting of Lawton blackberries, a luscious berry of good flavor, on the Judson property at the south end of the street. Cunningham Lane was named for a family who owned a large farm at the west end of that street and were early prune and berry growers. Hrubetz Road bears the name of Frank Hrubetz who farmed for many years north and east of the Liberty area.

Early pioneers in the prune industry planted orchards in 1890 in the hills south of Salem in Liberty, Sunnyside and Rosedale as well as west of Skyline Road and south of Fairview. As many as seventy prune driers could be found within a radius of 2 1/2 miles between Liberty and Rees Hill Roads from 1905-1930. The driers were large barn-like structures with furnaces, frequently built at the Rosebraugh Foundry in Salem, to dry the fruit by heat. Many of the driers were by springs; otherwise, a 30-50' deep well had to be dug for water, and a windmill, gas engine or hand power used to pump it (City of Salem 2001d).

According to one historian:

> Out Sunnyside Road near Twelfth Street Junction was the Hilfiker Orchards and drier... Ross Miles used the old drier after the Hilfikers were gone for a secondhand store for years. That is now gone and stores occupy that area. The next drier was south on Liberty Road and known as the Nines Drier, off east in his orchard. Then came the Hrubetz orchards and drier just north and east of Liberty. Next was the Zosel drier just north of Liberty School... Down Boone were the Dasch and Johnston driers. Out on Skyline Road were several driers. Walnuts were interplanted when the prune market went bad, and eventually all their prune trees were pulled out, to have a solid walnut orchard... said to be

> the largest walnut orchard in the world. In time, these trees began to die because of the lack of depth of the soil. So out went the walnut trees to grow grass seed and grain (Cammack 1983).

Today there is a bioswale and parking lot north of Liberty School. Springs and seeps in the area have caused many structural problems at the school.

According to a 1921 *Oregon Statesman* article, "...The Salem District which included southern Oregon and Clark County, Washington, should have had 80,000,000 pounds of dried prunes last year: they were on the trees, but unprecedented rains during picking time cut the marketable crop in two. Salem's local market district equaled 22,833 acres set to prunes, over one-half the prune acreage in Oregon. This acreage should yield five tons of dried fruit per acre. Marion County Fruit Inspector S.H. Van Trump said, 'There is no better prune district on Earth"' (Cammack 1983).

But not even prunes lasted forever. The *Capitol Journal* reported on Jan. 25, 1921 that

> The big market for dried prunes was in Europe, especially France, England and Germany from 1890-1920. Then prune growing in the Balkans began and was closer to the dried prune market. They could sell them cheaper, so the prune industry here began to fade from 1921-1939 when almost all the driers in this area were shut down. Canning Italian prunes as "purple plums" began in 1930 and grew to use a lot of Salem's crop. In the Depression, canned prunes were the cheapest fruit one could buy. Gradually times got better and people liked pears and peaches instead, so as of 1982 not many prunes were canned. With the collapse of the dried and canning prune market, the hundreds of acres of prunes in the Willamette Valley were bulldozed out to grow other crops. The Seeger Brothers and Cammack dozers cleared most of the orchards in the Liberty, Sunnyside and Rosedale areas (Cammack 1983).

Before subdivisions began sprouting houses in South Salem in the late 1960s and 1970s, many of the hills surrounding Salem were covered with extensive cherry orchards. Salem-grown cherries were noted for their quality, size, and flavor; indeed, Salem became known as the "Cherry City" in 1907. In 1928, the Salem trading district had more than 2500 acres bearing cherries. Salem was known for two black cherry varieties, Bing, and Black Republican, as well as Lamberts and Royal Annes, which were the most profitable cherries grown in the Northwest. During the first part of the 20th century, Salem's canning industry grew from one plant to more than ten, and canned cherries were an important part of the Salem pack. Improved rail refrigeration resulted in increased shipments of fresh cherries out of the Valley in the 1920s. Brined cherries, using a new method to make maraschino cherries developed at Oregon State University, came on line in 1927. Canned cherry production increased in World War II,

and remained high into the 1960s, when consumers no longer wanted canned cherries (City of Salem 2001e).

But the farms were, of course, a later use of the land, as settlers were sometimes reminded:

> In the spring of 1924, John Berg, while ploughing on the Bruce Cunningham farm near the Skyline orchards six miles south of Salem discovered a hundred elongated stones standing in an irregular circle 35' in diameter on the brow of a gentle rise facing the east. These were the only stones of the kind in the locality, according to Donegan Wiggins, an amateur archeologist residing in Salem. Just the upper ends of the rocks were visible and their peculiar shape was not suspected until they were dragged from their beds with tractor and chain. . Because the rocks were an encumbrance in the tilling of the soil they were exhumed and heaped into a pile nearby (Horner 1986).

According to Horner's unpublished notes, "These stone monoliths are composed of sedimentary material (similar to sandstone) which formed naturally into cylinders. Prehistoric inhabitants, during an unknown time period, chiseled the cylinders and placed them into a crude ring. The purpose of this circle of vertical stones is still a mystery. Speculations have included seasonal rituals perhaps corresponding to solar or lunar positions, and fertility rites based on a phallic resemblance of some stones. Since the site was destroyed before accurate documentation -- systematic excavation with field notes and photographs -- the meaning of these artifacts will probably remain questionable" (Horner 1986).

According to Connie Schultz, a cultural protection specialist with the Confederated Tribes of the Grand Ronde, these monoliths are neither mysterious nor unknown. Rather, the place they were displayed was a very sacred prayer area to the Native peoples of the Valley (Schultz pers. comm.).

Based on available information, it is possible to determine the approximate location of the field where the monoliths were found. However, historical preservationists request that specific sites not be divulged.

Seven of the artifacts are known to remain in existence at this time. They are currently housed at the Horner Collection at Oregon State University. Negotiations are underway to determine whether the monoliths will be displayed at all, or whether they will be turned over to the Confederated Tribes of the Grand Ronde. One possibility is that the Horner Collection will be transferred to the Benton County Museum upon completion of a building to house the collection, according to the Benton County Collections Specialist (Sutliff 2001).

According to notes at the Museum, Inventory #98584-1 was acquired by the Museum in 1985, donor unknown. The monolith was noted as having been found on

the Carl Denzel farm on Cunningham Lane near Skyline Road. While there were notes in the Museum regarding the circumstances surrounding its possession of Museum Inventory #98584-1, there is no information about how the Museum obtained the other six stones. The Museum noted the piece as Kalapuyan (Horner 1986).

Roads to market, often dirt, meant mud or heavy dust in season. Then came rock crushers. The *Oregon Statesman* reported in 1902 that the new road from Liberty to Salem was the "first road in the county constructed on scientific principles" using crushed rock from the Ewald property on the southeast corner of Madrona. The tracks for the streetcar line were laid to bring crushed rock to Salem to pave its streets. At Madrona, the quarry created in the process became Hidden Lakes off Liberty Road (Duniway 1987f and 1987g).

In 1907, Salem Heights School District was created from the Liberty School District and Salem Heights school was built in 1908. Salem Heights Community Hall followed across Madrona in 1911. Fred Thompson, a prime mover in the creation of the Salem Heights School District, owned 20 acres east of Liberty Road and five acres to the west, next to his father's home. His father's home remains standing today as Thompson's Brew Pub (Duniway 1987g).

Also in 1907, the state purchased 672 acres of land for an institution for "feeble-minded, idiotic and epileptic persons." Fairview Training Center opened its doors in 1908. In 1962, resident population exceeded 2,700. In the early 1960s, Fairview had 80 acres of orchards, 30 acres of truck gardens, and poultry, pork, beef and dairy operations. Most of these operations ran parallel to or immediately upslope from Pringle Creek. At one time, a small lake near the main entrance offered residents and staff the opportunity to swim and row boats (Oregon Department of Human Resources 2000).

The Modern Era

The mid-1930s brought sweeping changes to the landscape of the Willamette Valley. The Flood Control Act of 1936 authorized dollars and projects in the Willamette Basin for "bank protection works and clearing flood channels to prevent the loss of land by erosion and reduce flood heights." Most of the funds were spent on hydraulic control of regional rivers.

During the same decade, the Works Progress Administration (WPA) and the Army Corps of Engineers began the State of Oregon Willamette Valley Project. Major goals included (1) flood control through bank revetment and construction of seven reservoirs in the tributaries of the Willamette, (2) navigation by maintaining channel depths through dredging, (3) irrigation, soil conservation and erosion abatement for agriculture and (4) social and recreational programs to establish parks and encourage "healthy outdoor life."

Most people supported the dams and flood control projects, but early warning flags were raised by the Izaak Walton League and the Fish Commission of Oregon. The League was concerned over the low priority that recreation and fishing were being given compared to flood control and they also issued an early call for control of pollution caused by municipalities. The Fish Commission wrote an early report entitled "Fish and Wildlife Problems Arising from the Willamette Valley Project." The report's opinion on the effect of the dams and flood control projects on fisheries was: "All competent fisheries authorities on the Pacific Coast are thoroughly agreed and have never wavered from the considered opinion that any and all multiple-purpose dams blocking major salmon runs have an ultimate and definite deleterious effect on them" (Oregon State Planning Office 1936).

Taking care of business, getting through two World Wars and surviving a major Depression and the downturn after World War II consumed most of Salem's efforts in the first sixty years of the twentieth century. Staying alive, keeping afloat, and remaining competitive took the front burner. Any worry about clean industry or finite natural resources or pollution of waterways was fleeting. Internally oriented, Salem proudly informed outsiders at both the old bus depot and along 99E that Salem was 99.9 percent white, native-born (*Statesman-Journal* 2001).

In the 1950s, Salem took stock and decided some things needed to be changed.

Salem improved and extended facilities such as the sewage treatment system, natural gas connections and water system upgrades. Completion of the Detroit Dam and other dams on the Willamette River and its tributaries reduced chances of flooding and encouraged development in low-lying areas (City of Salem 2001f). In 1961, Salem won a coveted "All-American City" award.

Salem voters annexed 2,827.06 acres in South Salem on June 29, 1964. The City's previous southern edge had jogged from Hoyt Street and Fairview Avenue on the east of Commercial Street across to King Street and Salem Heights Avenue on the west of Commercial Street. The new city limits extended south of Boone Road. The City Council had decided to promote a "metropolitan day of reckoning" by placing on the ballot an election of annexation within the entire South Salem sewer district plus amending the City Charter to allow the City Council to levy additional taxes to pay for the district and the annexation (City of Salem Public Works Department 1964a and 1964b). With the advent of a centralized and common sewer system, Salem began growing houses in the midst of orchards and fields. A resident remembers when she was a child galloping her horse along a dirt road, later Madrona Street. Neighbors crossed a stream (Clark Creek) and went to the dairy farm which became 93,000 square foot Fred Meyer South in 1968 (Baynes pers. comm.).

In 1967, Salem recognized it had substantial problems with urban decay in its downtown core. The City obtained a federal grant to fund Salem's Urban Renewal Agency and produce a General Neighborhood Plan for an area covering approximately 680 acres. By 1972 a 110-member Citizens' Advisory Committee produced the Central Salem Development Program (CSDP). Within the CSDP, the Pringle Creek area was defined as being Central Salem's most blighted area: "...Over 58 per cent of the buildings in a 76.8 acre delimited Pringle Creek renewal area warrant clearance due to structural substandardness and blighting influences, while incidents of incompatible land uses, obsolete building types, inadequate public services, and degradation of natural waterways continue to intensify" (City of Salem Urban Renewal Agency 1972). That was after excluding the Boise Cascade's paper division, chip storage pile and container division from consideration as well as setting aside for later consideration all areas south of Pringle and Shelton Creeks, east of Church Street and north of Trade Street.

The Pringle Creek Urban Renewal Project became the first designated renewal area under the CSDP. It was a 21.1-acre five-block area in which the plan noted that over 75% of the buildings were substandard, and the current mixture of industrial, residential, commercial, and wholesale uses "extremely inharmonious"(City of Salem Urban Renewal Agency 1972). Objectives of the plan included protecting vistas, natural areas, natural vegetation and elements of historical significance. The Historical Structure Subcommittee reviewed all the buildings noted as having historical interest within the Pringle Creek project area and agreed that every single one was expendable (City of Salem Urban Renewal Agency 1972).

The major change proposed in existing land use in the Pringle Creek renewal area was the elimination of most manufacturing and wholesale uses. However, there was a caveat: "Industrial and warehousing development should not be located on major waterways UNLESS water in volume is absolutely essential to the industrial activity and there is every assurance that pollution of resources will not occur." (City of Salem Urban Renewal Agency undated). Plan objectives included using the Willamette riverfront and creekways to their greatest potential as parks and open areas, and developing greenbelts of open space along Pringle Creek, Shelton Ditch, and the Millrace in order to utilize the natural amenities these waterways afford, and facilitate pleasurable and safe pedestrian and bicycle movement." (City of Salem Urban Renewal Agency undated). Obviously these amenities were in short supply in 1972.

As part of the area's redevelopment, several sewer lines were abandoned, rerouted or replaced and the study noted that several were severely deteriorated. A storm drainage study proposed building a flood wall and/or earthfill dikes on the north banks of Shelton and Pringle Creeks to protect new development from flooding.

Also in the late 1960s, voters approved a bond measure to acquire a four-block area and construct a centrally located library, civic center and fire station. Within that four-block area were several single family homes and a Masonic Temple which had been converted from an old cold storage warehouse. The new Salem Civic Center was

completed and open for business in 1972 (Waitz 1976; Moore pers. comm.). The new fire station was built on pilings and fill in an area which, historically, had often had standing water. When new fire station personnel were assigned to work at the building, "old timers" assigned them to go find the basement. They would spend hours looking for access with no success. The building has no basement (Henlin pers. comm.).

Four additional studies in 1979 and the 1980s presented options for Salem's Riverfront and Greenway, noting that most of the riverfront and its surrounding uses in their current condition were "unattractive." A 1981 study remarked on the continued presence of the Boise Cascade container plant at the riverfront, stating that the plant represented a considerable investment on the part of Boise Cascade and that equipment currently used had an anticipated life in excess of 25 years (City of Salem Urban Renewal Agency 1981). Comments about Boise Cascade's location abound: in 1983, a neighborhood association proposed connecting Front Street to South River Road through Boise Cascade with a convention center over the top. At a 2001 Willamette University forum, the presence of Boise Cascade on Salem's waterfront was likened to having a gorilla in the living room (Rice pers. comm.).

While Salem was looking to clean up its downtown, residents in close-in South Salem lived pretty much as they had for several decades. They raised their families, still had summer gardens and put up with seasonal flooding during the other months. One current resident, born in 1958, has early boyhood memories of playing in Clark Creek from the stretch along Gilmore field, as it ran through all of the yards along the east side of Davidson, and on toward Pringle Creek in Bush's Pasture Park. His grandparents had a wooden driveway/bridge to cross from the street, over the creek, and up to their house. It was a compelling adventure to take an underground trek leading from where the then open-air Clark Creek fed into a tunnel leading underneath the south end of Bush's Pasture Park, reemerging at its confluence with Pringle Creek. He and his younger brother used rag and stick torches soaked in lighter fluid - every mother's nightmare - to light their way. He remembers that it was "extremely creepy, icky, and scary" (Crawley pers. comm.).

He reported that they would only make the trip in the downstream direction from Davidson to the park. When they attempted to make the trip in reverse, there were too many branching pipelines feeding into the underground passage. Some of the braver neighborhood boys would explore upstream into the pipe labyrinth, but they, either blessed with fertile imaginations or steeped in the lore of Tom Sawyer, were afraid that they might make a wrong choice going upstream and never be heard from again. "Culvert crawling" and "inner-pipe travel" appear to have been common in Salem. Some of the kids would push popsicle sticks up around the edges of the manhole covers in the streets so that when people walked or drove by they would see a little circle of popsicle sticks sticking out of the manhole covers with the unspoken message "I was here" (Crawley pers. comm.).

Other stories tell of boys crawling through underground passageways carrying the West Fork of Pringle Creek beneath Arlene Avenue at the north edge of Cannery Park to where it reemerges three blocks later at Coloma. Now the routes are used primarily

by raccoons and other nocturnal travelers. In the later 1970s, Pringle Creek was placed into its current underground culvert instead of running along Arlene. The culvert travels under people's houses and storm water is reported to have broken loose into homes and garages during larger-than-usual seasonal storms (Rollings pers. comm.).

One Salem resident doesn't remember the exact date that the creek was entombed along Davidson, but he remembers that he was "still a young kid." After the city ran the creek through culverts and backfilled the ditch, his grampa was extremely upset to lose access to his irrigation source for the garden. Grampa would send the boys down into the new tunnel from the entrance at Howard Street. Their mission was to crawl through the culverts until they were under the drain in his driveway, and then they would carefully position a foot pump (with rocks to secure it) so that Grampa could draw water from the creek to water his vegetable patch. The high water flows every winter would knock the foot pump loose, requiring that the boys (or rarely Grampa) make their way again from Howard Street to the driveway drain to reposition the pump each spring for another growing season (Crawley pers. comm.). It is understandable that neighbors in the area like their gardens and fight seasonal high water: a large swath of hydric soil associated with Clark Creek runs all through the area.

A South Salem High School science teacher who taught students there between 1968 and 1972 recalls taking students on field trips to where Clark Creek meandered between Gilmore Field and its entry into the double 36-inch culverts at Howard and Davidson Streets (Smith pers. comm.). According to the City of Salem Public Works Department, meandering Clark Creek was placed into an "engineered concrete lined channel" as a "flow conveyance improvement" somewhere between June, 1975 and February, 1977. That same project also "improved" Clark Creek three blocks upstream to Hoyt Street immediately north of Gilmore Field (Downs pers. comm.).

Another resident has lived on Wilbur Street next to Pringle Creek for 30 years. Her house was built in 1954-55 and the site previously was an empty lot. She recalled her basement flooding twice in the last 30 years. She also recalled that the water in the stream next to her house on Wilbur Street used to be "crystal clear," that watercress used to grow on it and that "big" rainbow trout (this information is anecdotal; the fish may also have been steelhead), whiting and crawdads lived in it. She remembered three to four rainbows at a time, all pan-sized. Other wildlife included falcons, opossums, blue herons, hawks, owls, raccoons, muskrats, and wood ducks. Also noted were nutria and rats. Trees included cottonwoods and oaks as well as pussywillows and wildflowers. She also noted that several trees had fallen.

In her comments on how the stream and its habitat have changed, she said the water quality has declined, there are fewer fish, she has seen bags of garbage and bubbles in the stream, there are "spikes" of high water in the spring, and it has not been this dry in 47 years. She suggested that tighter controls be placed on what goes into the creek. Her example was a nearby car repair business that sprays water off the parking lot and work areas into a storm drain (Rice pers. comm.).

With a history of severe flooding along area streams, (1861, 1881, 1890 and 1964) city officials believed it to be "apparent" that a complete review of storm drainage problems in the Pringle Creek renewal project area would be required with "due consideration given" to the potential floods in Pringle Creek and Shelton Ditch where the water reached 147.7 to 148.25 feet in 1964. Residents began to notice the increase in potential loss of life and cost of infrastructure replacement as more people moved in and built up areas along the streams. However, they also believed that any problem could be solved with sufficiently good engineering.

For example, in 1916 Mennonites purchased the old Capitol Hotel at 665 Winter Street to open Deaconess Hospital, which is where Salem Hospital stands today. By 1984, the community had concluded it needed a new $2.1 million dollar, 200-bed hospital. Salem could have expanded the Salem General Hospital facility, which stood on a knoll on Center Street (or Asylum Street, as it was called in 1899). Instead, the community's resources went to the Deaconess Hospital site where, on the morning of December 23, 1964 -- after the Willamette River crested at 30' -- water from the Willamette, Pringle Creek and Shelton Ditch flooded the basement to a depth of seven feet, knocking out heating, power, and communication systems. The National Guard was called out to evacuate 121 patients, including a woman in labor and an infant on a respirator (City of Salem Urban Renewal Agency 1972).

Later, Salem Hospital invested in dikes and high-powered pumps, and in 1986 the ground level of Winter Street and the hospital itself was raised 4.5 feet. Site expansion has continued, including multi-level parking garages, additional wings and stand-alone buildings. In the late 1980s surface parking lots expanded, shoving fill material over the edge into Pringle Creek where chunks of concrete and asphalt remain today, nestled in with various storm drains which carry untreated parking lot runoff directly to Pringle Creek (McMillan 1996).

In the spring of 2000, three large trees along Pringle Creek crashed down onto parked cars in the Salem Hospital parking lot. Nineteen large trees subsequently were determined to need either removal, pruning or rehabilitation. When the Pringle Creek Watershed Council and the City of Salem Natural Resources staff inventoried the site, they found problems common to urban streams which had, until recently, been considered annoyances rather than amenities.

The stream was deeply incised, bank slumping was apparent, landscaping debris and parking lot sweepings had been piled or blown down the bank. Norway rats are primary beneficiaries of landscaping debris piles along stream banks. Near the Mission Street bridge, Pringle Creek spreads wide and shallow in full sun. Later it is pinched between buildings and parking lots with heavy foot traffic along the top of the bank creating additional bank instability. While some native trees and shrubs still exist along Pringle Creek in this reach, many parts of both banks are overrun with non-native Himalayan blackberries, ivy and nightshade. Reed canarygrass perches well above normal water levels, an indication of flashy (or sudden) high flows.

*M*uch of the urban area around Pringle Creek has been developed with little regard either to the stream's needs to function as a healthy waterway or to the community's drainage needs. According to the 2000 Stormwater Master Plan, by far the biggest part of Salem's stormwater system is a closed system of storm drains (456 miles) as opposed to 27.6 miles of streams within the City limits. The "stormwater system" in the Pringle Creek watershed is similar. Much of Pringle Creek is in closed pipes underground.

In the course of inventorying stream sites along Pringle Creek, the watershed council has found generally that setbacks are inadequate; impervious streets and parking lots drain to streams with little attention to water quality; many of the streams have been dammed, straightened, ditched or piped; riparian edges have been paved; slopes tend to be vertical and thus erode as water rises and falls in the streams; extensive areas receive insufficient shade; streams are "flashier," with more extreme, and faster, highs and lows; springs have disappeared; riparian vegetation is either stressed or totally inappropriate for the sites; mid-level and multi-story shrubs critical for sheltering and feeding song birds are being mowed, whacked, and sprayed with Round-Up; city "ditch-cleaning" crews are mowing down herbaceous green plants such as cattails, sedges and rushes in small streams and wet areas because of concerns about "conveyance" and fire hazard (though green wetland plants are not known for catching on fire); diverse life forms including insects, frogs and turtles expected to be present in healthy riparian zones are nonexistent in much of Pringle Creek's watershed. None disappeared overnight. Residents have consistently noted that favorite birds, deer, foxes, pheasants or fish just slowly diminished, finally and quietly disappearing. People stand for a moment, thinking, and then say, "one spring they just didn't come back." But then they disparagingly identify other current denizens: too many raccoons, dogs and neighbors' cats (City of Salem 2000).

Neighbors reminisce about their homes built near Nina and Arlene in 1971. Cock pheasants crowed from the homes' ridgelines (Rollings pers. comm.). They disappeared after homes were built along the extension of Arlene and along Clarence Court, sometime in the mid-1970s. A longtime resident on Idylwood near Judson Middle School and Woodmansee Park estimates the last time he saw a fish (cutthroat trout) under the bridge in Pringle Creek behind his home was 18 to 20 years ago (1981-1983); his daughter caught a cutthroat under the bridge about 30 years ago. He said the best time to see cutthroat was in March and April, although he recalls seeing them into June. He believed they traveled downstream (Zwicker pers. comm.).

In 1963-65, he used to go into where Woodmansee Park is now and fish, catching cutthroat. He recalled seeing one salmon "splashing around, near dead" in Pringle Creek behind his home on Idylwood, he believes in the early 1970s. A day or so later, he recalled that he and fellow workers heard "some noise about 2 o'clock in the morning" near where they were working in the vicinity of McGilchrist and the railroad tracks. He said they shined their lights into the creek and saw "about half a dozen" salmon splashing around. He believes it was in the fall because the weather was good. He thought the fish were part of a hatchery stocking program. He also recalled many

China pheasants and "hundreds of quail" which diminished after Judson School was built and finally disappeared around 1975-78. He said they used to see lots of opossums and few raccoons; now it's the other way around (Zwicker pers. comm.).

The remaining natural areas in the Pringle Creek watershed are mostly publicly owned: city parks and city property, school sites and state lands such as the Oregon School for the Blind. They offer the most promise for stream protection, enhancement and restoration. Many individual streamside landowners have provided various levels of protection to the creek that runs over, through or alongside their property. But most have not provided for long-term protection through conservation easements or deed restrictions.

Arguably one of the best reaches in Pringle Creek is the publicly owned area between Deepwood and Bush's Pasture Park just south of Mission Street. Even though this is a stream in sync with its floodplain, covered with a canopy of mature native trees and healthy multi-leveled understory, it has problems. It was in Bush's Pasture Park that monitors detected traces of the herbicide dieldrin. Though itself imperfect, this reach exemplifies much of what protection and enhancement can offer urban streams.

Small reaches farther downstream below the Church Street bridge as well as some upstream in several residential areas are also potentially healthy, given urban constraints, and future potential projects include establishing criteria for and evaluating "best reaches," which in turn can be used as "reference reaches." Immediately upstream of this area and the confluence of Clark and Pringle Creeks, lies approximately 62,250 square feet of unpaved parking area called Lower LeFelle. Neighbors complain about dust in the summer. Parking lot runoff flows unabated and untreated directly into Pringle Creek.

At Pringle Park, agreements were reached several years ago for paved parking to be shared with Salem Hospital (Waitz 1976). The park itself lies between Pringle Creek to the south and Shelton Ditch to the north. The area has been flooded many times and continues to serve as stormwater detention during high flow events. In general, its natural areas along Pringle Creek exhibit mature native growth. Some of the stream bank and the bank to the east, between Salem Hospital and the park, suffer from excessive and inappropriate foot traffic.

Partway through Pringle Park, the stream itself is pinched between a wall on the Pringle Park side and decades of landscape dumping across the stream on the Oregon School for the Blind (OSB) property. Recent removal of southside riparian vegetation has opened up what used to be a shady, cool portion of the creek. OSB, Salem Parks Operations and the Pringle Creek Watershed Council are partnering to plant native trees and shrubs along this portion of the creek.

The City obtained .32 acres south of Judson Middle School in 1962 as part of a trade with the State of Oregon. In return for the Carson Springs Natural Area, the City deeded land on the south side of Pringle Park adjacent to the Oregon School for the Blind to the state. The school district agreed to the use of 2.55 acres of its land as an

outdoor laboratory for Judson students (Waitz 1976). Both sites retain promise today for both site improvement and education, but in both instances the areas immediately next to Pringle Creek are victims of urban abuse or neglect: erosion, bank incision, overgrown exotic species, insufficient shading and landscape debris dumping at the Oregon School for the Blind site.

The Judson site hosts junk such as fencing, concrete blocks, bedsprings, large pieces of wood, plastic and bottles in and near the stream. Judson's lower ballfields are often too wet due to poor drainage, which is a problem similar to ballfields at Leslie Middle School and South Salem High. In addition, Gilmore Field at Hoyt and University SE has served as a regional detention basin for stormwater since 1976. Because of multiple springs in the area, a high water table, and until recently an improperly functioning drain on the detention facility, the attempt at conjunctive uses has not been as successful as everyone had hoped. Woodmansee Community Park, adjacent to Judson Middle School, recently had a Master Plan adopted which includes extensive potential for natural enhancement and stream restoration.

In 1980, the City purchased almost seven acres for a neighborhood park to serve the area east of Liberty Road, north of Kuebler to Idylwood (Regional Park and Recreation Agency of the Mid-Willamette Valley 1980a and 1980b). The land was purchased from the Stayton Cannery and is called today Cannery Park. The confluence of the West Fork of Pringle Creek is at the southwest corner of the park. Various volunteer and public works restoration and enhancement projects have been undertaken in the last several years in this park: wetland and upland plantings, partial stream restoration and riparian planting after the 1996 flood, and the creation in 2001 of a bioswale in partnership with the watershed council, Salem Public Works and ShurGard Storage Company. In 2001, Parks Operations obtained a $250,000 state lottery grant to fully develop the park, including completion of stream restoration and riparian plantings. Because the surrounding area is fully developed, the park has a lot of use. The stream banks have been damaged by overuse and minimal protection. Additional projects are needed to return the stream to optimum health.

Clark Creek Park, acquired in 1969, is a neighborhood park east of Commercial Street through which Clark Creek flows (Waitz 1976). Urban abuse, overuse of the streambanks, erosion from construction projects and incised banks have degraded the stream. Though much of the stream has trees nearby, there is little mid or lower story. Active Park Partners has participated in volunteer planting projects in the Park. Much more is needed to bring the stream and its attendant floodplain and riparian areas back to health.

A few locations along Pringle Creek such as one near 12th and Commercial manage to retain substantial native vegetation and natural stream flow. But even those areas have had sewer lines and storm drainage systems installed and have had to recover from the impact. At 12th and Commercial there has been major road construction as well. In June 1989, about 7,000 gallons of raw sewage flowed into Pringle Creek near 12th and Commercial after a boulder crushed a plastic pipe that workers were replacing (*Statesman-Journal* 1989a).

In 1993, the City approved two new developments along Pringle Creek on 12th Street, inappropriately as it turned out, because the developments went into the floodplain without widening a culvert and modifying the stream channel as required by new FEMA maps. The city had erred by using an older map. The city remedied the situation by constructing a larger culvert for Pringle Creek under 12th Street, deepening the creek where it runs through Brookside Garden Townhomes to increase capacity and deepening and widening Pringle Creek on the east side of 12th Street, south of Meadow Creek Village (*Statesman-Journal* 1993).

Other sites such as rights of way along the Union Pacific Railroad tracks next to Fairview Industrial Park offer more challenges, but the owners have indicated a willingness to partner with volunteers to mitigate some of the damage done over time along Pringle Creek. Communication between the watershed council and landowners continues.

While some business owners have been good stewards of the creek that runs through their back yards, others have sought to pipe, pave over, drain parking lots into, and dump industrial waste and refuse, into the creek. In August 1989, 50 gallons of cooking oil spilled into Pringle Creek near Davcor and 19th St. SE (*Statesman-Journal* 1989b). In 1996 and 2000, mass fish-kills were the result of industrial spills at SumcoUSA. The spills reached Pringle Creek at Fairview Industrial Park (*Statesman-Journal* 2000a). An area pilot project spearheaded by a group consisting of the watershed council, Marion County Solid Waste Management, the City of Salem and DEQ called the Watershed Enhancement Team (WET) is working to educate and change these practices. This voluntary program encourages local businesses to take a pledge to go beyond regulatory compliance. Almost 100 businesses in the watershed have signed up.

Public jurisdictions have their accidents as well. In August 2000, a major downtown water main ruptured, spilling five million gallons of water and flooding nearby businesses and eroding the north bank of Pringle Creek between Fire Station #1 and City Hall (*Statesman-Journal* 2000b). Using "state of the art" restoration techniques and within a very short time frame in order to stay within the "fish window," Salem installed below normal water level rip-rap and ran coconut fiber "blankets" up the streambank into which several hundred trees and shrubs were planted. Follow-up appeared to be a problem, however. Although native trees and shrubs adapt well to their native locations, in today's urbanized world, they need help for the first two years or so to get started. Many of the trees and shrubs at this southern-facing sunny site received no regular watering. The City replaced those trees and said the watering "problems" had been fixed. Later that same summer, most of the trees and shrubs were again dead due to lack of water.

Nor are public schools immune. In the summer of 2001, City of Salem water quality monitors noted that Clark Creek had turned a "funny color" near South Salem High School. The first thought was that someone was washing out paint rollers or brushes

into the storm drain -- an all-too-common occurrence. However, from the volume of the flow, it was obvious this was a much larger incident than some homeowner cleaning up after painting the house. The cause was traced to South Salem High School's "maintenance drain." Staff and teachers have carefully used this interior floor sink to dispose of all sorts of maintenance-related substances such as products used to strip floors and clean paint equipment. Up until about ten years ago, it was also used to dispose of classroom waste or by-products such as those used in science labs and classrooms.

Everyone was "sure" the floor sink connected to the sanitary sewer system and that they were properly disposing of waste into that system. Instead, they discovered that it ran directly, without any filtration or diversion, to the storm sewer which drains into Clark Creek -- into its concrete-lined channel east of the ballfields. This portion of South Salem High School was built approximately 47 years ago and it appears that this had been the disposal practice for 47 years. The same day this problem was discovered, school staff capped off and discontinued using the floor sink. Shortly thereafter, the old line discharging into the creek was disconnected and a new connection was made to the sanitary sewer. In addition, the school district set about checking all the other schools, especially the older ones, to determine if anything similar was occurring there (Miller pers. comm.).

The City of Salem continues to struggle with conflicting goals and rules regarding treatment of Salem's riparian areas. For example, the current tree ordinance defines "intact riparian corridor vegetation" as " vegetation that is characterized by a diverse, multilayered assemblage of native trees and a vigorous, dense understory of native plants that provide any or all of the following benefits: (1) maintains or improves water quality; (2) provides fish and wildlife habitat; (3) mitigates development-related hydrologic changes; (4) mitigates flood hazards; and (5) provides other significant ecological, aesthetic, or educational benefits due to its natural conditions and functions."

The reality in Salem in 2001is: there is almost no place with intact riparian corridor vegetation either because of traditional stream cleaning methods which favor conveyance over water quality or habitat, or the property owners "clean up" the riparian edges for lawns and flowers. The result: an infestation of Himalayan blackberries and reed canarygrass, which is then used as proof that there is no intact riparian corridor vegetation to be protected under the tree ordinance. Additionally, the building and maintenance of various public infrastructures such as storm and sanitary sewer lines, culverts, bridges and streets often destroys intact riparian vegetation.

Many residential landowners have enjoyed having Pringle Creek or Clark Creek in their gardens and have designed around them. Most who have lived in the area for several years are realistic about "high water events." Some homeowners take stream stewardship very seriously. For example, several Idylwood Drive homeowners have cared for Pringle Creek and enjoyed the animals and bird life that such stewardship rewards. But when properties are sold, especially between major rainstorms and to

people from outside the area, new residents have no knowledge about the stream in their back yards.

Too often properties are developed in ways unfriendly to neighboring streams. For example, a 2000 lot partition immediately adjacent to Pringle Creek has resulted in at least a 30′ high "hill of fill" over a spring on which two lots have been created and which now block the sun from those north of the "hill." Some homeowners dump grass clippings and landscape debris at creekside. Others use herbicides and fertilizers with inadequate protection for aquatic life. Some have dammed the creek or built concrete walls as dikes. Some have scraped the soil bare or installed fences at the stream's edge. Some have dumped in cars and tires allegedly to reinforce the bank during high water. One watershed council member asked, "I wonder if all the homeowners on the east side of Davidson are aware that everything that enters their driveway drains falls immediately into the creek? I bet that many have no idea" (Crawley pers. comm.).

In addition to streamside residents, all residents of the watershed need more help understanding the interactivity of the watershed. For example, there are several hundred individual detention basins on private property in Salem and, according to Salem's 2000 Stormwater Master Plan, the majority probably are not working as intended. Many residents profess ignorance about catchbasins draining directly to streams and express surprise when told that the stormwater and sewage treatment systems are separate in Salem. Homeowners, pesticide applicators, businesses, and public facilities groundskeepers all add to the current urban use of insecticides such as Sevin, lindane, malathion, diazinon and chlorpyrifos, and herbicides such as dichlobenil, prometon, tebuthiuron, 2,4-D and MCPP. These blend with the consequences of primarily agricultural pesticide use in years past. Because of overuse, certain weeds now "break" from the herbicide used to control them. One pesticide, dieldrin, has not been legal for more than 25 years, but measurable amounts were found in the last two years in Pringle Creek.

Under Commercial Street SE and Boise Cascade's buildings water roils around bridge and building footings in part because trees downed upstream have floated into the gabions protecting the structures and broken away the wire baskets. This is the first major barrier to fish passage in Pringle Creek. Other issues concern impacts of changes at the mouth of Pringle Creek. Across the Willamette Slough from the mouth of Pringle Creek are Boise Cascade's old settling ponds. Upstream are eroding revetments adjacent to Minto Brown Island Park. At Eola Bend there are active gravel mining operations, and inland, near the closed hazardous waste dump, sinkholes appeared on Brown's Island. Across the Willamette, there are proposals for major riverfront development requiring massive fill to raise the site above the 100-year flood level. All these actions accumulate into measurable consequences for Pringle Creek and the Willamette River.

While watershed councils began garnering public support and thousands of trees have been planted in the last few years on behalf of salmon and riparian areas, much

more is needed. Education, continued project development and community involvement are keys to protecting, enhancing and restoring our urban watershed.

The Pringle Creek Watershed Council was formed in 1995 as an advisory committee to Salem's Department of Public Works. After the State of Oregon passed legislation that created watershed councils, PCWC became an independent watershed council. PCWC is currently served by a 19-member board of directors who reflect major stakeholders in the watershed, including educational/academic, business/economic, environmental, government, residential/property owners, scientific/technical advisory, five Neighborhood Associations, and other/general interest.

Just as a trickle at the top of the watershed is the beginning of a stream that becomes a river, so too are local preservation, enhancement and restoration efforts the beginning of a larger network. The Oregon Plan for Salmon and Watersheds seeks change in the basic relationship between people and natural resources, urging people to work together to build communities that will be sustainable in the long term and profitable in terms of cultural, environmental, recreational, and spiritual values. Awareness and a willingness to change must occur at the local level (Oregon Watershed Enhancement Board 2001).

C*onclusion*. In 1851, The Willamette Valley was covered mostly by savanna and prairie. These ecosystems have given way almost entirely to intensive agriculture and urban development. Originally, there were an estimated 877,240 acres of prairie; in 1995 an estimated 2,000 acres remained in the entire 3.4 million acres of the Willamette Valley Basin. Today even areas considered to be of marginal economic value (e.g. wetlands), are being lost to human encroachment. One of Oregon's benchmarks for a "livable environment" called for maintaining 100% of the 1990 Wetland Resource Base (Kagan et al. 2000).

In the Willamette Valley, wetland losses continue at an average annual rate of approximately 546 acres a year, despite regulations, programs and policies designed to curb wetland losses. Net wetlands lost between 1982 and 1994 in the Willamette Valley equaled almost ten square miles. While much of that loss is attributed to conversions to upland agriculture, most of the rest is the result of urban development. By any measure, the extent of loss of the Willamette Valley's primary ecosystems is dramatic. (Kagan et al. 2000).

About 27.6 miles of Salem's streams run above ground. Salem's Stormwater system includes 456 miles of pipes and culverts in addition to 54.6 miles of open ditches. Catch basins funnel whatever we let fall or flow from our yards, streets and parking lots into that "closed" system. Eventually, the "closed" system joins our streams and the Willamette River -- and brings with it much of what we have placed in it.

What our future looks, sounds, smells, and feels like requires broad ranging community discussion because whatever we do -- or don't do -- will have far-reaching and irretrievable consequences. Determining "highest and best use" surely deserves consideration on behalf of both the past and the future.

WATERSHED CHRONOLOGY

1500 BC	Kalapuya Indians begin Willamette Valley burning
1792	Cpt. Robert Gray of *The Columbia* enters the mouth of the Columbia
1805	Lewis & Clark trace the Columbia from its source to its mouth
1809	M. Gervais, member of Lewis & Clark party, settles at French Prairie
1812	Fur traders William Wallace & J.C. Halsey explore the Willamette Valley
1833	Missionary Jason Lee appointed to mission in Oregon Territory
1834	Jason Lee arrives on the Willamette, 10 miles upstream from Salem
1838	First wagon train crosses the Plains
1840	Grist and sawmills built in Salem, followed by a Mission school
1840-42	Salem called "The Mills" because of the Mission Mills
1841	Missionary Lewis Judson arrives to begin surveying new town
1842	Rev. Gustavius Hines preaches at the Indian Manual Labor School
1843	Marion County created; orginally called Champooick County
1843	Jason Lee home built, in part by native Hawaiians
1843	People adopt measures to protect flocks & herds from wild animals
1846	Dr. William H. Willson plats City of Salem
1846	Virgil & Phernie Pringle & family arrive in Salem on Christmas Day
1847	Fabritus and wife Virgilia Pringle Smith file Donation Land Claim #47
1848	Almost every able-bodied man leaves Salem for California's gold fields
1849	Champooick renamed Marion County honoring Gen'l Francis Marion

1850	Rev. L.H. Judson names Salem after his home town of Salem, Mass.
ca. 1850	Dr. William H. Willson files Donation Land Claim
1851	Oregon's Capitol moves to Salem
1851	*Oregon Statesman* newspaper moves to Salem from Oregon City
1851	First steamboat arrives, takes agricultural goods for Calif. gold miners
1852	Willamette University incorporates during Oregon's first legislature
1853	Original First Methodist Church dedicated
1853	Dr. William H. Willson establishes first drug store in Salem
1853-1861	First South Commercial Street bridge over Pringle Creek
1841	Pioneer Cemetery established in part by Leslie donation
1856	Salem given Charter by Oregon Legislature
1857	City Charter addresses standing water, unwholesome, offensive substances
1857	City Charter not enforced "with determination"
1859	B.M. Durelle's sawmill downtown burns down
1861	Disastrous flood wipes out much of downtown and bridge
1861-1892	Second Commercial Street bridge, a covered one, built over Pringle Creek
1863	Suspicious fire set in saloon causes major damage
1864	Another major fire burns entire city block
1864	Voters choose Salem as state capitol by 79 votes
1860's	Salem Flouring Mills built

1865	Willamette Flouring Mill established at Commercial/Trade (BC site)
1865	Yet another major fire set in a saloon, also suspicious, burns entire block
1865	Two convicted killers hanged at Pringle Park
1865-1869	Several major fires during the next five years
1866-1909	Capital Lumbering Company established
1868	William Graves becomes Salem's first known undertaker
1869-74	Sam Clark, is editor of *Oregon Statesman*
1869-1900	Reed Opera House open
1869	Ladd & Bush Bank opens for business
1869	Four new coal oil street lamps placed, including one at covered bridge
1869	Special City Council meeting convened regarding spread of smallpox
1869	1,000 cases of measles hit Salem
1869	City's first calaboose planned
1869	Common drunkenness ordinance passed
1869	Posh Chemeketa House opens, "a credit to our young State"
1870	First Water Works consisting of a 150,000 gallon cistern built
1870	Gas Works built
1870	First Train bearing mail/passengers chuffs from Portland to State Fair
1871	Susan B. Anthony speaks on women's suffrage at the Reed Opera House
1875-95	City of Salem steamboat excursions on the Willamette River
1876-1952	First Marion County Courthouse on High Street
1878	Bush House built

1878	Barrick Funeral Home opens
1881	Salem's first sewer carrying both sanitary and stormwater is constructed
1881-1927	Continued construction of Salem's sanitary and stormwater systems
1883	Kalapuyan Chief Quinaby dies during Christmas week
1886	First bridge built across Willamette River
1886	Electric lighting comes to Salem
1889	Yew Park Addition established
1890	Sanborn map shows island off mouth of Pringle Creek
1890	World-renowned prune industry begins in Salem area
1898	Deepwood Mansion built by Dr. Luke Port
1892	Third South Commercial Street bridge built over Pringle Creek
1896	Salem Memorial Hospital opens at 12th and Ferry with 5 beds
1896	Life Expectancy: 46 years; infant mortality rate: 15%
1903	Salem Library formed by Salem Women's Club
1903	First major annexations quadruple Salem, south to Hoyt, east of 25th
1905	Dan Fry moves to Gaiety Hill
1907	Five blocks on Court Street are first five blocks paved in Salem
1908	Liberty School built
1909-1941	C.K. Spaulding Lumber Co exists on old Capitol Lumber site
1913	Railroad bridge built across Willamette River
1916	Mennonites purchase former Capital Hotel, 665 Winter St., for hospital
1917	Bush's Pasture Park's first parcel deeded to City

1918	State evicts Salem Hospital, just in time for influenza epidemic
1919	Virgil T. Golden begins city's first ambulance service
1920	Miller's Department Store opens on Reed Opera House site
1921	Cornerstone of Salem General Hospital laid
1923	First municipal full time fire department established
1923	Pringle Creek Park purchased
1924	Mysterious monoliths discovered on Cunningham farm
1926	Elsinore Theatre opens
1940	Salem celebrates centennial with 30,908 citizens
1941	First airline flight out of Salem
1942	OR Pulp & Paper Lbr Division Takes over Spaulding Lbr Co site
1940's	OR Pulp & Paper Lbr Division Expands to Salem Flouring Mills site
early 1950's	Bennett Field constructed; Kalapuyan sweathouse obliterated
1952	Woodmansee Park's first parcel purchased
1961	Salem wins coveted national "All American City" award
1962	Carson Springs Natural Area purchased
1962	Most of hangar at McNary Field destroyed by Columbus Day windstorm
1962	Willamette (University) Urban Renewal Project (22 acres)
1964	City annexes 2807.6 acres in South Salem
1964	Salem Memorial Hospital evacuated during 100-year flood at Christmas
1964	Concrete box culvert 5'x5'x230' placed under Commercial near 12th St.
1968	Fred Meyer opens 93,000 SF store in South Salem

1969	Clark Creek Park purchased
1969	Fire at Fairview Training Center kills three residents
1970	Central Salem Development Plan completed
1971	Pringle Creek Urban Renewal Project (78 acres)
1972	US Army Corps of Engineers stops annual dredging of the Willamette
1972	Boise Cascade ceases dumping effluent directly into Spaulding Slough
1972	New Salem Civic Center dedicated in August
1973	Riverfront Park's first of seven parcels purchased
1975	Clark Creek at South Salem High placed into concrete lined ditch
1976	Riverfront/Downtown Urban Renewal Project (254 acres)
	Neighborhood Renewal Projects:
	1. South Central (760 acres)
	2 Mission-Lee (85 acres)
	3. Lee-Hines (36 acres)
1980	Front Street bypass Built
1980	Cannery Park property purchased
1982	Mission Street bridge and freeway not built
1982	Shoreline Drive - South River Road highway not built
1984	Fairview Industrial Park Urban Renewal Program begins
1984	Salem voters approve purchase of riverfront property from Boise Cascade

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Glenn-Gibson Watershed

History of Glenn-Gibson Creeks Watershed

By Dorald Stoltz and Jim Castle

Introduction

The Glenn and Gibson Creeks watershed drains approximately 10.4 square miles of agricultural and residential land above West Salem in the South Eola Hills. The upper portion of each creek runs through farm and large-scale residential acreage, while the lower portion of each cuts through some densely-built residential areas. There is no industry, other than agriculture, within the Glenn-Gibson creeks drainage basin. Other than a few small specialized nurseries, businesses and retail stores are limited to a handful of operations along Wallace Road. The extensive commercial and industrial development adjacent to Edgewater and Wallace roads in West Salem proper are, technically, outside (over the hills) from the watershed.

Both Glenn and Gibson Creek run for the most part through private land, so there is very limited public access. The exceptions are Orchard Heights Park, which Glenn Creek passes through on its way to the Willamette River, and Brush College Park, which is bordered by Gibson Creek. In addition, one small branch of Glenn Creek passes near Wallace Marine Park. There is a new, as yet undeveloped, nature park near the intersection of Doaks Ferry and Orchard Heights on property donated by former Governor Straub. There are two public elementary schools in the watershed, Chapman Hill and Brush College. There are also Walker Middle School and the new West Salem High School.

Population of the watershed area is estimated at 50,000 to 60,000. Both creeks are entirely within Polk County. Glenn Creek runs within the Salem city limits for about three-quarters of its course, while Gibson Creek runs through the city for a much shorter distance.

Early Human Inhabitants

For at least 5,000 years before the first white men came to the area, the Glenn and Gibson Creeks Watershed was a small section of the range of the Yamhill band of the Kalapuyan Indians. The Yamhills' area was described in the 1851 treaty in which the band ceded its lands to the United States government as:

> Commencing at the mouth of the Yamhill River; thence, up said Yamhill River, to the junction of its North and South Forks; thence, up the South fork to its junction with Deer Creek; thence up said Deer Creek, to its head waters, thence, due west to a point on the summit of the Coast Range of Mountains; thence, southwardly, following the summit of Said Coast Range, to a point due west from the head waters of the North fork of the Luck-a-miute River at its entrance into the Wallamette River; thence, down said Wallamette River to the place of beginning (Mackay 1974).

Though no encampments, burial sites, mounds or other evidence of Indian habitation have been found within the watershed, the area shares characteristics with other areas the in which the Kalapuyans roamed. Like other members of their tribe, the Yamhills managed their land to encourage growth of wild food plants and protect the game they lived on. Through the Willamette Valley, the Indians annually set huge fires. Fires on the open areas cleared out brush so that desirable grasses and the root plants could flourish. Fire in the forested areas kept brush and tree seedlings in check and made hunting easier. As a result of this periodic burning, the Glenn and Gibson Creeks area hills, which might have been solid Douglas fir forests, are mainly open areas broken up by wooded sections, primarily on steeper terrain.

The Kalapuyans' main food was camas. They also dug and gathered acorns, wild onions, salmon berries, thimbleberries, raspberries, salal berries, blackberries, huckleberries, wild cherries, sunflower seeds and strawberries. They hunted deer, elk, bear, beaver, squirrel, gophers, rabbits and a number of birds (Mackey 1974). There are no records of any significant numbers of fish in Glenn and Gibson creeks and, according to historians (Gulick 1991), fish were neither numerous nor constant there.

Pre-Settlement – Early 1800s

The first white men to come to the area were fur trappers, settlement promoters, missionaries and explorers. They did not find a pristine wilderness, but, rather, miles of flatlands and hills that had been carefully managed by the Indians for centuries. Writers from that period commented on the beautiful landscapes, fertile soil and lush plants. The Glenn and Gibson Creek watershed area includes no significant landmarks from this era.

In 1843, the Salem and Doaks ferries began their runs across the Willamette River. The Salem Ferry was about where the Marion and Center Street bridges are now. The Doaks Ferry was where the town of Lincoln is now.

Settlement Period - 1848 to the Early 1900s

The Glenn and Gibson Creek Watershed lies almost entirely within what was then considered the Brush College farming community. According to Charlotte L. Wirfs, Brush College historian, this included the "area between just south of Lincoln to the Willamette River or where Edgewater street is now located" (Wirfs 1981).

First to arrive at Brush College was a group headed by the Rev. Jesse Harritt, a member of the Meek Cutoff party that got lost in the Cascades while attempting a shortcut from Boise to The Dalles. Harritt and his friends arrived by flat boat in December 1845.

In 1850, the Donation Land Act was passed by the United States Congress. Within just a few years, approximately 12 donation land claims made up the Brush College area, accounting for all but the upper reaches of the Glenn and Gibson Creeks drainage. The claims ranged in size from 159½ to 640 acres. The main use of the land was agricultural. As today, the farmers produced what the market demanded. They first planted wheat and oats, but by 1890 were also tending orchards of prunes and cherries. They raised cows, sheep and pigs (Leth 1980).

One of the donation land claimants, Hosford, built a mill to produce lumber. However, the project was abandoned when it turned out that Gibson Creek could supply sufficient water to run the mill only six weeks out of the year (Maynard 1981).

As Harritt and his neighbors settled in, they had few local roads to travel. What is now called Wallace Road was in place, built in 1851 from the Yamhill County line south to Rickreall and on to Benton County. Doaks Ferry Road ran from the Willamette River to Wallace Road and then turned south where it became a path (Wirfs 1981).

By 1882, there were a number of other landowners in the area, though most of the donation land claims remained with their original owners. The roads were still primitive, but the county had platted and started to build a road system. Doaks Ferry was cut through from Wallace Road to Eola. Brush College Road provided transport to Bethel to the north where it joined up with other county roads (Ogilbe 1882).

Between 1886 and 1889, Robert Stewart Wallace purchased a donation land claim from Lewis Parkhurst and established Wallace Farm. Wallace, whose business were based across the river in Salem, graveled what is now called Wallace Road to improve wintertime access to the Salem ferry and, later, the first bridge connecting Salem and West Salem. The bridge, however, was washed away during a flood in 1890. Salemtowne is located on what was the Wallace Farm and the Wallace home is now the Farmhouse wing of the retirement complex's clubhouse (Week 1983).

The year 1890 was significant for the area that was to become West Salem. The flood washed out much of the townsite of Eola, located just south of the Glenn and Gibson Creeks area, dashing that community's hopes of becoming a major city. The previous year the West Salem addition, a flat area along the Willamette River, had been subdivided. Orchard Heights, inside the watershed, was subdivided in 1892, followed

in 1900 by Kingwood Heights in the hilly area that separates the West Salem "flats" from the watershed. In 1913 West Salem was incorporated, and in 1949, it merged with Salem (City of Salem 1984).

Years of Development

The major residential development in the watershed area began in the 1960s when a local developer, Larry Epping, purchased the Koehler property in the hills above West Salem in 1963. As the lots were subdivided, Glenn Creek often formed one border of the newly-platted lots. There was a building boom in the late 1960s and 1970s, resulting in subdivisions of residential homes scattered throughout the watershed. After a lull in the 1980s, the building resumed, both infilling in the existing subdivisions and establishing new developments.

Creeks -- Water Quality and Change

Though there is no evidence that development has resulted in significant changes in the streambeds of either creek, it has impacted the riparian areas. First, in many cases vegetation is removed down to the creek level in the course of construction. Then, after the homes are built, homeowners plant lawns and non-native plants. Residents are not encouraged to restore natural riparian areas. Water quality is impacted by the use of pesticides and herbicides and street run-off that all drain, through the storm water system, into the creeks.

Aside from the portion close to the Willamette River, only narrow, streamside ribbons along Glenn and Gibson creeks are listed as floodplains. Floods, such as the one that struck the area in 1996, do damage to obstacles that have been placed in the creeks' way, like culverts and landscaping. However, the high water levels in the winter months and the occasional flooding allow the creeks to refresh themselves and reclaim their courses.

According to reports from farmers who have lived in the area for a number of years, water quality in the two creeks is better now than in than in the past when farmers were not concerned about water runoff from their lands. Don Meyer, a member of the local watershed council who farms on Gibson Creek, said "Agriculture takes much better care of the land now than in earlier years." He also pointed out that logging practices have improved and are monitored where there were no controls in the 1940s and 1950s (Meyer pers. comm.). This view was substantiated by another council member, Wayne Simmons, whose family has farmed land in the watershed since 1912. He said there was much more siltation in the creeks 70 or 80 years ago because of erosion of topsoil from the orchards (Simmons pers. comm.).

Meyer and Simmons said that there are many more coyotes than there used to be, resulting in decreases in both the deer and fox populations. Neither has ever seen bears locally, though they were reported by the earliest visitors to the area. Meyer said

that there are significant increases in the number of hawks, beavers, cougars, raccoons and blue herons in the area where he farms. Both men said there have never been many fish in the creeks and never any salmon. They attributed much of the reduction in the number of salmon in the Willamette, and all fish in private ponds, to the blue herons which, they report, are much more prevalent than they used to be (Meyer pers. comm.; Simmons pers. comm.).

Lowell Ford, who farms on Wallace Road, says there are "far more fish in our stream (Glenn Creek) than 30 years ago." He credited the increase to restoration efforts he has undertaken, including replanting of native trees and removal of silt and reed canarygrass, to allow the stream to meander and form shallows and deep areas (Ford pers. comm.).

Summary

Land uses in the Glenn and Gibson Creeks watershed have evolved through the years from the nomadic ways of the Native Americans through farming and logging of the early settlers, a mix of residential and farming through much of the 1900s, to a virtual explosion of growth from the mid-1960s to the present as farmland is converted to subdivisions of single-family dwellings.

Over the years stream quality has varied, though there is no evidence that either creek, Glenn or Gibson, ever supported large fish populations. Riparian zones along the streams have been replaced by lawns and garden plantings, thus eliminating much of the watershed's wildlife habitat. There has been no major re-direction of either creek, and the landforms remain much as they were when the first white settlers arrived, except that they are now covered with streets and homes.

There is increasing awareness among residents of the watershed's fragility, and its importance to West Salem's quality of life. Hopefully this interest will expand, enhanced by governmental support of restoration projects and enactment of regulations governing land use.

Glenn-Gibson Watershed Place Names

Brush College School and Road – Named for the vegetation at the site of the school. After the Indians stopped their annual burning, shrubs and trees grew profusely. The use of the word "college" referred to use of the site as an elementary school. There is no actual college in the area. Land for the school was deeded in 1867. Until 1975, what is now Brush College Road was called Spring Valley Road.

Chapman Corner, Hill, and School – Named for the Captain Chapman family that lived in the area (Sec. 17, T7S, R3W). Chapman Corner was the site of their home; the 400-foot elevation Chapman Hill is nearby. It was earlier called Schindler Hill after a different landowner. Chapman Hill School, which opened in 1986, is nearby.

Chatnika Heights – Named by developer Larry Epping after the Indian word of unknown origin applied to a nearby branch of Glenn Creek.

Doaks Ferry Road – Named for Andrew Jackson Doaks who operated a ferry on the Willamette River at what later became the site of Lincoln. The road was also known as Military Road.

Eola – This is an adaptation of Aeolus, the Greek god of winds. Lindsay Robbins, a local musician, is said to have suggested the name. The townsite of Eola was incorporated in 1856. Eola County Park, now part of Chemeketa Community College, includes land set aside for a town square when it was hoped that Eola might become the state capital. The Eola Hills, which includes the Glenn and Gibson Creeks watershed, is named for the townsite.

Gehlar Road – Named for Max Gehlar, a local landowner.

Gibson Gulch, Road, and Creek – Named for Davies Gibson, a pioneer settler in the area (Sec. 12, T7S, R4W).

Glenn Creek and Glen Creek Road – Named by a local resident, C. A. Park, for the narrow valley or glen the stream flows through.

Grice Hill – Named for L. Grice, who owned nearby land. It was once a major source of stone for building in Salem.

Orchard Heights and Orchard Heights Road – Named for the orchards that grew on the slopes.

Salemtowne – Named by Landmark Townes, the developer of the retirement community. The name reflects the location near West Salem and the name of the developer.

Spring Valley Road and Creek – Named for the numerous springs found in the area. Brush College Road was called Spring Valley Road prior to 1975.

Wallace Road – Named for R. S. Wallace, owner of a large farm that is now the site of Salemtowne.

West Salem – Named after the city of Salem with the directional modifier. The city of West Salem was incorporated in 1913 and merged with the city of Salem in 1949. The name, Salem, is an Anglicization of the Hebrew word "shalom," which means peace. (Source*:* Clarke, Gordon W. 1977. *Polk County, Oregon Place Names*. Oregon College of Education. Monmouth, OR).

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Claggett Creek Watershed

History of Claggett Creek Watershed

By Lee Hettema

Approximately 20, 000 years ago the Willamette River flowed in a more easterly course through the Willamette Valley. There is evidence that the old channel between the southern and northern Willamette Valley ran through the narrow gap at Mill Creek and the Waldo Hills (Orr, Orr and Baldwin 1992; Orr pers. comm.). This evidence consists of the gravel quarry at the bridge over Mill Creek on I-5 (course pebbles) and Lake Labish. Lake Labish is the remnant of a bend in the ancient Willamette River. The former river course was cut off during the Pleistocene Epoch when a natural dam of sand from Silver, Butte and Abiqua Creeks blocked the channel. The resulting shallow lake slowly filled with silt and organic matter to become a marsh. Thick peat deposits in the old lake reflect a long period as a swamp and a bog. In this organic layer, bones of mammoths, mastodon, giant sloth and ancient bison are frequently found. The carcasses were probably washed in and covered, allowing the remains to be preserved in the oxygen-poor bog. Because these remains sank into the bog, they could not be eaten by scavengers and so remain as a fossil record (Orr, Orr and Baldwin 1992).

Archaeologists have been conducting a dig at two sites in Woodburn. At one site, called the Stafek locality, in Front Street Park, they have recovered a human hair and two flaked stone artifacts. These were found in undisturbed marshland clay that directly overlay Missoula Flood silts. This clay is contemporaneous with sphagnum bog deposits that have been carbon-dated to 11,690-12,000 years B.P. These artifacts were recovered in 1999. (Stenger pers. com.; Hibbs pers. comm.).

In 2000, at another site, Legion Park, a human hair was recovered from the upper portion of Missoula Flood stratum. This stratum has been carbon dated to 12,000 years B.P. William Orr has identified fossils from these sites (e.g. ground sloth, mastodon, dire wolf, bear, big horned sheep, horse and the largest known Pleistocene bird, the teratorn, with a 14-16 foot wingspan). If human hair and artifacts were found at a fossil-rich site in Woodburn, human artifacts might also be found at the fossil-rich site we call Lake Labish. Both sites show an abundance of fossils indicating the presence of game or prey. Hibbs believed that the Woodburn results would be replicated in studies throughout the lower Willamette Valley because of silts and gravels from the Missoula Flood that preserved early organic materials in a perfect anaerobic soil environment (Hibbs pers. comm.).

The next reference to the area near Claggett Creek is in 1812/13. John Jacob Astor's Pacific Fur Company established two trading posts in the Willamette Valley. The southernmost outpost was Wallace House on the Wallace Prairie. On old maps from the 1800s the west Keizer-Mission Bottom area is named Wallace Prairie. A few years later the trading post was transferred to Hudson's Bay Company. In 1818, the United States and Great Britain agreed to joint occupancy of the Oregon Country. All Hudson's Bay outposts south of the Columbia River were abandoned by 1824. In 1834

Jason Lee and the Methodist Missionaries settled at Mission Bottom. Salem began in the 1840s.

Two of the settlers from the Jason Lee Mission give the first account of a major Willamette River flood in 1843. On January 16, 1843 Gustavius Hines and L.H. Hudson set out from Salem by canoe to paddle up to Fort Vancouver. They arrived on January 18, 1843.They describe their voyage as quite cold; rain and hail fell constantly. It continued to storm without interruption until February 2, 1843 (Marion County Historical Society undated).

In 1841 Lieutenant Charles Wilkes of the US exploring expeditions noted that "generally the valley's prairies were one-third greater than the forests; some (of the prairies) were 15-20 miles across." He also noted that Indian tribes inhabited the area (mid-Willamette Valley) but only sparsely due to disease (Marion County Historical Society undated).

After Wilkes' reports and reports from the Willamette Mission began to filter back to the populated area of the then-United States the rush to settle was on. In 1843, the father of Keizer, Thomas Dove Keizur, came to the Oregon territory with the Applegate expedition. Thomas Dove Keizur was the first settler in the Oregon Territory to have his deeded land claim surveyed (Loudon pers. comm.).

In 1852, Charles and Mary Claggett arrived in the Keizer area (Wallace Prairie) and settled on their deeded land claim near the current intersection of River and Lockhaven Roads. Their son William Claggett accompanied them. Charles was born in 1813, and William was born in 1840. William Claggett was one of Willamette University's first students. Some of the other early settlers of the Keizer area were the Pughs, the Fords and the Smiths. By 1917, more than 70 years after the first settlement in the Keizer Bottom, there were fewer than 70 families in the entire area. The Smith graveyard became the Claggett Cemetery (at the end of Bolf Terrace). The first school in the area was a log cabin on the Claggetts' farm near the intersection of River and Wheatland Roads. The first schoolmaster was Hugh McNary, son-in-law of Charles Claggett.

We can now see how the first name for Claggett Creek was Ford Creek; it flowed across the Ford lands in the vicinity of what we now call the McNary Golf Club. The name was later changed to Grierson Creek and then finally Claggett Creek, although some stubborn Keizer old-timers still refer to part of Claggett Creek as McNary Creek.

As the first settlers arrived the General Land Office of the United States began the preliminary surveys to establish the sections for the townships and ranges that Claggett Creek flows through. Since I once was a surveyor, I decided to check the surveyor's notes from 1851 and 1852 to get the most detailed early account of Claggett Creek. We will proceed from Clear Lake to Claxter Corner. First, some old surveyor measurements must be translated into terms we are more familiar with. A chain is 66 feet long, while a link is 1/100 of a chain (0.66 feet =7.92 inches). There are 80 chains to a mile and a section is one mile by one mile.

It was important to the General Land Office to complete these surveys because people tended to settle where the land was flat and the soil was good. Generally, flat

land in the Willamette Valley was surveyed before the Cascade foothills, because this land was more likely to be settled first and was easier to survey.

In Township 6 South, Range 3 West, the surveyors encountered a stream that was 40 links wide. The course of the stream was northwest for 3 chains, then southwest into Clear Lake. In other words, this is the mouth of the Claggett at Clear Lake. The surveyor noted lots of ponds on this traverse (Ives 1852).

On the line between sections 26 and 27, the survey crew encountered a stream that was 30 links wide. The Alvis Smith farmhouse was near the creek. At 50 chains north of the section corner, the surveyors encountered a bank. At 56.2 chains north of the section corner, they encountered the creek again. The surveyor noted that the Willamette River overflowed in most places. The soil of the bottoms was first rate, sandy loam and mostly prairie soil. East of the bottoms was first-rate clay soil. Timber was fir, white ash and maple, with undergrowth of hazel (native filbert), vine maple and rose briars (Ives 1852).

On the section line west from the section corner between sections 26 and 35, the survey crew encountered the west bank of a creek. At 23.50 chains west of the section corner, they encountered a stream, 15 links wide, flowing southwest near the intersection of Labish (flowing out of Lake Labish) and Claggett Creek. At 25.50 chains west from the section corner, the party encountered a road--the current River Road (Ives 1852).

On the township line between Township 6 South and Township 7 South, Range 3 West, bearing due west, the survey party descended the bank of a creek, and entered a swamp. Then they encountered a stream 10 links wide, its course northwest. After first entering the swamp 16.00 chains west of the section corner, the surveyor noted that the traverse went through swampland until they were 56.00 chains west of the corner, where they encountered nearly level prairie, which was cultivated. The soil was first-rate clay loam and sandy with short grass (Ives 1852).

The surveyors described the land near Clear Lake as gently undulating bottoms, overflowed in highest water by the Willamette River. The west side of the bayou was swampy with a sloping bank. The east side had a bold bank. The soil was first-rate clay loam. The timber was fir, white ash and maple, with undergrowth of hazel, vine maple and briars. The bayou was 36.00 chains wide and apparently very deep (Ives 1852).

At 27.00 chains west of the section corner the survey crew encountered the outlet stream of the bayou (Clear Lake). The stream was 30 links wide and its course was southwest. Shortly the party encountered the same outlet stream again, but the course was northwest and the current brisk. The stream meandered back and forth, flowing sometimes faster, other times slow. This survey was done very quickly: begun on December 8, 1851, it was completed January 1, 1852 (Ives 1852).

In Township 7 South, Range 3 West, on the section line between Sections 11 and 12, heading north from the section corner, the survey party descended a bank. They then encountered a shoal pond, dry in dry season. It was 370 links wide. At 60.00 chains from the section corner, they encountered a stream, 4 links wide, its course northwest. At 67.50 chains from the corner the party encountered another stream, 6 links wide and

also flowing northwest. These were two branches of Claggett Creek. The land was slightly undulating. The north and south quarter sections were mostly covered with water in the wet season. Soil was first-rate clay loam, with fir and white ash. The undergrowth was rose, vine maple and hazel with grass and fern (Ives 1852).

On the section line between sections 2 and 11, heading west from the section corner, the survey party left the prairie. They encountered a stream 10 links wide. The course of the stream was north, through gently undulating land. The soil was first-rate clay loam and sandy loam, timbered with thinnish fir and white oak. The undergrowth was hazel, oak, willow and grass. A little further west was prairie land, high bottom, partly overflowed in high water. This survey too was finished quickly. Begun on November 14, 1851, it was completed December 6, 1851 (Ives 1852).

On the range line between Range 3 West and Range 2 West, walking north, the surveyors encountered a swamp with willow on the west side, while most of the other parts were wet prairie, which overflowed in wet seasons. It had a very rich alluvial soil and was called Lake Labish (Hyde 1852). This survey was begun February 2, 1852 and was completed February 24 of the same year.

The surveys were usually completed quickly, often in winter. The surveyors were recording wet season conditions, and guessing at dry season conditions. They emphasized soil, timber and undergrowth, focusing on resources and problems.

Aside from the cryptic description of Claggett Creek and the surrounding lands in the General Land Office Field Notes, the only other mention of Claggett Creek in history is when the creek flooded. The bulk of my narrative will deal with the recent major floods of the Willamette River and Claggett Creek.

1861-62	Willamette River crest estimated at 47 feet in Salem. Champoeg was swept away.
1881	River crested at 36.3 feet. Flood water reached downtown Salem.
1891	Crest at 45 feet. Floods swept away Marion-Polk County Bridge.
1943	January floods following 60 days of heavy precipitation and 26 inches of snow. Crest at 38.6 feet.
1964-65	Flooding caused $2,240,000 worth of damage. Christmas week crest at 45.3 feet. Flood receded, then rose again the last week of February doing $47,200,000 more damage. 12.4 inches of snow fell in mid-December, then a Chinook wind blew in and melted all the snow. 8.16 inches of rain fell in January 1965. From November to January 23.58 inches of rain fell. The annual total for the year was 36.94 inches. Considered to be a 100-year flood.
1996-97	Four day cold spell with 17-degree lows and 35-degree highs followed by five days in the 50's. 7.58 inches of rain fell. Some claim this was also a 100-year flood event (Hanson 1998).

Some of you flood fans might wonder about the Flood of 1948 that washed away Vanport. This was not included because it was more of a Portland-area flood of the Columbia.

The flood of 1861 is often characterized as the worst flood to hit Salem. The Keizer Bottom has been subject to flooding throughout its history. The flood of 1861 was the worst flood to hit Keizer. The flood came as far east as the current fire hall site on Chemawa Road. Keizer was isolated from Salem. The then unnamed Claggett Creek flooded lowlands at the current Claggett Creek Park and closed Chemawa road to the east. The creek swelled to the proportions of a river. The *Oregon Statesman* reported in 1862, "The flood of 1861 went down in history as the most disastrous ever experienced in the Willamette Valley" (Lossner 1990). Earl Byrd's grandmother told him that people went to their rooftops with cattle horns so they could be found and rescued during the flood of 1861 (Hanson 1998).

Paul Townsend of Mission Bottom stated that the flood of 1891 was comparable to what he had been told about the 1861 flood and what he experienced in the flood of 1964: "There were pigs in the attic" (Lossner 1990). In Salem in 1891, two feet of snow fell. Then a Chinook wind melted everything. The Willamette rose so high that the bridge to West Salem was washed out. Don Durette said, regarding the flood of 1891, "There was a legend about that flood that I heard repeated many times and that is the River was so high, that Keizer Creek reversed itself and most of Keizer was under water" (Lossner 1990). Keizer Creek was another name for Claggett Creek.

Not all the floods involving Claggett Creek occurred during the major floods of the Willamette River. In 1909 Thressa Hall, a student at the then two-room schoolhouse at School House Square, said that the flood waters of the Willamette River poured through the ravine behind the school. Claggett Creek rose above the footbridge at Chemawa Road. Whenever the creek rose above the footbridge, Keizer School would close (Lossner 1990).

In 1923, Paul Townsend of Mission Bottom observed that the flood water in the bottoms was the highest that he had ever seen (Lossner 1990). During the flood of April 12, 1931, Jack Chapin talked about fishing with a shovel (Lossner 1990).

During the flood of 1943, a US Coast Guard cutter floated onto the Rehfuss farm on Cherry Avenue through the draw where the Keizer Elks Club is now situated. The purpose of this cruise was to rescue people stranded by the flood. The flood crested at 30.6 feet. The 1943 flood was characterized by a rapid rise in water level, six inches per hour. This was a major problem; coupled with no advance warning, this flood was very destructive to the farms in the Mission Bottom area. People have speculated in hindsight that there was no advance warning due to the war effort. Flooding in the Willamette Valley was classified information -- if the enemy had been aware of limited harvest from the Willamette Valley, it could have constituted a tactical advantage.

On Christmas Day in 1953 electric power to Mission Bottom was out, since most of the Bottom was under water.

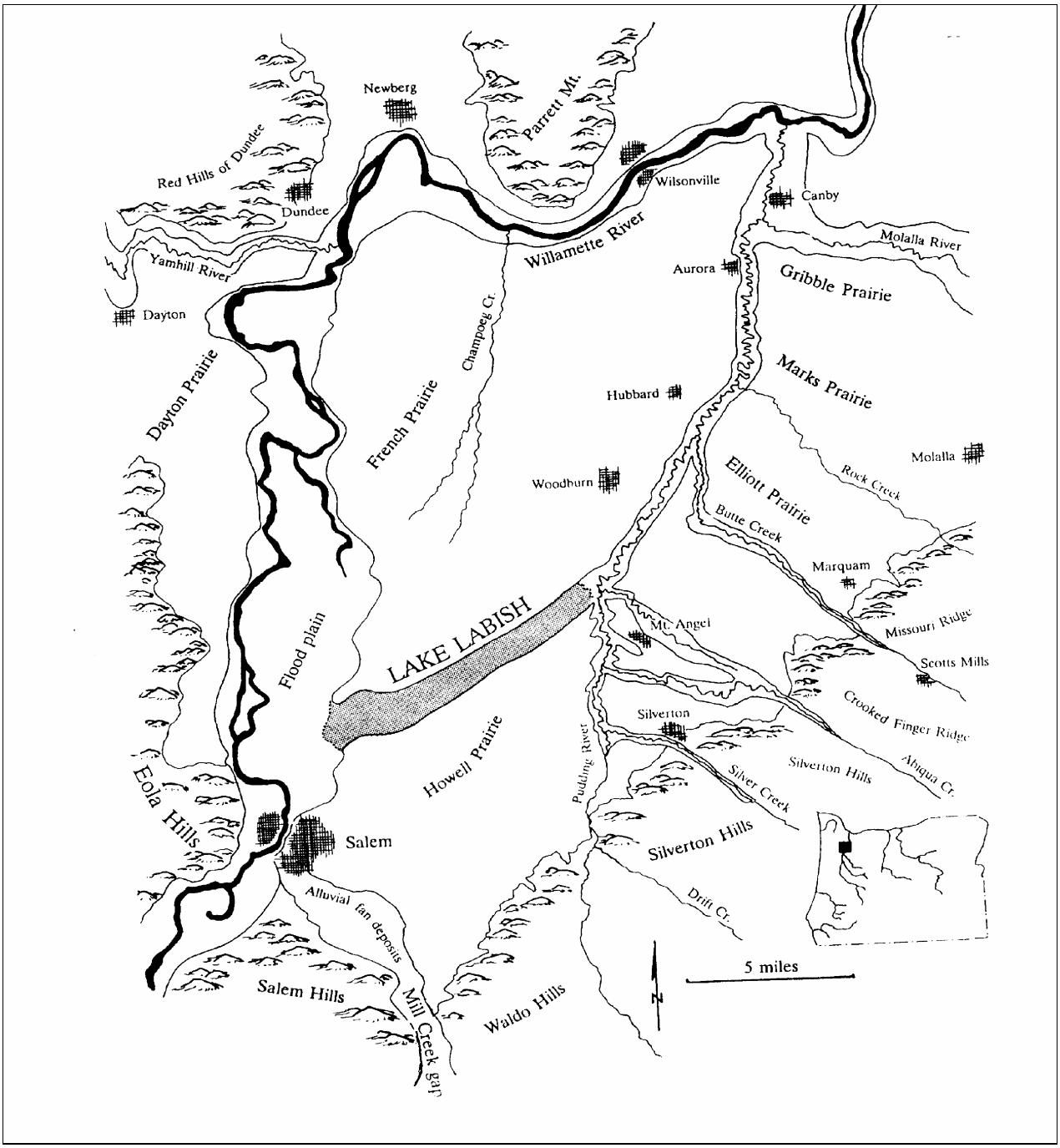
During the flood of 1964/65, water from the Willamette River swept away the new football field at McNary High School (Backlund pers. comm.). Other accounts of this incident give Claggett Creek the credit for the theft of the football field. Flood waters covered Chemawa Road past Keizer School into the Safeway parking lot (Lossner 1990). Volunteer fireman Otis Anderson said that the water from the backed up Claggett Creek came in from across McNary High School. This flood was devastating because people had 15 minutes' notice to evacuate their homes, which were decorated for Christmas. Many of the photos of this flood show soggy Christmas trees and presents at the high water mark. 4,200 of Keizer's 7,000 residents had to evacuate, as the flood waters rose four inches every 15 minutes (Morgan 1994).

History of Lake Labish

Mt. Mazama erupted 6,800 years ago, thus forming Crater Lake. Ash covered all of Oregon east of the Coast Range, Washington, Idaho, Montana, and part of British Columbia and Alberta. Lake Labish still has an ash layer more than two inches deep, some three feet below the lake surface (Tryk 1996).

French Canadian fur trappers discovered Lake Labish in 1848 (**Figure 3-1**). The name of Lake Labish comes from the French word "la biche," meaning "female deer or elk" (Tryk 1996). The Pudding River, which drains into Lake Labish, purportedly got its name when two French Canadian fur trappers shot an elk about three miles west of Mt. Angel. Their Indian wives made blood pudding from the kill; hence, the name Pudding River (Tryk 1996).

Figure 3-1. Location of Lake Labish



Lake Labish drains into Clear Lake and the Willamette River from a natural divide about three miles from the western end. The Little Pudding River drains Lake Labish's eastern end. Marion County gave permission in 1875 for construction of a two-mile ditch from Clear Lake. This was the first attempt to drain Lake Labish, though it failed because of the many surrounding springs. The federal government gave the lake bottom to the state of Oregon, as no private landowners were interested in it until 1890

(Tryk 1996). The federal government retained about seventy acres of Lake Labish for the Chemawa Indian School's classes in agriculture. They grew onions, pole beans, and sweet corn.

Salem suffered a major flood in 1891. The railroad crossed Lake Labish on a trestle a little north of Chemawa. The trestle gave way under the southbound train, dumping part of it in the water. There were five fatalities. The engine could not be salvaged; it kept sinking in the soft lake bottom, where it still lies. The railroad filled in that section of the lake to cover it (Tryk 1996).

The western end of Lake Labish was drained about 1911. A ditch through the middle section was completed in 1915. In that same year, M.L. Jones dug a ditch from the east side of the divide, which allowed the lake to be cleared of brush. This was mostly willows and buck brush, with some small ash and alder. Lateral ditches were then dug by hand to drain the fields (Tryk 1996).

Two millionaires, A. F. and J. O. Hayes from California, became interested in the northern end of Lake Labish in 1913. They wanted to farm the rich bottomland. The Parkersville Dam prevented the draining of the lake. Hayes and other landowners who wanted the land bought out the owners of the dam and removed it (Tryk 1996). Hayes then began dredging the Little Pudding River by steam-powered shovel, and then by tractor.

The Hayes built a steam-powered sawmill east of the Pudding River, near the lake bottom. The logs for the mill were rafted during high water by tugboat. The mill furnished all the lumber for the buildings of Hayes Labish Farms (Tryk 1996).

The crops on the Hayes Ranch in the early years included peppermint, onions, sweet corm and pole beans. In later years it also raised celery and lettuce. The ranch had a pig farm in the late 1930s and 1940s. In the early 1930s, Hayes formed the Labish Brokerage to ship the ranch's products to market. Prior to that, three shippers from Portland hauled the onions from Brooks by rail (Tryk 1996).

In the early years, horses were used for all agricultural work. The Hayes Ranch had a stable of draft horses. Even when tractors began to be used for the hard work, horses were still used to finish up and for harvesting (Tryk 1996).

A large Japanese community grew onions, celery, lettuce, and other vegetables in part of Lake Labish. Every farm had its own greenhouses to nurture the young celery and lettuce plants. The Japanese had their own churches and schools.

Onion-growing on the lake was all done by hand for many decades. The land was prepared with horses wearing special shoes clamped to their hooves to keep them from sinking into the ground. Seeding was done with a hand-pushed seeder. Two acres was a full day's work. Weeding was done on all fours. Harvesting onions by hand was slow and hard. The onions were pulled and placed in rows by people walking on their knees. One person could do about a half an acre. The onions were picked up by hand or with a fork, and hauled to the barn by horse-drawn wagon. They were shipped mainly to the California market; some were exported to places such as Panama, China, the Philippines, and Hawaii (Tryk 1996).

The Japanese community of Lake Labish continued to farm until 1942, when the U.S. government moved all the Japanese from the West Coast to the interior, for security purposes during the war. Only a few families returned after the war to grow onions. The Hayes Ranch operated until 1945. Then it was sold, and subdivided into ten and twenty acre lots, most of which are still farmed to some degree (Tryk 1996).

Guide to the Upper Claggett Basin

For those of you interested in following the upper portions of Claggett Creek in its urban environment, the following text describes how to best view the creek.

One block east of the intersection of Lancaster Drive and Market Street, at the corner of Market and Clay, on the north side of Market St., is the outfall of a culvert that begins at Lancaster Mall and flows under I-5. What I call the McKay branch of Claggett Creek begins here. The best way to view this reach of Claggett Creek is to park in the Bible Center Fellowship parking lot. The creek is on the east side of the parking lot. The creek flows north for one block to Sunnyview Road.

At Sunnyview, the creek is diverted underneath Sunnyview Road to Scotsman Lane, the southern entrance to McKay High School and a potential wetlands mitigation site on Claggett Creek. The creek continues to flow in a northerly direction on the McKay High campus. Again it is piped underneath the McKay High baseball and soccer fields to re-emerge near the playground in McKay Park. The creek continues to flow northward. Claggett Creek can be seen at the end of Glendale Avenue. Glendale is between Sunnyview and Silverton Roads on Lancaster Drive. The creek can also be accessed by turning off Lancaster Drive at Devonshire Court. This is the big intersection near Wal-Mart. Drive to the end of Devonshire Court and park. By walking through the Devonshire Court Apartments, you can view this reach of Claggett Creek. To access the northern end of this reach, head eastward on Silverton Road from the intersection of Silverton Road and Lancaster Drive. Just past Double H Western Wear turn right onto Tierra Drive. Claggett Creek is clearly visible here.

Behind the Double H store, the creek is again piped into a culvert and diverted to the west underneath Lancaster Drive, where it re-emerges east of Fisher Road. This reach of Claggett Creek is easily accessible from Hornbeam Street. There are large fields here, so you can wander along the creek. If you are lucky you will see the red-tailed hawk that hunts from the big tree by the creek. This reach of the creek passes underneath Cooley Drive. Cooley Drive is a connector between Lancaster Drive and Fisher Road near the west entrance of Chemeketa Community College. The final access point of this reach of Claggett Creek is the Boy Scout cabin at 4160 Fisher Road. This is the only log cabin on Fisher Road with an American flag in front of it. If you are approaching the cabin on Portland Road, proceed in a northeasterly direction on Portland Road, until you cross I-5. At the first traffic light, turn right onto Ward Drive. Ward Drive will go through an S-curve. Take the first right onto Fisher Road. As you proceed south on Fisher Road you will drive through two swales. The first or northern-most swale is the Chemeketa branch of Claggett Creek. The second or southernmost

swale is the "main stem" of Claggett Creek. If you park in the lot at the Boy Scout cabin you can walk back to the creek course at Fisher Road. If you follow the creek westwards, towards I-5, you will encounter the confluence of the "main stem" and the Chemeketa branch. This is one of the most beautiful places in the upper Claggett Basin.

The aforementioned Chemeketa branch of Claggett Creek flows from the north side of the northernmost parking lot of Chemeketa Community College. It passes by the Tierra Apartments between Ward Drive and the Chemeketa campus. It also flows near the Jan-Ree swimming pool.

Finally, there is the Hawthorne branch of Claggett Creek. Just like the McKay branch of Claggett Creek, the headwaters of the Hawthorne branch is in Lancaster Mall. The Hawthorne branch is primarily piped underground. This branch briefly emerges at the northeast corner of the intersection of Sunnyview Road and Hawthorne Avenue, just west of I-5, at a detention basin. The Hawthorne branch finally emerges at the southern end of Eastgate Park, which is off Hawthorne Drive just south of Silverton Road. This branch then flows north to its confluence with the main stem of Claggett Creek near the bridge the creek passes through under Portland Road.

To access the mainstem of Claggett Creek, park in the lot at the intersection of Hawthorne Dive and Hyacinth Street. You will be just west of I-5. You can also access this reach of the creek by parking in the empty lot, near the bridge on Portland Road. This lot is two lots southwest of Stuart's Auto Supply on the east side of Portland Road. This reach of Claggett Creek is the most shaded and least disturbed. We need to preserve this reach of the creek as a template with which to gauge our success in restoration efforts.

The reach of Claggett Creek from the Union Pacific Railroad tracks to the Salem Parkway is mostly in private hands, so you must get permission from the owners to check out this reach of the creek. It has been heavily impacted by gravel extraction and the Salem Industrial Park.

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Mill Creek Watershed

History of Mill Creek Watershed

By Sue Geniesse and Jon Yoder

Introduction

The Mill Creek watershed was once a land of open prairie and scattered forest. Mill Creek flowed through braided channels and wetlands, and was joined along the way by smaller waterways. Trees along stream banks provided shade and a source of woody debris to nourish the stream. Watershed habitats supported a variety of plants and animals.

As development occurred over time, Mill Creek was pumped for water supplies, harnessed to generate energy, and used to carry wastes. It was altered both to move water closer to where it was needed, and to move flood waters away quickly. Urbanization, industrialization, agriculture and timber harvesting, have all affected the natural stream environment.

Mill Creek's Sources and Diversions

The source of Mill Creek is the Cascade foothills in Coon Hollow just north of Mehama. The maximum elevation in the watershed is approximately 2,200 feet above sea level, but most of the basin lies at lower elevations. Only 6.5 square miles of Mill Creek's approximately 110 square miles is over 1,000 feet elevation (City of Salem 1996). The watershed is approximately 24 miles long and 6 miles wide.

From its source, Mill Creek flows west through forests, agricultural land and the cities of Turner and Salem. Along the way, it adds to its flow with water from the North Santiam River (diverted via the Salem Ditch), and from Beaver, McKinney, Battle, and Rogers creeks. It enters Salem near Kuebler Boulevard, a short distance upstream from I-5. Within Salem, the creek flows through commercial and residential areas, its water diverted at two sites, and joins the Willamette River north of "D" Street at Willamette River Mile (RM) 84.

The Beaver Creek tributary drains approximately 31 square miles. It joins Mill Creek about a mile east of Turner at Mill Creek RM 11.9. McKinney Creek drains hill country and agricultural land south of Salem, joining Mill Creek just west of Turner at RM 9.4. Its tributaries include Battle Creek (and its tributaries, Jory, Waln, and Powell Creeks) and Rogers Creek.

Water is diverted from the North Santiam River through the Salem Ditch, also known as the Salem Canal, in Stayton. The water is diverted through a control gate located at the east end of Stayton near Pioneer Park, and joins the natural flow of Mill Creek in the Santiam Golf Course next to Highway 22 near Aumsville (RM 17.7). The amount of summertime base flow contributed by the Salem Ditch to Mill Creek is actually larger than the amount of flow contributed by the natural Mill Creek headwaters (City of Salem Public

Works Department 1995). It is the only reason that Mill Creek flows in any significant amount year-round, instead of stagnating in the late summer or drying up entirely.

Shelton Ditch, a diversion off Mill Creek in Salem, begins behind the State Printing Office east of Airport Road between State and Mission Streets near RM 3.4. The water flows due east through residential neighborhoods, along Mission Street and the Pringle Parkway before joining Pringle Creek at the Church Street Bridge about four blocks upstream of Pringle Creek's confluence with the Willamette River.

The Mill Race in Salem diverts water from Mill Creek at 20th and State Streets, behind the Duck Inn near RM 2.2. The Mill Race flows parallel to Ferry Street through Mission Mill and east through Willamette University. The water then meanders in a constructed creek habitat through the park north of the SAIF building and Pringle Parkade. Finally it flows through an elevated concrete channel or flume above the north side of Pringle Creek and eventually joins Pringle Creek just upstream of Commercial Street SE.

Other similar man-made diversion channels (mill races) existed historically, such as the Capitol City Power Ditch, but have since been paved over and eliminated.

The Watershed Before Historic Settlement

Geologists studying the Mill Creek floodplain theorize that the North Santiam River once flowed through what is now downtown Salem, rather than flowing well south of the city as it does today. One site where soil layers document this is at the Mill Creek Prehistoric Site Complex (formerly known as Hager's Grove Site), located in the Mill Creek floodplain adjacent to the Highway 22/Interstate-5 interchange. The basal, or lowest, sediment layer at the site is a gravelly layer representing a period of postglacial sediment deposition dating to around 12,000 years ago. At that time, the North Santiam River flowed through Turner Gap. As regional topography changed between 12,000 and 6,000 years ago to cut the present North Santiam River channel, the former North Santiam channel continued to serve the smaller drainage area of Mill Creek. Since that time, existing evidence is that there has been mostly localized migration of the creek channel within the relict North Santiam channel trough (Connolly et al. 1998).

When historic settlers first arrived, the Willamette Valley floor consisted primarily of open prairie with a scattering of Douglas fir and Oregon white oak trees. This ecosystem was maintained and managed by the Kalapuya Indians for camas production through intense annual fires. Forests that were present could be found in isolated groves surrounded by prairie, in higher and steeper foothills of the surrounding hills, as well as along riparian zones. Forest species consisted of Douglas Fir, Western Hemlock, Western Red Cedar, and Big Leaf Maple in moist areas and Douglas Fir, Ponderosa Pine, Western Red Cedar, Oregon White Oak, and Madrone in drier habitats.

The Mill Creek Prehistoric Site Complex, at the Highway 22/Interstate-5 interchange, has yielded some 77 cultural features. Most appear to be in-ground ovens

for processing foods, notably camas, alliums, hazelnuts, acorns, and a cherry pit, which were recovered charred in association with the ovens.

No faunal remains (including fish and other aquatic resources or land-based game) were recovered at the site complex. Other than the presence of projectile points and other stone tools, no direct evidence of hunting or fishing was recovered. This is most likely because faunal remains, particularly small fish or animal bones, have not survived well in the acidic soils of the Willamette Valley and so are lacking in the archaeological record (Tasa pers. comm.).

There are four main clusters of radiocarbon dates at the Mill Creek Prehistoric Site Complex, with the earliest cluster dating back 3,800-5,000 years ago and the youngest cluster 150-600 years ago. Occupation of the site seems to have been episodic and probably seasonal. Botanical remains indicate that occupation occurred during the spring/summer (camas and cherry) and fall (hazelnuts/acorn). And because the height of Willamette Falls probably barred large numbers of salmon from migrating to Mill Creek, except during times of very high water, the inhabitants of Mill Creek sites would not have had the plentitude of fish resources that allowed some other Northwest groups to establish more permanent settlements (Pettigrew 1980; Connolly et. al 1998). Nor could they live along the banks year round due to the unpredictable and sometimes devastating floods.

The natural vegetation at the Mill Creek Prehistoric Site Complex is riparian. Most of the area is now densely wooded, with hardwood trees such as black cottonwood, Oregon ash, Oregon white oak, and willow, and a diverse underbrush dominated by wild rose and hazel. However, because many of the oak trees are widely spaced and exhibit a savanna growth habit, the archaeologist who excavated the sites presumes that they once had more room for growth (Pettigrew 1980). He speculates that now dense vegetation on the site is a result of the brush fire prevention that has been the practice since the valley was settled by Euro-Americans. Notably, archaeological remains were found only in more open grassland areas.

Historic Settlement

Rev. Ezra Fisher, a Baptist missionary, wrote about Mill Creek:

> …up the valley of Mill Creek through a picturesque and fertile part of the country.…hastened 12 miles up Mill Creek through one of the most delightful prairies surrounded by the most picturesque scenery in North America, if not the world (Maxwell 1953).

Early settlement altered the valley ecosystem as a result of agricultural and industrial growth and a move away from maritime fur trade. Mills of all sorts, such as woolen, saw, and grist, sprouted up along waterways to fulfill the distant demand for flour, lumber, and other goods. In Stayton, water was diverted from the North Santiam

River to Mill Creek to supplement seasonal low flows in Salem. In Salem, Mill Creek was diverted to power industrial uses along constructed mill races. The mill races continued to have an industrial function, but by the turn of the century, after the Willamette Woolen Mill burned and with a few exceptions, the main channel of Mill Creek took on more of a residential character.

As early as the 1840's, the Methodist Missionaries who settled in the Salem area began to change the area's character. The 1878 Historical Atlas Map of Marion & Linn Counties states: "In 1840,…the people around were chiefly engaged in stock raising. The first considerable drove of cattle brought into Oregon was brought by the mission, in 1837 (Edgar Williams Co. 1878)."

Settlement spread in the Mill Creek valley from several routes and directions. From Salem, settlers rapidly traveled up Mill Creek. The town of Turner was founded on an 1849 land claim by A. Cannon. The 1878 Historical Atlas notes that: "The site of the town is both pleasant and healthful, being located on gently rolling prairie land near Mill Creek…. A fine new mill has recently been erected on the creek (Edgar Williams Co. 1878)." The town of Sublimity was founded by 1852. Sublimity has one of Oregon's oldest post offices.

The town of Aumsville was founded in 1864 by G. H. Turner. The 1878 Historical Atlas describes it as such:

> The land adjacent is a rich prairie with scattered belts of timber to the eastward. The first settler in this neighborhood was Mr. John McHaley, who came in 1849. Mr. Turner, taking advantage of the fine water power supplied by Mill Creek, built an excellent flouring mill in 1864…which did an extensive business until the building of the railroad, since which time the prosperity of the place has declined (Edgar Williams Co. 1878).

The town of Stayton was platted in 1872. The 1878 Historical Atlas attributes the town's prosperity to its "almost unlimited" water supply for manufacturing, irrigation, and stock purposes.The authors of the 1878 Historical Atlas describe the Mill Creek valley in lyrical terms:

> The Valley of Mill Creek is from half a mile to three miles in width, the greater portion of which is prairie land. The low lands of this part are very rich, and classed among the most productive in the state, and the whole may be considered as generally productive….The part of the country between Mill Creek and the Santiam and Willamette Rivers is about evenly divided between rolling, hilly, and level lands. The level portion for the most part have a black soil, while the hills are principally a clay formation. Here, too, nature has been most bountiful in its supply of creeks and springs, affording pure water in great abundance. There are

> many groves of white oak, fir, and cedar, too, is quite plentiful (Edgar Williams Co. 1878).

Wheat, oats, cattle, and sheep became the chief commercial products of farms. The valley ecosystem was transformed into fenced, symmetrical, manicured fields. Without annual fires, shrubs invaded and open woodlands became dense forests. In addition, vegetation was removed along riparian areas where the soil was richer and water was easily accessible.

By 1982, when the Mill Creek Drainage Study was completed, watershed land uses were estimated as follows: 18% forest land (most in irregular patches), 62% cropland, 1% non-cropland pasture, and 19% urban development. Most of the land bordering Mill Creek was agricultural. The study reported as widespread various agricultural activities that contribute to unstable streambank ratings: removal of bankside vegetation, tillage practices up to the bank without a buffer, and unrestricted access by cattle to the lower bank areas (Mill Creek Watershed Task Force 1983).

Urbanization had significant effects. Industries depended on the creek for power and in return they modified and diverted the channel. Industries installed turbines, which unintentionally became obstacles for fish. Private homes and businesses were built along Mill Creek; many owners replaced native vegetation with lawn, filled natural wetlands, and reinforced the creek bank against erosion (and natural channel meandering). Creeks and the Willamette River became the primary waste disposal outlet for residents and businesses.

Channel Modifications, Irrigation, and Flooding

Over the approximately 150 years of historic settlement, there have been numerous and cumulative channel modifications, "improvements," and diversions (principally for irrigation) that have affected the course and flow of Mill Creek. Most of these were engineered with a specific well-intentioned purpose or purposes in mind, but their actual and cumulative effects have in many cases unintentionally degraded other watershed functions.

The Salem Ditch, dug in 1855-56 to increase the dry season flow in Mill Creek for Salem mills, was the earliest historic Mill Creek channel modification. The ditch has since been widened, deepened, and reinforced several times. According to the 1982 Mill Creek Drainage Study, the canal ordinarily carries 125-150 cubic feet per second (cfs) and never carries more than 170 cfs.

Ernst Lau, a Stayton historian, recounted the difficulties of maintaining the Salem Ditch and the link to the North Santiam River:

> Within a few years of the completion of the ditch, trouble was experienced in keeping it supplied. For the next 75 years those who assumed the responsibility of operating the ditch faced two kinds of challenge: a river whose flow could vary by a hundred-

> fold within a short period of time and whose course was by no means established; and, as more and bigger turbines (and more irrigation and municipal water needs) were installed on the ditch, finding ways to divert enough water from that unruly river to keep things running (North Santiam Watershed Council 2001).

For instance, in 1872, a February flood caused the main channel bend of the North Santiam River to migrate south, leaving the Salem Ditch headgates dry when the river was low. This resulted in an 1873 project to extend the north channel enough to re-intercept the river and build dams to divert water from the main channel into the north channel (North Santiam Watershed Council 2001). Again in 1909, the main channel of the North Santiam River moved south and the Salem Ditch headgates were left dry. In response, the new south channel of the North Santiam River was blocked off (*Stayton Mail* 1991).

Mill Creek also obtains water from the North Santiam River through a system of irrigation ditches operated by the Santiam Water Control District (SWCD). Most of the approximately 40-square mile district lies within an area bounded by the towns of Stayton, Aumsville, Turner and Marion, plus a corridor extending from Turner towards Salem along Mill Creek. The District was formally created in 1959, when it purchased an existing ditch system from the Willamette Valley Water Company. Prior to that, a series of private ditch companies, dating from 1909, supplied irrigation water to the area (Winebery 1981).

According to A.D. Gardiner, original manager of the SWCD, farmers along Mill Creek could not irrigate their lands because Boise Cascade held the rights to almost the entire flow of Mill Creek, and the creek was closed to new water rights filings. The SWCD and Boise Cascade entered into a water exchange agreement made possible because some of the District's irrigation ditches eventually emptied into Mill Creek. Under the agreement, farmers took water directly from Mill Creek to irrigate their fields. The District then replaced this Mill Creek water by running an equivalent amount of North Santiam River water through existing District-owned irrigation ditches that already emptied into Mill Creek (Winebery 1981).

Water from Mill Creek is sometimes diverted into the Pringle Creek system. This occurs indirectly via the complex web of irrigation drainage-ways and directly by means of the weir dam diversion structure to Shelton Ditch. Also, at times of major flooding, Mill Creek overflows into the Pringle Creek basin upstream from Interstate-5 (City of Salem Public Works Department 1995).

One example of how waters from Mill Creek have been diverted to Pringle Creek involves the Santiam Water Control District-operated gate structure on Mill Creek south of Kuebler Road, inside the Salem urban growth boundary. During the growing season, flows are diverted to irrigate nearby farms and the excess then goes into the East and Middle Forks of Pringle Creek near Kuebler Road. This irrigation drainage supplies much of the water in the summer to this reach of Pringle Creek. During the

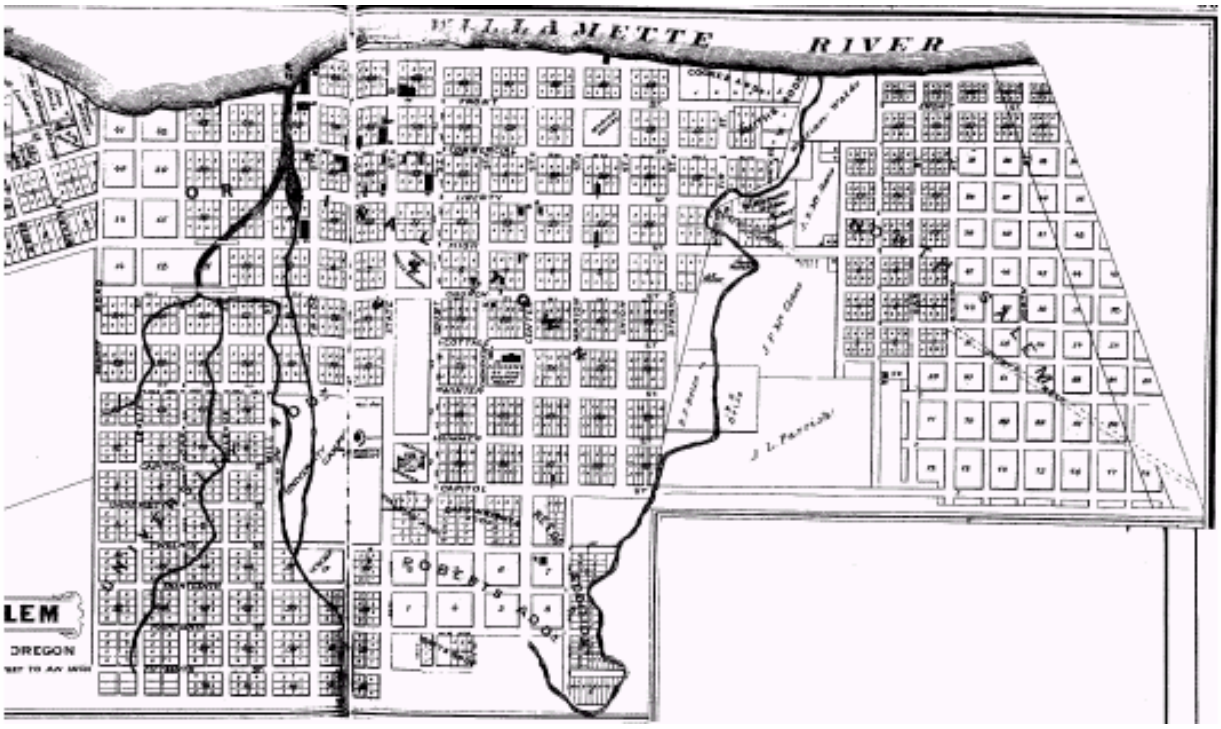
winter, the control gate on Mill Creek is closed and the irrigation channels become storm drainage-ways (City of Salem Public Works Department 1995).

Shelton Ditch directly diverts Mill Creek flows to Pringle Creek. Various sources differ on whether Shelton Ditch is a natural drainage channel extended and adapted to relieve flood overflows from Mill Creek or whether it is a totally artificially constructed channel. The 1878 Historical Atlas map of Salem (**Figure 3-2**) and the 1895 Sanborn Insurance Maps of Salem show a natural drainage/creek that drains into Pringle Creek in the relative location of where Shelton Ditch is today (Edgar Williams Co. 1878; Sanborn Fire Insurance Co. 1895). This natural drainage did not extend far enough to connect with Mill Creek. A 1947 U. S. Army Corps of Engineers Survey Report on the Willamette River and Tributaries states that Shelton Ditch was constructed in the late 1890's:

> …by plowing a furrow along a county road to provide relief from overflow from Mill Creek . Continuous erosion entirely destroyed the road and created the present channel. …Several years ago the city of Salem inaugurated a program of cleaning and straightening the channel to allow it to take flood waters from Mill Creek more readily. Some work was done in the early 1930's and in 1938 a concrete weir and diversion dam was built whereby the flow through the city (via Mill Creek) could be partially controlled and excess water turned down Shelton ditch (U.S. Army Corps of Engineers 1947).

In contrast, the 1968 City of Salem Storm Drain Master Plan states that Shelton Ditch was constructed in 1936 and a 1990 Corps of Engineers report states that it was constructed in 1940 (City of Salem Public Works Department 1968; U.S. Army Corps of Engineers 1990). Perhaps what occurred was that an original natural drainage was enlarged, straightened, directly connected to Mill Creek, and eventually had its flow altered through various constructions from the late 1800's to the present.

Figure 3-2. 1878 Historical Atlas Map of Salem



According to the U. S. Army Corps of Engineers Shelton Ditch, originally a shallow drainage, has over time eroded or been constructed into a 20-foot deep (average) channel (U.S. Army Corps of Engineers 1990). The 1947 U. S. Army Corps of Engineers Survey Report foreshadows this deepening:

> …Originally, the ditch passed through relatively undeveloped territory where little flood damage appeared likely. In recent years, however, the south city limits have been extended and an extensive residential area has developed south of the ditch and considerable industrial development has taken place immediately adjacent to it. Sixteen bridges now cross Shelton ditch.. …The developments along Shelton ditch have created the necessity for bank protection and greater capacity in order to reduce erosion and overflow damages along its course (U.S. Army Corps of Engineers 1947).

In rural areas of the watershed irrigation needs, combined with agricultural flooding problems, brought about various channel modifications and "improvements." Over the years, water from the Salem Ditch, the Stayton Ditch, and Mill Creek has been diverted to an expanding and interconnected irrigation canal network of over 16,000 acres in the area bounded by Turner, Aumsville, Stayton, Marion, and Salem (Trosi pers. comm.). Much of this irrigation water eventually drains back into Mill Creek carrying sediment, agricultural chemical wastes, and some urban runoff (Mill Creek Watershed Task Force 1983). The 1982 study states that over the years the canal system was:

> …made more efficient by the installation of subsurface tile systems, the addition of new canals, the widening and deepening of older canals, and the upsizing of culverts. This has had the result of reducing rural flooding, making more land available for crop production, and reducing flooding on county roads (county road drainage ditches are interconnected with the District system). It has probably also had the effect of increasing peak runoff from these lands into Mill Creek (Mill Creek Watershed Task Force 1983).

During the 1960's, the Santiam Soil and Water Conservation District embarked on a series of flood control "improvements" in the agricultural areas of the watershed. The June 1968 City of Salem Storm Drain Master Plan reported:

> [Beaver] Creek has recently been improved for flood control purposes for a length of 6.4 miles and now accelerates the discharge to Mill Creek. Plans are underway for the construction of additional ditch improvements and the annexation of approximately 3500 acres to the district, both of which will tend to increase the rate of discharge to Mill

> Creek. ...With the flow in Mill Creek now being accelerated by channel improvements in tributary streams, the flow reaching the diversion dam East of Airport Road will continue at an increasingly high rate until such time as storage reservoirs and channel stream flow control facilities are provided. ... The trend in improvement of land management practices being developed by agricultural agencies to provide better drainage systems, accelerates the flood waters in the City. This coupled with the gradual urbanization of suburban areas increasing the volume of runoff, point to the need for the City to work toward the provision of means to alleviate the overloading of Mill Creek and subsequent excessive diversion to Shelton Ditch. ... The City should begin financial planning to provide its share of the cost of constructing a paved flume in Shelton Ditch (City of Salem Department of Public Works 1968).

Similarly, a 1967 report by the U.S. Soil Conservation Service reported that:

> Channel scouring is occurring on Mill Creek below Turner. During periods of high flows, bank cutting is taking place in localized areas. A channel stabilization program is needed to reduce the erosion of the channel and to maintain a relatively uniform channel and velocity between Turner and Interstate 5 (U.S. Soil Conservation Service 1967).

In other words, these are examples of well-intentioned channel engineering to accomplish one purpose (agricultural irrigation and drainage) that then causes a problem downstream (accelerated discharge), which leads to a call for more channel engineering to address the unintended problems of downstream flooding and erosion.

As major highways were constructed through the Mill Creek floodplain, the channel was modified to better fit the engineers' design. For example, when Interstate-5 was constructed in the vicinity of the Highway 22 interchange, an artificial channel was constructed that keeps the creek on the west side of the interstate highway and, for the most part, moves it out of the interchange area.

Numerous floods have characterized Mill Creek over the years. The creek drains a mostly low-lying, shallow basin and so is sensitive to rains or sudden snowmelt. Most of the larger historic floods resulted from heavy rains supplemented by snowmelt at a time when the soil was near saturation from previous rains.

Major floods occurred in 1861, 1888, 1909-10, 1937, 1949, 1964, 1972, 1974 and 1996. The U. S. Army Corps of Engineers rate the highest recorded floods as the 1964 flood (about a 50-year event), the 1974 flood (about a 75-year event) and the 1996 flood, estimated to be about a 90-year event (City of Salem Public Works Department 1997).

Water Quality

Historical water quality data for the Mill Creek watershed is scarce prior to recent decades, but a few anecdotal sources give clues about the quality of the water. These sources indicate that, generally, industrialization and lack of sanitary sewers resulted in a degradation of area waterways.

In 1868, Salem City Council passed an ordinance requiring that residences hook up to rudimentary "sewers" that dumped into the Willamette River, Pringle Creek, and Mill Creek. By 1885, the privately owned Salem Water Works had to move its water intake from the Willamette River at Chemeketa Street to off Minto Island, because of pollution entering the Willamette from Pringle Creek (Chapman 1995). The 1878 Historical Atlas Map noted about Salem: "This city is peculiarly favored in the manner of drainage, as without having any steep gradients it offers ample slope for carrying off all sewer and surface water. This fact, no doubt, contributes largely to the remarkable healthfulness of the place" (Edgar Williams Co. 1878).

In the late 1880's sewer lines were laid on Court Street, Ferry Street, and in North Salem. These all dumped into the Willamette River and Mill Creek. The State Penitentiary and Asylum dumped raw sewage into Mill Creek (Chapman 1995). The *Oregon Statesman*, in 1900, stated that the city had a "good system of sewers." A later 1903 article describing the widespread pollution in the creeks expressed the downside to this sewer system (Chapman 1995).

On the other hand, Salemites reportedly had their favorite swimming places on Mill Creek. According to a *Capitol Journal* article, one such place was the old Live swimming hole between 14th and the railroad trestle, where Olinger pool now sits, which was used by youth as early as the 1880's and 1890's: "There youth acquired a swimming hole wisdom and their four lettered words and predatory habits used to shock stiff-necked guardians of youthful morals and police would be summoned" (Maxwell 1953).

The Oregon Sanitary Authority was established in the 1940s to clean up the Willamette River. The City of Salem's first sewage treatment plant was built in the 1950s at what is now River Road Park in north Salem. The City's current Willow Lake Wastewater Treatment Plant was initially constructed in 1964, has subsequently been expanded and upgraded several times, and now treats all the wastewater generated in the greater Salem/Keizer urban area.

Watershed Chronology

1834 Jason Lee, a Methodist Missionary, and his party arrive and build a mission about 10 miles north of Salem at Mission Bottom, on the Willamette River.

1840-41 The central mission site, including the Lee House and parsonage, is moved to Mill Creek in what is now Salem. Mill Creek is named by the Methodist missionaries, who established a saw and grist mill called Mission Mill located near present day Boon's Treasury. The mill is inoperative during the dry season due to insufficient water supply.

1844-45 The Mission is disbanded and Mission landholdings sold, including an Indian Manual Training School that subsequently became the Oregon Institute, and then Willamette University. The original mills are sold to John Force.

1850 The town of Chemeketa (now Salem) is platted within a triangle bordered by the Mill Creek, Pringle Creek, and the Willamette River.

1852 Sublimity Post Office established.

Early 1850's Realizing the potential to increase the amount of summer flows at his Mill Creek mills by diverting water from the North Santiam River, John Force purchases a right-of-way for a connecting canal from Stephen Porter (documented on the original 1852 GLO map). According to Henry Brown:

> ...in the summer of 1850, the proprietors of the North Salem Mills commenced opening a race ...but the work was stopped by a mob from Santiam City and the neighborhood of Jefferson, and from the vicinity of Mill Creek below the proposed race. The North Salem Mill owners expended in that effort hundred dollars, when their operations were thus summarily suspended by what all unprejudiced persons now see was a blind and suicidal act of a mob (Brown 1871).

1856 Willamette Woolen Manufacturing purchases the mill site, paying $400 to John Force for a claimed water right to divert water from the North Santiam River, and including the right-of-way for the connection between

	the river and Mill Creek. Although the water right is in dispute, the company begins work on the canal. Disagreement about the water right brings the issue to the territorial legislature, which incorporates Willamette Woolen Manufacturing and grants the company exclusive right to water taken from the North Santiam—up to 254 cubic feet of water per second. Some members of the legislature object to the lack of limitations on the amount of water that could be taken from the Santiam.
1856-1876	Willamette Woolen Manufacturing is Salem's leading industry. Mill Creek's increased volume powers a 48-inch double turbine wheel and the company has up to 100 employees (Maxwell 1953).
1861	A major flood in December carries the Salem Ditch headgate 1.5 miles downstream.
1861	Trustees of Willamette University agree to let a mill stream be dug across the campus for use of a nearby woolen mill (City of Salem 2001).
1864	Woolen Mill investors buy land in Salem from Alvin Waller and others for a mill race. Waller dam built to divert Mill Creek to the Mill Race. The dam is reconstructed about 1915.
1864	Legislature approves removal of the state penitentiary to 147 acres lying on both sides of Mill Creek about 1 ¼ miles east of what was then the City of Salem but is now well within the city. The total cost of $9,019.17 to acquire the land includes the cost of acquiring a water right from the Willamette Woolen Manufacturing Company.
1865	The Mill Race powers the Willamette Flouring Mills on the Willamette River at Trade Street north of Pringle Creek (later called the Salem Flouring Mill and the Kinney Flouring Mill). The Mill burns in 1899, is rebuilt in 1901, and is finally replaced by the Oregon Pulp Company (Boise Cascade) in 1919-1920 (Chapman 1995).
1866	Flour Mill established west of Stayton on Salem Ditch.
1866	The Mill Race powers Pioneer Oil Mill, (on the site of the present Mission Mill Museum), which makes linseed oil from flax.
1868	Salem City Council passes an ordinance requiring that residences hook up to nearby "sewers" which empty into the Willamette River.

1870's	Tannery and Chair Factory operate in Salem near site of present day Jason Lee Manor near Center and 14th Streets. Excavations have uncovered turbine tubes used by the chair factory (Maxwell 1953).
1872	City of Stayton platted, named for Drury S. Stayton.
1872	February flood moves main channel of North Santiam River, leaving Salem Ditch headgates dry in low flows.
1872	Agricultural Works built along Salem Mill Race near High Street.
1873	Digging in Stayton to extend the Salem and Stayton ditches to meet the new course of the North Santiam River.
1876	Willamette Woolen Manufacturing Mill burns.
1878	Aumsville Mill, along with feed and grinding mills in Turner, is powered by Mill Creek
1880's	Salem sewer system developed; some lines discharge into Mill Creek and Willamette River.
1882	Capitol City Milling power ditch completed taking Mill Creek water from between Church and High Streets to Front Street and north. The mill produces 800 barrels of flour per day. The ditch is later paved over.
1886	Water-powered electrical plant, built along Mill Race at Mill and High Streets replacing Agricultural Works, provides electric street lighting for the Salem downtown area.
1887	Capital City Ice Works established at 1551 Center Street in Salem, behind present day Jason Lee Manor.
1888	Flood wipes out Capitol City Milling and the Mill Race is rebuilt.
1889	Thomas Kay Woolen Mill built along the Mill Race, replacing Pioneer Oil Mill.
1890's	Shelton Ditch in Salem established or expanded to improve overflow drainage from Mill Creek
1891	Sawdust dumping law declared unconstitutional. Mills are allowed to continue dumping waste into streams and canals.

1903	Pollution in creeks in Salem described in the *Oregon Statesman.*
1905	City Ice Works uses two turbines to produce 100 horsepower in high flows and 10-15 horsepower in low flows.
1909-10	A series of three successive floods washes out dams on the North Santiam River and moves the main channel south, once again leaving the Salem Ditch headgate dry.
1915	Waller dam replaced.
1921	November flood. A. D. Gardner blows up part of the intake dam for the Salem Ditch to keep the floodwaters from flowing into the ditch, and thus protects the town of Stayton.
1921-24	Road through West Stayton and Turner to Salem is paved. In 1923 the 25-year old corduroy road that had connected Stayton and Sublimity through the Mill Creek "swamp" is paved (North Santiam Watershed Council 2001).
Late 1930's	Shelton Ditch expanded to alleviate flooding problems and weir dam constructed.
1937	Major flood.
1948	Long Range Plan for the City of Salem seeks to remove much of the industrial use along the Mill Race.
1949	Major flood.
1949	Road construction on what is now Highway 22; construction of Detroit and Big Cliff dams.
1953	Big Cliff and Detroit dams come on line, regulating North Santiam River flows.
1959	Santiam Water Control District buys its ditch system from Willamette Valley Water Company.
1964	Major flood (about a 50-year event) in which an estimated 3,000 acres are flooded. As a result, the USDA Soil Conservation Service prepares a Mill Creek report that recommends dam and reservoir construction, stream

channel stabilization, vegetation clearing, channel enlargement and realignment, and obstruction removal.

1968 Introduction of fall Chinook into Mill Creek by Oregon Department of Fish and Wildlife.

1972 Major flood.

1973 Urban renewal project along the south side of Trade Street. The Mill Race had been contained in a deteriorated concrete flume flowing beneath the old buildings. In this project area, the industrial buildings are cleared, and the Mill Race is raised to the surface to flow in a new channel bed that meanders through a new park (Salzman 1984).

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1974 Major flood (about a 75-year event).

1989 Gasoline spill along Mill Creek in Salem. Hundreds of fish killed; also fish eggs in the gravel.

1996 Major flood (estimated to be about a 90-year event).

Table 3-1. Population Change in Marion County, 1870-1990.

Population	Marion County	City of Salem	City of Stayton
1870		1,139	
1880		2,538	300[1]
1890		3,398	
1900	27,713	4,258	324[2]
1910	39,780	14,094	703
1920	47,187	17,679	649
1930	60,541	26,266	797
1940	75,246	30,908	
1950	101,401	43,140	
1960	120,888	49,142	
1970	151,309		
1980	205,950	89,233	
1990	229,500	108,400	5,160

[1] Source: Edgar Williams Co. (1878)

[2] Source: North Santiam Watershed Council (2001)

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