

City of Portland Civic Planning, Development, & Public Works, 1851-1965 A Historic Context



March 2009



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Planning and Sustainability
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PORTLAND PARKS & RECREATION
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Supported by a Certified Local Government Grant from the Oregon State Historic Preservation Office

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Benson "bubbler," ca. 1912.



Harbor Drive ca. late 1940s.

Introduction

Overview

This document provides a framework for understanding the history of urban planning and public works in the City of Portland between 1851 and 1965 and for evaluating the significance of City-owned historic resources. The historic context spans a time period of more than a century beginning in 1851, the year Portland was incorporated. The new city grew rapidly from a raw frontier settlement on the Willamette River to a prosperous urban center. During the early expansion years, Portland's municipal government struggled to provide basic public services such as streets and sidewalks, police and fire protection, and sanitation, and the foundation was laid for other developments related to art, architecture, engineering, and landscape architecture. In the late nineteenth century and as the twentieth century unfolded, the City gradually increased its capacity to systematically plan and implement infrastructure projects and public services, and guide private development—even as new challenges emerged, such as the rise of the automobile as the preferred mode of personal transportation. The historic context ends in 1965, coinciding with the completion of Portland's first major urban renewal projects, examples of massive, modern-era public improvement efforts that comprehensively reshaped the physical and social character of broad swaths of established urban neighborhoods.

This document is organized chronologically. Within each time period, public planning, infrastructure development and service provision is examined generally, with further details illustrated through examples and photographs. Major topics and themes woven throughout the chapters include:

- Evolution of local governmental structures and bureaucracies;
- Patterns of commercial, institutional and residential real estate development;
- Effects of national political, cultural and social trends;
- Commerce, public finance, and economic conditions;
- Functions of privately-owned public services and utilities;
- Role of public and private elites in civic life and public-sponsored activities; and
- Education and schools.

Purposes and future use of this historic context

This report was prepared collaboratively by the City of Portland Bureau of Planning and Sustainability (BPS) and Portland Parks and Recreation (PP&R), in partnership with the Oregon State Historic Preservation Office (SHPO). It was undertaken to better understand the historical contexts and significance of City-owned historic resources, including properties acquired or developed as part of a City planning or public works program, and privately developed resources that subsequently came into City ownership whose significance may not derive directly from public works programs.

Importantly, it is also intended to provide a frame of reference for future actions by the City; it is one part of a long-term effort to create a set of tools that the City can use to identify, evaluate and protect properties of historic significance—the irreplaceable cultural resources held in trust for the people of Portland, present and future. A related project is the development of a comprehensive Historic Resources Database system that will provide a unified source of historic

resource information for City staff and the public, and will greatly assist in future preservation planning and research projects.

Moving forward, this historic context statement and the Historic Resources Database can assist efforts to inventory, evaluate, protect and manage City-owned properties of historical or architectural significance. This work has already begun. Portland Parks and Recreation has built upon this broad-based, citywide document and created a historic context statement focusing specifically on parks development and property. Using an early version of the database, Parks and Planning staff conducted a reconnaissance-level architectural and landscape survey of 83 park properties acquired between 1851 and 1940, and an intensive-level evaluation of a selected sub-set of these properties. These products were used to help create a Cultural Resource Management Plan for historic properties managed by PP&R.¹ This work can serve as a model for other City bureaus that manage assets of potential historical significance.

It is also anticipated that this context statement and the other tools mentioned above will inform the City's current endeavor to develop and eventually implement the *Portland Plan*, a citywide effort to guide the physical, economic, social, cultural and environmental development of Portland over the next 50 years. Future projects could include: surveys of historic resources managed by other City bureaus; focused thematic historical context research; development of cultural resource management and protection plans; and National Register designations for historically significant properties.



A postcard scene of City Park (now Washington Park), ca. 1900, when it still contained a zoo. Note reservoir, completed in 1895, in background.

¹ For more information about PP&R historic resources contact Kathleen Wadden, 503-823-PLAY.

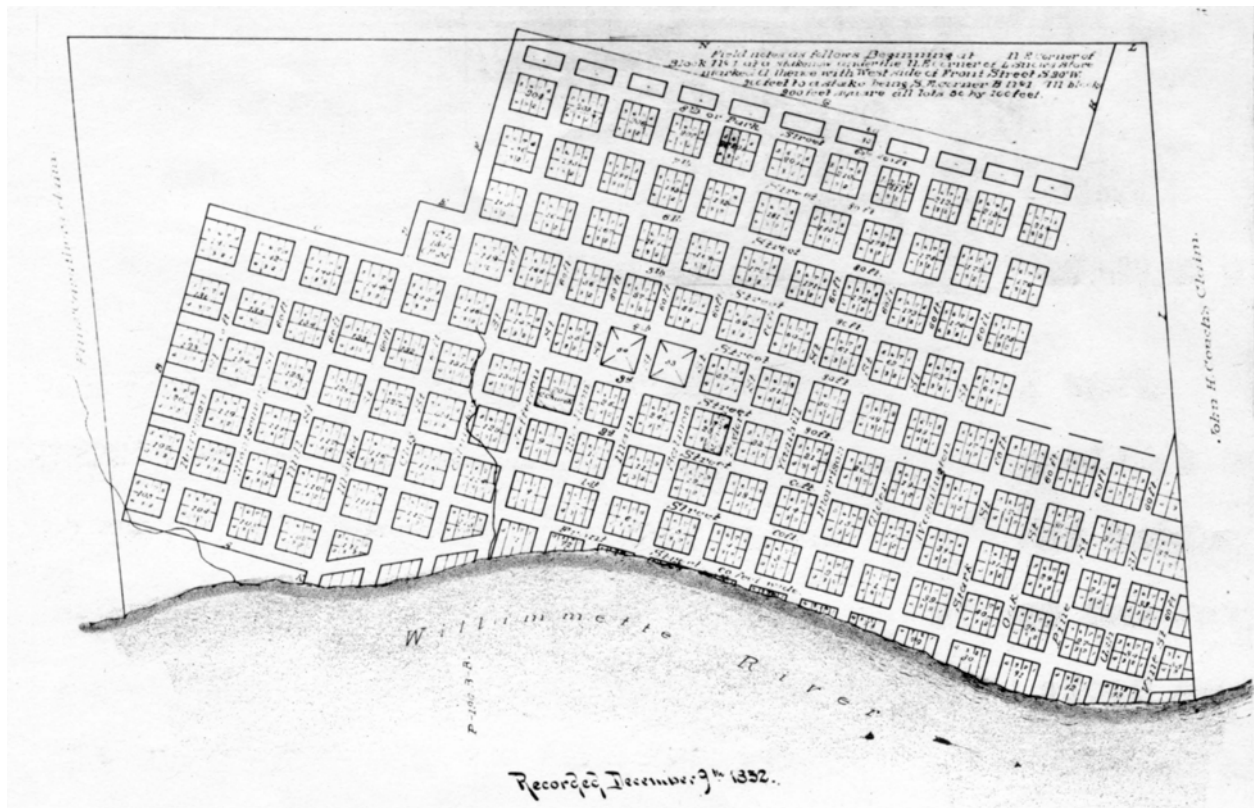
I. 1850-1870: Founding Era—a time of limited public sector activity

In the early 1840s, the location of what would become Portland was nothing more than a small clearing in the dense forest hugging the Willamette River, 12 miles up from that river's confluence with the Columbia River. In 1843, William Overton bought the claim to the clearing from a squatter and gave lawyer Asa Lovejoy a half interest for filing the claim with the provisional government in early 1844. Overton, seeking adventure in California, soon sold his half interest in the 640 acres to Francis Pettygrove, an Oregon City storekeeper. In 1845, Pettygrove and Lovejoy had a surveyor layout the town site; and Pettygrove, winning a coin toss, named the new town Portland after his old home Portland, Maine. The surveyor laid out the claim in a 16-block grid, in which the blocks measured 200-foot square, each one containing 8 lots measuring 50 feet by 100 feet. North-south streets had an eighty-foot public right-of-way, including sidewalks and curbs; while cross streets extended sixty feet. The survey contained no alleys.¹

Pettygrove gave an initial boost to the infant settlement in 1845 by building a log store and a wharf. Captain John Couch helped Portland gain its ascendancy over rival river towns such as Oregon City, Milwaukie, Linnton, and St. Helens by promoting it as the natural head of navigation on the Willamette for ocean-going ships. Still, the raw conditions of Portland's early years were reflected in its nickname, "stumptown." As settlers cleared land for future homes and businesses, they left stumps of giant, old-growth firs standing on the unbuilt lots. Another push to Portland's initial growth came when Daniel Lowndale took up 640-acre claim west of the new town site and established a tannery in 1845. Its leather was essential for such pioneer needs as harnesses, saddles, boots, gloves, and clothes.²

The ownership of Portland's town site soon changed hands. Lovejoy sold his one-half interest to Benjamin Stark, a ship supercargo, in 1845; and Pettygrove peddled his half to Lowndale in 1848. In the following year, Lowndale sold a one-fourth share to Steven Coffin, and soon after Lowndale and Coffin sold a one-sixth interest to William Chapman. Finally, in 1850, Stark and the other proprietors agreed to divide up the development rights to the town site. Stark retained the ownership to a triangular-shaped segment of the town site, consisting of about 48 acres bounded by Burnside Street on the north and Stark Street on the south, while the other owners received rights to the remaining 600 acres. In the meantime, James Terwilliger had bought a 640 acre claim to the south of the original Portland townsite, while Capt. John Couch filed on a 640-acre tract to the north in 1845.³

Lowndale and his partners devoted their energies to promoting the development of Portland. In 1850, they commissioned a new survey of an expanded town site, containing an additional 100 blocks. Although Lowndale, as the leading promoter of the Portland town site proprietors, reserved 22 blocks for parks and set aside two blocks for a public market and customs house, the ultimate fate of these lands would generate considerable litigation. Likewise, the new survey map showed the west bank of the Willamette River as divided lots, whereas the original survey of 1845 had designated this land as undivided public land, not to be sold. Law suits over ownership of the river bank would drag on for many years. Although Lovejoy would argue consistently that he and Pettygrove intended to preserve the waterfront, or levee as it was often called, for public use, Pettygrove swore otherwise. The subsequent proprietors opposed public ownership and proceeded to sell lots along the waterfront, setting in motion a flurry of law suits to settle the issue.⁴



1852 survey of Portland.

Portland grew rapidly in the 1840s, partly fueled by the demand for food and lumber in the California goldfields and also by the construction of a plank road to the Tualatin Plains called Canyon Road. This primitive wagon route linked the rich agricultural lands to the west with the rising city, assuring Portland's commercial ascendancy over its town rivals along the Willamette and Columbia rivers. Canyon Road followed the grade westward up Tanner Creek from the riverfront and crossed the West Hills and then dropped down onto the Tualatin Plains. Started in 1849 by Lownsdale, the initial road-building effort moved slowly. Under a territorial charter, a reorganized road company had partially planked the route in 1851; and by 1856 a dependable road had been achieved.⁵

By 1850, Portland had 805 white inhabitants, three quarters of whom were males. In addition to gender imbalance, 90 percent of all Portlanders were in their twenties. In spite of its skewed demographics, the young burg was the largest town in the Pacific Northwest. Portland assured its independent future by securing a charter of incorporation in 1851 from the territorial legislature. As an incorporated city, it now controlled its political life, electing its own officers and adopting governing ordinances. Early city government focused on providing a jail and fire protection, enacting sanitation regulations, improving streets and sidewalks, and levying a property tax (one-fourth of 1 percent of assessed valuation). Minutes of the early city council meetings reveal an inexperienced and disorganized government. The Mayor was often absent and council meetings were held erratically. Growing disenchantment with the original charter led to its replacement in 1853. The new charter created a government of three branches—executive (mayor), legislative (9-member council), judicial (recorder/justice of the peace)—but it failed to perform much better than the previous one. The legislature tried once more with a third charter in 1854.⁶



Front Street looking south during the 1860s.

The third charter, which lasted for ten years, made only minor adjustments in the organization of city government but did allow the council authority to levy additional taxes for specified projects outside of regular government business. The new government finally created a fire department and started the process to purchase a fire engine. In 1854, the city council initiated a long-running legal effort to determine ownership of the land between Front Street and the Willamette River. In 1858 the territorial legislature amended the city charter, authorizing the division of the city into three wards for electing city council members. In 1861, the U. S. District Court ruled in favor of private ownership of the river frontage.⁷

In 1864, voters elected a prominent merchant, Henry Failing, mayor. He immediately applied his business acumen to city affairs, placing its operations and finances on a firmer footing. Under his leadership, the council voted a special tax to purchase a dredge for deepening the city harbor and appropriated money to remove snags from the Willamette River. The council also passed various infrastructure measures such as setting the width of city sidewalks, providing for gas street lamps, and constructing a hose and bell tower for Fire Engine Company No. 4. In addition, the council voted to assess property owners for the improvement of Front Street from Morrison to Harrison. Finally, at the request of the mayor and city council, the state legislature approved a new charter for Portland in 1865, increasing the mayor's term of office from one to two years. The mayor, after eleven years of separation from the council under the previous charter, once again presided over council meetings. He could veto ordinances but had no council vote. Under Failing's second term, the city approved a contract for sewers, street projects, placement of lamp posts for gas lights, and the digging of cisterns for use by the fire department. Over the next few years, street expansion became a major focus of council business.⁸

In the early 1850s, a number of young merchants from New England and New York arrived in Portland to make their fortune. These entrepreneurs included William Ladd; Henry Corbett; Josiah, Henry and John Failing; Henry Corbett; Cicero Lewis and Simeon Reed. Starting as commission agents for mercantile houses in New York and San Francisco, this group of men soon did well-enough to import goods on their own accounts. By 1860, these merchants dominated the economic, political, and social life of Portland and were responsible for making it a thriving commercial center, which specialized in exporting agricultural products and importing

finished goods. During the decade of the 1850s, Portland's leading merchants presided over some 60-odd businessmen operating along Front Street.⁹

Some early Portland merchants diversified their mercantile and shipping business by investing in other economic activities. For example, Herman Leonard and John and Henry Green organized the Portland Gas and Light Company in 1859 to manufacture gas from imported Vancouver Island coal. With success in that franchised public service, they formed the Portland Water Company in 1862. While Leonard and the Green brothers went into the public utility business, Corbett, Henry Failing, and Ladd branched into banking. Ladd and a partner started a private bank in 1859, while Corbett and Failing received a charter for the First National Bank in 1865. Over time, the banks proved crucial to the economic growth of the city. Highly profitable, the banks supplied needed credit, exchange services, and capital to new and existing commercial, transportation, and industrial concerns.¹⁰

Not all attempts at business diversification were successful. Efforts to start an iron works and various transportation ventures resulted in expensive failures. Portland investors started The Oregon Iron works in 1865 to manufacture pig iron from ore deposits near the village of Oswego. Badly underestimating the costs and difficulties involved, the Oregon Iron Works closed in 1869 after only 19 months of production. Investments in the Portland and Milwaukie Macadamized Road Company in 1863 fared little better than the iron works. Designed as a toll road to connect Portland with the Taylor's Ferry crossing on the Willamette River to Milwaukie, the venture never made much of a profit and was sold to Multnomah County in 1879. The six-mile road employed a new surface technique, consisting of compacted small gravel mixed with tar over a bottom section made up of coarser rock.¹¹

The Portland merchants were a nimble and innovative group of entrepreneurs, capable of surviving the ups and downs of the business cycle and the uncertainties of the California market, which absorbed most of Oregon's agricultural and lumber exports prior to 1870. To keep growing in the 1850s, they attempted to develop new markets in the Pacific, supplied gold rushes in southern Oregon, and monopolized the marketing of Oregon's agriculture products. They also actively involved themselves in city government in the 1850s and 1860s, serving on the city council and running for other elective city and county offices.

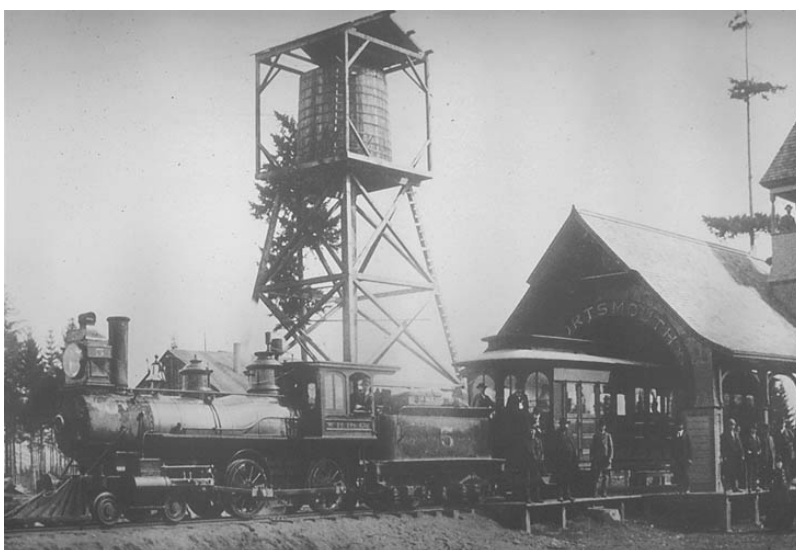
Portland municipal government in the 1850s was chaotic and politically fractious, with rapid turnover on the city council and numerous changes to the charter by the territorial legislature. Merchants wanted limited, laissez faire government, permitting them to maximize private money making. They wanted city government to provide basic health and safety services at the least cost and took part in city affairs to ensure that result. Initially, leading merchants ran for office not as a public service but rather as a means to protect their own interests. By 1859, merchants no longer dominated the city council membership. They realized, however, that they could exercise political power without directly holding office on the council. They held other elective offices and developed power over political parties vying for office. Merchants also played a key role in organizing and participating in various voluntary associations such as fire companies, a library, churches, schools, and fraternal orders. Such activities provided another means of extending their power and asserting control over the social order. With the adoption of statehood in 1859, the Portland merchants had another level of government requiring their attention. During the nineteenth century, the state legislature had a great deal of influence over Portland's municipal government. The legislature, for example, had to approve the city charter and tightly controlled city bonding levels.¹²

In mid-nineteenth century Oregon, the key to holding and eventually expanding trade depended upon developing steamboat transportation on the Columbia and Willamette rivers and along the Northwest coastline. The culmination of the early efforts to develop and control waterborne transportation of the Oregon Country came with the formation of the Oregon Steam Navigation Company (OSN) in 1860. This great transportation monopoly, formed by John Ainsworth, Simeon Reed, Robert Thompson, Jacob Kamm, and others, combined Columbia and Snake river steamboats, strategic river portages, and, ultimately, railroads. The OSN was well positioned to take advantage of the mining rush to Idaho and eastern Oregon in 1861-62. In the process, the OSN tied the agricultural and mineral wealth of the upper Columbia River region to Portland during the 1860s and later.¹³

Portland had long wanted a railroad to connect with northern California, but its business interests lacked the capital for such an undertaking. Congress solved this problem in 1866 by authorizing a land grant to subsidize such a railroad. A group of Oregon businessmen had organized the Oregon Central Railroad in 1863 to build a line south from Portland along the far west side of the Willamette River but lacked the money to push the enterprise very far. An epic battle between rival railroad factions ensued when a second company formed in 1863 to claim the land grant by constructing a line down the east side of the Willamette River, through the heart of the Willamette Valley. The race, which began in earnest when both companies started construction in April 1868, took a surprising turn in August of that year when the brash entrepreneur, Ben Holladay, arrived in Portland and bought controlling interest in the eastside railroad. Renaming the eastside line the Oregon and California Railroad, Holladay used his own considerable fortune to push construction vigorously in order to gain the congressional subsidy. His methods also included lavishing large sums of money on congressmen and state legislators to gain approval of his railroad plans.¹⁴

After much preparatory work, Holladay's crews began laying rails in October 1869; and by the end of the year, they had completed 20 miles, thereby receiving the promised federal land grant. The west-side railroad soon sold out to Holladay in early 1870, and he ultimately built tracks south on both sides of the Willamette River. Holladay threatened Portland's economic future by his plan to make east Portland the terminus for his railroad empire. He, however, offered to make downtown Portland the terminus if the city paid him \$100,000 in cash. With little choice, Portland's merchants swallowed hard and raised the funds through private subscription by February 1871.¹⁵

During the 1860s, Portland experienced rapid growth. The city's founding merchants consolidated their economic power; and a few of them organized a remarkable transportation monopoly, OSN, which earned enormous profits before being sold to the Northern Pacific Railroad. Portland and its merchant and financial interests profited greatly from



Steam locomotive at Portsmouth Station.

their role in supplying the mining boom of eastern Oregon and Idaho, while handling the gold pouring in from the mines. Portland's merchants also gained from military supply contracts, as the Army stepped up its efforts to pacify the various Indian tribes east of the Cascades. The city's wealthy investors also initiated efforts to build a railroad connection to California. At the end of the 1860s, the Portland merchants attempted to develop a direct wheat trade with Great Britain and sought to improve the ship channel between Portland and Astoria to allow larger vessels to reach the former city. As a reflection of Portland's growing economy, the city's population increased 188.6 percent between 1860 and 1870 (2,874 to 8,293).¹⁶

Portland's rise to city status by 1870 occurred at the same time as great urban centers began to rise in the United States. In 1840, just prior to the founding of Portland, cities of 8,000 or more accounted for only 8.5 percent of the nation's population; by 1860, the number of such cities had risen to 16.1 percent. Before 1820, no American city exceeded 100,000 but by 1860, nine cities had reached that figure. Between 1820 and 1870, the population of American cities grew at three times the rate of the national population. This urban growth reflected the rise of a national market economy, with cities gaining new functions in commerce, finance, and manufacturing. The hallmark of these new great cities was the development of a dynamic, concentrated core—the massive downtown center. Around this commercial and financial core area, sectors devoted to government, transportation terminals, produce markets, and skid rows arose. Industrial areas sprawled outward along railroads or waterways, and residential neighborhoods also developed on the outer fringes of the downtown core.¹⁷

The shaping of the great urban centers was left to market forces and various governmental entities that responded in ad hoc fashion to specific urban problems caused by rapid growth. Prior to the twentieth century, no comprehensive city planning occurred. The geographic expansion of cities took place largely through the work of real estate developers and holders of utility franchises, such as streetcar companies. In the process, city governments provided little oversight of building construction other than to enact weakly enforced fire protection ordinances. Transportation routes and service levels were planned by privately-owned railroads and steam navigation companies. The unregulated growth of cities produced environmental problems such as polluted water and air, recurrent epidemics, frequent fires, and filthy streets. The urban response to these problems caused by unplanned growth was piecemeal, special purpose planning. By the end of the nineteenth century, the fragmented effort to cope with problems related to water supply, sewage, and lack of open space would lead to the emergence of comprehensive city planning. Work on matters of water supply, sewerage, and park design helped to established a body of precedent and expertise that formed the based of Progressive Era comprehensive city planning.¹⁸

In response to periodic cholera and yellow fever epidemics during the first half of the nineteenth century, a sanitary reform movement developed, which urged cities to improve the squalid conditions caused by polluted water, contaminated food, and a lack of proper sanitation. Reformers systematically surveyed physical conditions within cities, identifying the environmental circumstances related to the spread of disease, and prepared plans to remediate those conditions. Sanitary reformers worked to educate the public and government bodies to the link between public health and a more scientific understanding of disease.¹⁹

As a first step in improving the urban setting, sanitary reformers proposed creating extensive water supply systems. Until 1850, most cities had relied on wells, cisterns, and water wagons for water supply. The move to city-wide water systems required tapping distant, pure water sources and engineering elaborate viaduct, reservoir, and distribution networks of pipes to deliver pure water. In 1820, only Philadelphia had such a system. By the 1840s, Boston and



Portland water workers.

New York had developed municipal water supplies. After 1850, more and more cities adopted this approach, most through privately built water systems. Cities had to rely on private companies because charter-imposed restrictions on municipal taxing and financing power limited their ability to pay for expensive public works. As late as 1870, privately-owned waterworks accounted for 128 (52.5 percent) of the 244 municipal water systems in the United States.²⁰

After pushing the development of systematic urban water supply, sanitary reformers next demanded comprehensive water-carriage sewerage. Until the mid-nineteenth century, cities used cesspools, manure pits, and privies to dispose of wastes. Sewers, to the extent they existed, were simply open ditches for draining stormwater to drain stagnant pools rather than carrying away wastewater. Beginning with Brooklyn and Chicago in the 1850s, city sewer systems based on water-carriage took hold slowly as most municipalities could not afford to finance both a waterworks and a sewerage system at the same time. Most people seemed satisfied with using inexpensive privy vaults and cesspools to get rid of waste and failed to see the value of switching to an expensive public system of underground sewers. American cities did not experience the breakdown of the old methods of sewage disposal until the 1880s. By that time, the increased use of domestic water consumption and water closets began to overwhelm backyard privies and cesspools and create health hazards. The first city sewerage systems combined both storm and wastewater and relied on the principle of dilution to dispose of the waste.²¹

As growing, mid-nineteenth century cities experienced space pressures an urban parks a movement developed to provide more public space within the urban core. Central Park in New York City was the first major city park in the United States responsive to the increased density of land use in the new urban centers. When completed in 1862, Central Park—encompassing 843 acres or 1.3 square miles—was unprecedented. Previously, few city parks in the United States exceeded 10 acres. Advocates of city open space proposed parks to provide all city inhabitants with a bucolic and healthy place to seek solace and escape from the cares and dangers associated with dense and unhealthy city living. New York's success with Central Park led other cities to develop their own park systems after the Civil War. All were modeled on the idea of an oasis park displaying a scenic aspect and embracing a system design approach. "This idea," one planner has noted, "called for the concerted planning and construction of a complete system of physically connected open spaces for a city. In principle, a single great park would

linked by wide, tree-lined carriage roads, at first called 'park-ways,' to additional smaller parks serving other purposes, such as scenic overlooks, gardens, and parade grounds."²²

The leading figure in advocating the pioneering concept of a planned, integrated urban parks system was Frederick Law Olmsted, the founder of American landscape design. He had designed Central Park in partnership with architect Calvert Vaux. The two went on to design urban park systems for San Francisco, Brooklyn, and Buffalo that responded to urban congestion with parks of unprecedented scale, matching parkscape to the new, expanded cityscape. These new parks were developed in land away from the built-up city core where open land still existed. This exposed a shortcoming of early park planning: the failure to address the densely developed urban core. The advent of a civic art movement intent on beautifying the built environment at the end of the nineteenth century would, in conjunction with the work of the sanitary reformers and urban parks planners, help to introduce comprehensive city planning in the first decade after 1900.²³

¹ Jewel Lansing. *Portland: People, Politics, and Power, 1854-2001* (Corvallis: Oregon State University Press, 2001), 1-7; E. Kimbark MacColl, *Merchants, Money, and Power* (Portland: The Georgian Press, 1988), 1-10.

² Lansing, *Portland*, 8-10; MacColl, *Merchants*, 1-11.

³ Lansing, *Portland*, 11-12; MacColl, *Merchants*, 12-14.

⁴ Lansing, *Portland*, 12-14; MacColl, *Merchants*, 14-17, 54-58.

⁵ Lansing, *Portland*, 14-19; MacColl, *Merchants*, 10-12, 51-53.

⁶ Lansing, *Portland*, 20-66; MacColl, *Merchants*, 65-72.

⁷ Lansing, *Portland*, 66-106; MacColl, *Merchants*, 72-78.

⁸ Lansing, *Portland*, 113-31.

⁹ MacColl, *Merchants*, 17-39, 102-03.

¹⁰ MacColl, *Merchants* 39-41, 104-06.

¹¹ MacColl, *Merchants*, 151-52, 166; Lansing, *Portland*, 111.

¹² MacColl, *Merchants*, 65-71, 106-14.

¹³ MacColl, *Merchants*, 121-32.

¹⁴ MacColl, *Merchants*, 132-35.

¹⁵ MacColl, *Merchants*, 136-39.

¹⁶ MacColl, *Merchants*, 143-69.

¹⁷ Jon A. Peterson. *The Birth of City Planning in the United States, 1840-1917*. (Baltimore: The Johns Hopkins University Press, 2003), 12-18; Martin V. Melosi, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore: The Johns Hopkins University Press, 2000), 59.

¹⁸ Peterson, *The Birth of City Planning*, 18-26.

¹⁹ Peterson, *The Birth of City Planning*, 29-39; Melosi, *The Sanitary City*, 19-39, 58-72.

²⁰ Melosi, *The Sanitary City*, 39-42, 73-89.

²¹ Melosi, *The Sanitary City*, 90-99.

²² Peterson, *The Birth of City Planning*, 39-42, quote on 42.

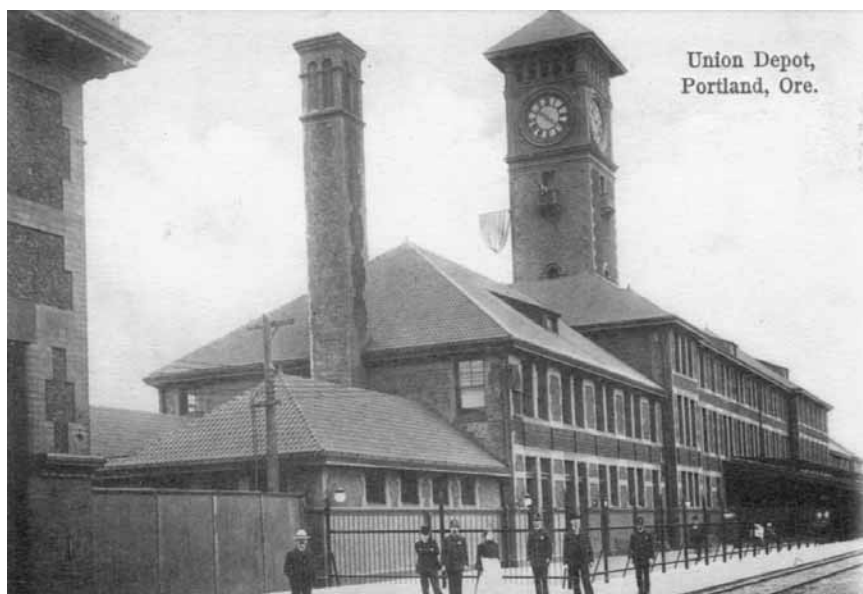
²³ Peterson, *The Birth of City Planning*, 39-42.

II. 1870-1900: Growth and Development during the Expansive Railroad Era

Portland underwent tremendous growth between 1870 and 1900. The city's population increased over eleven times during that 30-year period, rising from 8,293 to 90,426. During that time, transportation improvements enabled Portland to capture much of the trade of the Pacific Northwest and to become a leading international grain exporter. The arrival of the transcontinental railroad in 1883 and the development of an improved ship channel to accommodate ever-larger ocean-going vessels were the keys to Portland's economic expansion. While private investors undertook the building of Portland's railroad connections, federally-subsidized navigation work carried out by the Army Corps of Engineers improved the ship channel. The Army Engineers also carried out navigation improvements up the Columbia and Willamette rivers during the late nineteenth century.

The decision in 1870 to make Portland the western terminus of the Northern Pacific Railroad assured the city's continuing commercial preeminence. At the end of the decade, financier Henry Villard formed a transportation empire to complete a transcontinental rail connection for the Pacific Northwest. He took over the Oregon and California Railroad from Ben Holladay, purchased the OSN, and formed the Oregon Railroad and Navigation Company to build up the Columbia River to link in eastern Washington with the Northern Pacific, which he also owned and had been constructing east from St. Paul. Villard's transcontinental railroad ushered in an economic boom in the Pacific Northwest during the 1880s. During that decade, the population of the region increased by almost a half-million; and settlers took up some 2.5 million acres of agricultural land. Railroads also offered another way to transport western lumber to eastern markets, helping to stimulate Portland's lumber industry, already one of its most important economic activities.²⁴

As a grand assertion of their power and a desire to bring greater order and efficiency to their operations, the railroads decided to jointly build a union station to consolidate passenger operations in Portland. Originally conceived by Villard in the early 1880s, the union station project went uncompleted when he became bankrupt. Villard's successors in the railroad business picked up the project and commissioned the Kansas City, Missouri architectural firm of Van Brunt and Howe to design the station. Finished in 1896, the imposing Richardsonian Romanesque-styled, red brick and terra cotta building has a splendid 150-foot tower. In 1900, 22 passenger trains arrived and departed daily from the station.²⁵



Union Station.

In its natural state, Portland's 110-mile river connection to the sea contained numerous river bars, rocks, and other dangerous obstructions, limiting the potential of the city's ocean-bound trade. In addition, the treacherous bar at the mouth of the Columbia also presented problems to ships attempting to reach Portland. In 1865, the city attempted to remove the obstacles to safe navigation for 15-foot draft vessels by purchasing and using dredging equipment to deepen and maintain the channel. Lacking the expertise to accomplish the task of river improvement, city officials, working through the Oregon congressional delegation, got a federal appropriation that authorized the Army Corps of Engineers to carry out the river channel improvement. Beginning in 1868 and initially using the city's dredging machinery, the Army engineers started work on the ship-channel project. By 1875, they had established a 17-foot-deep navigation channel, which supported almost 185,000 tons of traffic, chiefly wheat and lumber. Over the next twenty years, Congress funded Corps of Engineers projects to increase the ship channel depth to accommodate ever-larger ships. By the mid-1890s, the Corps had enlarged the depth to 23 feet and total cargo tonnage averaged over 1.4 million tons during that decade.²⁶

While the Corps of Engineers worked on the Portland-to-the-sea ship-channel project, they also improved the navigability of the Columbia River between Portland and Lewiston, Idaho. The mining rushes of the 1860s and the growth of wheat farming on the Columbia Plateau stimulated the expansion of steamboat shipping on the Columbia and Snake rivers. Portland merchants, through the OSN transportation monopoly, dominated this commercial traffic on the rivers. In 1865, at the peak of the mining boom, the OSN had almost 30 steamboats, 13 schooners, and four barges operating on the Columbia River. By the time it sold out in 1880, the company had invested more than \$3 million in its facilities and paid an estimated \$4.6 million in dividends.²⁷

In their natural condition, the upper Columbia and Snake rivers contained numerous rapids and rocks hazardous to steamboat navigation. Again working through Oregon congressional delegation, Portland business interests secured congressional authorization and funding for the Corps to improve the rivers' navigability. Between 1872 and 1892, the Corps completed a five to six-foot navigation channel from Portland to Lewiston and worked on the major project to construct a canal and locks at the Cascades of the Columbia. The Corps finally opened the canal to steamboats in 1896.²⁸

The Army engineers also carried out navigation projects on the Willamette River and built a massive jetty at the mouth of the Columbia River. These projects assured the continued economic growth of Oregon and made Portland the commercial capital of the Pacific Northwest in the late nineteenth century. The work on the Willamette involved snagging, dredging, rock removal, and the construction of current deflection devices such as wing dams and pile dikes. The Corps navigation improvements, together with the construction of the Willamette Falls Canal and Locks (1873), provided Willamette Valley farmers with cheap and efficient transportation for their produce to Portland until railroads spread throughout the valley.²⁹

To overcome the dangerous conditions at the mouth of the Columbia River, Congress authorized the Corps to construct a massive jetty. The goal of this project was to train the river currents to create a deep and stable ship channel across the bar at the river's mouth. After careful study, the Corps recommended in 1882 a 10,000-foot long rubblestone jetty to achieve a thirty-foot channel depth. When completed in 1895, the jetty project had cost about \$2 million. Over time, Congress periodically authorized the Corps to deepen both the ship channel from Portland and the jetty at the mouth of the Columbia to accommodate ever larger ocean-going vessels.³⁰

To support Portland's efforts to develop trade and commerce through its port, the state legislature created the Port of Portland Commission in 1891. Its primary focus was to maintain the shipping channel in the Willamette River between Portland and the junction of the Willamette with the Columbia River and to establish a public body that could effectively lobby Congress for Corps of Engineers' navigation projects to continue increasing the depth of the waterway to the mouth of the Columbia River. The consolidation of Portland, East Portland, and Albina provided the Port Commission with taxing and bonding authority to minimally accomplish its responsibilities. In the Port Commission's early years, it relied on the Corps of Engineers for advice and engineering expertise; and its first chief engineer came from the staff of the Portland District of the Corps of Engineers. From its beginning, the 15-member Port Commission consisted of the city's business and community elite, appointed by the state legislature. The port had no authority over the private docks, most of which the railroad owned.³¹

Portland's steadily expanding foreign trade combined with banking and commercial activity, designed to supply the interior of the region, made it a rich little city. As buildings of brick, stone, and cast-iron fronts replaced wooden frame structures, the business district of Portland took on an atmosphere of bustling sophistication. Devastating fires in 1872 and 1873 hastened the process of transformation. In the late 1880s, Portland underwent a major economic boom. The founding of ten banks and two insurance companies in the city between 1885 and 1891 reflected this commercial renaissance, as did the awarding of twenty-four separate street-railway franchises, the organization of two electrical utilities, and the establishment of the Port of Portland. In 1889 alone, investors and homeowners poured over \$54 million into residential and commercial construction. Portland also had the distinction of accomplishing the first long distance transmission of direct current electricity in the United States, when, in 1890, power generated at Oregon City Falls was brought 14 miles to run electric street cars in downtown Portland. As generating capacity came on line, the city transitioned from gas to electric street lights between 1885 and 1887.³²



The construction of a bridge across the Willamette River in 1887 laid the foundation for urban growth on the east side of the river. The following year private investors built a second bridge spanning the Willamette; and by 1889, electric trolleys were crossing the river. Soon public transit lines served all

parts of the expanding city and encouraged the growth of newer subdivisions on the city's edges. In fact, much of the track expansion was designed to enhance the development value of outlying real estate owned by the various transit companies and their investors.³³

Because many city officials had won election by promising free bridges across the Willamette River, the city council and mayor in 1891 negotiated to purchase the privately-constructed Morrison and recently completed Madison street bridges. After buying the Madison Bridge, the council then authorized construction of the Burnside Bridge, which contractors completed in July 1894. The city finally bought the older Morrison Street Bridge in 1895. One bridge, the Steel, still remained privately owned. It had been built by the Union Pacific Railroad in 1888 with two decks, one for trains and the second for other traffic. Construction of these various bridges obstructed navigation in the Willamette River where it passed through the heart of the city and

resulted in the movement of ocean-going shipping and wharf facilities to the lower reaches of the river in Portland.³⁴

The consolidation of Portland with East Portland and Albina in 1891 tripled the city's acreage and increased its population from about 46,000 to 62,000. Portland's boom, however, came to a crashing halt with the Depression of 1893. This sharp national economic contraction stalled the city's growth until renewed activity, stirred in part by the Klondike Gold Strike of 1898, occurred at the end of the century. While Portland thrived economically during the last quarter of nineteenth century, it also became more cosmopolitan. As early as 1890, foreign-born inhabitants accounted for 37 percent of the city's population. A steady influx of Asian and ethnic European immigrants added diversity to the heavily Protestant New England and Midwestern cast of the city. Chinese and Japanese immigrants, Jews, Italians, African Americans, and Scandinavians made up the chief elements of this new ethnic mix. They created the foundations for a modern urban center, with diverse lifestyles and cultures.³⁵



Horses carrying pipes, Bull Run Watershed.

Portland's municipal government found it difficult to keep up with the city's growth. Initial efforts focused on expanding the street network and assuring the city an adequate and safe water supply. The city fathers also gave some attention to improving the ambiance of the city by the development of public parks. In addition, a police station, city hall, and port improvements were undertaken by the city council or specially-formed public bodies.

The development of Portland's municipal water system represented an example of the use of an independent commission to achieve a public good.

When Portland established a municipal water system and developed the Bull Run supply in the 1890s, it reflected a national trend in growing cities across the United States to create urban utility networks. In the late nineteenth century, the political and economic leaders of many American cities believed that the development of a dependable and safe water supply demonstrated a city's commitment to growth and the well-being of its citizens. As the number of urban water systems increased, so did municipal ownership of them. Between 1870 and 1890, the number of water works more than tripled, rising from 244 to 1,879; and by 1897, in all but 9 of the 50 largest cities the waterworks were owned municipally. These new or expanded water systems faced many challenging issues, involving questions of supply, distribution, and purity. Successful responses to immediate problems only seemed to raise new issues. Improvements in supply or distribution, for example, generated even greater water demand. Growing cities demonstrated an insatiable appetite for water.³⁶

The search for a dependable supply of water usually was the first step cities took in demonstrating a commitment to a healthy community. The heavy cost of securing a reliable water supply and distribution system for growing cities led many municipalities to take over the existing private water companies operating under franchises. Private water companies proved unable or unwilling to make the necessary investments in supply and distribution systems to meet the rapidly increasing demand caused by urban expansion. The desire to better control water rates, a concern that franchise terms unduly favored private utilities, and a growing move toward local control of basic city services also fed the trend toward municipal ownership. In 1900, city-owned water systems served all but 1 of the 11 American cities with a population of more than 300,000. By 1924, 70 percent of the nation's waterworks were publicly owned. State legislatures also helped cities take over, upgrade, and expand private water systems by passing legislation that enabled cities to increase their bonded indebtedness. In addition, the municipal supply of water reflected an important aspect of Progressive Era government reform that looked to the efficiency and expertise of the trained and objective bureaucrat and scientist rather than private enterprise to solve urban problems.³⁷

As cities struggled to improve the quantity and quality of the urban water supply and to expand distribution, they developed new management and scientific tools. They adopted water metering to set equitable rates and prevent waste; sought new, often distant sources of supply; and struggled with issues of water purity. Metering proceeded slowly at first. During the 1890s, only 12 cities metered more than 10 percent of their taps; by 1920, the pace had picked up and 60 percent of American cities surveyed metered at the tap. Water systems tried to promote metering as one way to conserve water so as to reduce the need to find new sources of supply. The move to metering, however, could not keep up with the need to expand the supply of water for rapidly growing cities. As local wells, lakes, or streams became inadequate or polluted, cities had to find new, distant sources of water. Another possibility was the filtration or treatment of existing supplies. Often both solutions had to be employed.³⁸



Testing water quality.

As the role of bacteria in causing waterborne disease became known for the first time in the 1880s and 1890s, public health professionals emphasized the need to secure the purity of the urban water supply. In response, water engineers developed filtration by either the slow or fast sand methods. Over time, the fast sand or mechanical filtration won out as the preferred approach. By 1914, 40 percent of the urban population of the United States was supplied with filtered water. In combination with chlorination, which began in the United States in 1908, diseases such as typhoid fever declined dramatically in cities. The urban water supply also played an important role in another aspect of public safety—fire protection.³⁹

Protection against large-scale fires required waterworks to supply large, concentrated quantities of water at short notice. This meant that rapidly growing cities needed water systems with large capacity distribution mains, higher pressures, generous-sized reservoirs, and reliable pumping facilities. While the amount of water used in fire fighting usually was a negligible part of the total consumption, the rate of water demand during a fire was so great that it proved the main factor

in determining the capacities of pumps, reservoirs, and distribution mains. Private water companies demonstrated great reluctance to invest in large capacity mains and stronger fire hydrants for better fire protection, since such improvements returned little or no profit. Growing cities and their private water companies found it increasingly difficult to agree on the appropriate level of fire prevention facilities or the adequate level of compensation for system improvements. Major urban fires or the fear of them often forced reluctant city officials and taxpayers to embrace the concept of municipal ownership of waterworks. For example, one month after a catastrophic fire burned down the commercial heart of Seattle on 6 June 1889, voters overwhelmingly (1,785 to 51) chose to acquire the existing, inadequate private water companies and to build a municipally owned waterworks.⁴⁰

The decision by Portland's business and political elite to establish a special water committee to acquire the city's existing private water company and then develop a municipal water system followed a path typical of other growing American cities. By the mid-1880s, Portland's rapid growth had outstripped the ability of the private Portland Water Company to meet the city's water needs. Portland's population had expanded by 163 percent between 1880 and 1890, rising from 17,577 to 46,385. Over the next decade, it would almost double again, increasing to 90,426 inhabitants. As early as 1871, the city looked at taking over the Portland Water Company; but the city charter did not permit such action. By state law, an amendment to the city charter required state legislative approval. Portland's charter also did not permit the city to issue bonds without legislative consent. Reluctant to allow the city to enter into long-term debt, the legislature refused to alter the city's charter to allow it to establish a municipally-owned waterworks or issue bonds. The matter lay dormant for another decade.⁴¹

The Portland Water Company not only had great difficulty supplying enough water to meet the demand, it also faced questions of its water supply's purity. The private company took most of its supply from the Willamette River. Waste matter from upstream industrialization and settlement threatened to pollute that source of water. In the early 1880's, supporters of a municipal water system for Portland once again agitated for their cause. In 1885, Portland interests sought legislative approval for a charter amendment, allowing a public water system. Against a backdrop of complicated partisan political infighting and urban vs. rural divisions within the legislature, Portland political interests ultimately prevailed. The state legislature authorized the creation of a special Portland Water Committee to establish and operate a municipal waterworks. The Water Committee had authority to issue up to \$700,000 in tax-free revenue bonds. Fifteen of Portland's most prominent businessmen, including C. H. Lewis, William S. Ladd, Henry Failing, Henry W. Corbett, and Simeon Reed comprised the Water Committee. After establishing a municipal waterworks, the original body was to be replaced by a permanent five-member Water Committee.⁴²

The Portland Water Committee's initial work involved acquiring the existing Portland Water Company and the Crystal Spring Water Company and defending the constitutionality of the charter amendment in court. The Oregon Supreme Court upheld the charter amendment, and the Water Committee purchased the two private water systems for about \$615,000. By 1887, the Water Committee was free to focus on the search for a new water source. After a thorough investigation for a pure, gravity-fed source, the Water Committee began developing a plan to bring water from Bull Run Lake on the western slope of Mt. Hood to serve the city's long term water needs. By February 1888, the Water Committee had acquired clear title to Bull Run Lake and in 1889 purchased four square miles of additional property within the Bull Run watershed. The federal government owned the remainder of the land in the Bull Run drainage; and, at the Water Committee's request in 1892, President Benjamin Harrison withdrew the land from private purchase and placed it in a special forest preserve. Another early action of the Water

Committee involved reducing the existing residential water rate from \$1.50 per month for a household of six or less to \$.75 per month.⁴³

Since the acquisition of the private water companies had exhausted most of the Committee's initial bonding authority, it had to seek additional bonding capacity from the state legislature to make needed improvements to the existing operations and build the Bull Run system. Efforts to push ahead with upgrades and begin new construction were stymied at first when Governor Sylvester Pennoyer vetoed in 1887 and again in 1889 the bills raising the bonding capacity of the Water Committee. Governor Pennoyer objected to the provision making the bonds tax-free, since that would benefit chiefly the banks and rich investors buying the bonds. Finally, in 1891, the legislature passed a new bonding issue for \$2.5 million that was subject to taxation; and Governor Pennoyer signed the measure. Unfortunately, a clerical error in the legislation affecting the bonding authority and dollar limits delayed the Bull Run project another two years. Finally, the 1893 session of the legislature corrected the previous legislation; and the Water Committee could sell its bonds.⁴⁴

Having cleared away the political, financial, and legal roadblocks to establishing and expanding Portland's municipal waterworks, the Water Committee was ready to undertake construction of the Bull Run pipeline. Under the direction of Colonel Isaac Smith, Superintendent and Chief Engineer of Portland's waterworks, much preliminary planning, surveying, and road building had been accomplished by 1893 when pipeline construction began. The initial work had to be done over rough, steep terrain covered by dense stands of timber and underbrush. Workers completed the subsequent clearing, ditch digging, and road building largely by hand. The Water Committee also employed James Dix Schuyler of Los Angeles as a consulting engineer. Schuyler had wide experience in railroad construction, irrigation systems, and dam building in California.⁴⁵

Colonel Smith's plans for the Bull Run pipeline required 24 miles of riveted steel pipe, ranging from 33 to 42 inches in diameter. The conduit had a capacity of 22.5 million gallons per day. It would carry water from headworks located 710 feet above the Willamette River to a reservoir on Mount Tabor at an elevation of 402 feet above the Willamette. The pipeline alignment paralleled the Bull Run River part of the way and then traversed canyons and streams to the confluence of the Sandy and Bull Run rivers. From that point it ran in a westerly direction through Gresham and on to Mount Tabor. The cleared right-of-way stretched 33 feet and necessitated extensive excavation and bridge building. One trestle extended 628 feet over a bog.⁴⁶

The initial Bull Run system plan also called for construction of four storage reservoirs within Portland; Reservoirs 1 and 2 at Mount Tabor and 3 and 4 in City (now Washington) Park with a combined capacity of 66 million gallons. At the time, that represented a four or five day water supply for the city. The Bull Run gravity pipeline fed Reservoir 1, which distributed water to the other storage facilities in the system. A network of pipe then carried water throughout the city. An underwater pipeline beneath the Willamette River connected the east and west sides of the water system. The Water Committee completed the pipeline and distribution system upgrades in 1895 at a cost of \$2.4 million. Between 1894 and 1909 the city purchased seven small water systems supplying portions of Portland and its suburbs. While the Water Committee continued to expand the distribution system, it made no major additions to supply or storage capacity before 1909.⁴⁷

Contractors and hired laborers constructed the Mount Tabor Reservoirs at the same time as work proceeded on the pipeline. The Water Committee wanted to complete the entire system by January 1895. Water Committee engineers conducted surveys and negotiated for the

reservoir sites at both Mount Tabor and City Park. They began excavations for the reservoirs in 1893 and completed the work in the following year. The original site for Reservoir 1 consisted of 10 acres. Charles Oliver, superintendent of construction, later noted that because of the economic hard times during the Depression of 1893, he had no trouble hiring workers at \$1.50 per day for common labor. At times, he had as many as 1,500 men working on the four reservoirs; and no Chinese were allowed to work on the project. The excavation was done under contract.⁴⁸



Construction of a reservoir on Mt. Tabor.

As designed by the engineers in charge, Reservoir 1, located on the southern flank of Mount Tabor at 411.6 feet above the Willamette River, was comprised of a basin, parapet wall with iron fence, a concrete walkway, gatehouse, weir building, spring fed drinking fountain and several small outbuildings. The thimble shaped basin was 250 feet wide and 350 feet long, with a capacity of 12 million gallons. They constructed the basin of cast in place reinforced concrete using the patented Ransome method of twisted iron bars placed ten feet on center in each direction and anchored at 10-foot intervals by iron anchors driven to a depth of 3 to 20 feet into the slopes and embedded in concrete. The concrete lining was then coated with asphalt.

Colonel Smith's waterworks plan also included a low-service reservoir at the base of Mount Tabor, which occupied five acres of ground on the edge of the park. It sat about one-half mile southwest of Reservoir 1 and was 220 feet above the Willamette River. Rectangular in shape, it had a capacity of approximately 22 million gallons. Since it was excavated rather than situated in a ravine, no dam was required in the structure. Reservoir 2, about 250 feet wide and 700 feet long, was lined with bricks and asphalt rather than reinforced concrete.

The plan for the Mount Tabor reservoirs drew on cutting edge construction technology in the application of reinforced concrete to structures and buildings. After experiments begun in the 1870s, engineers and builders developed reinforced concrete as a major structural innovation in the United States in the last decades of the 19th century. By 1900, reinforced concrete construction had left the experimental stages and had become accepted as a common building material for factories, office buildings, and other types of structures. Concrete offered important advantages as a building material. It had great compressive strength, durability, low cost, and plasticity (i.e. could take many structurally viable forms). Plain concrete, however, was weak in tension. Through experimentation, cement manufacturers found that by adding iron or steel bars, concrete gained in tensile strength. Modern concrete, itself a product of experimentation, was a mixture of a bonding material, such as Portland cement; aggregate, such as sand and broken stone; and water. Manufacturers made Portland cement by mixing together various natural ingredients (including clay and lime in varying proportions) that had first been ground to a power, burned in kilns, and then milled.⁴⁹

Much of the original experimentation with concrete occurred in Europe. American architects and engineers were slow to use concrete because of the scarcity and high cost of a key

ingredient: cement. Before the 1870s, Americans produced little cement and imported most of the cement used from abroad. Most imported cement entered the United States through San Francisco as freight-free ballast for sailing ships taking on California wheat. In the mid nineteenth century, California builders began using the imported cement to manufacture concrete building blocks. Ernest Ransome, the son of an English cement manufacture, immigrated to San Francisco in 1870 to set up an artificial stone business using his father's patented process. He soon became interested in the problems of building earthquake resistant buildings. Following on the work of a few other inventors, Ransome developed and patented in 1884 a technique employing twisted iron bars to strengthen the concrete formed for slab construction. Ransome's innovation held the concrete together more securely, allowing builders to dispense with making an expensive iron frame in tension to keep the reinforcing bars in place. Under Ransome's product development and entrepreneurial leadership, concrete construction became commercial in the 1890s and early 1900s. The key factors in concrete's success as a building material were increased production of cement by American manufacturers and the fall in price per barrel. Annual domestic production of Portland cement grew from 300,000 barrels in 1890 to 1 million barrels in 1896. By 1906, production had reached 46 million barrels per year. The price of cement dropped as production rose. In 1880, American Portland cement cost \$3.00 per barrel; it fell to \$2.00 in 1890 and then to \$1.00 by 1900.

The Portland Water Committee's use of the Ransome patented method of reinforced-concrete construction was clearly a bold move at a time when reinforcing technology was in the early stages of experimentation. The Bull Run system of 1894 represented one of the earliest large-scale uses of reinforced concrete in the United States. Before 1890, Ransome's method had been used to construct three buildings and a bridge in California. The bridge, in Golden Gate Park, was the first reinforced-concrete bridge in the United States. The Water Committee also employed other patented concrete building processes held by Ransome. These included the method for finishing the concrete, the concrete mixer, and the circular lights cast in the concrete of the gate house floors and pump house roof. The concrete work for the reservoirs and accompanying buildings was not only technically innovative but aesthetically attractive as well. The finished, cast cement blocks used in the weir building and gatehouse at Mount Tabor gave the appearance of natural stone. To achieve this look, the workers, after removing the beveled formwork, tooled and brush hammered the cement blocks in a variety of textures. The ornamental iron fences and lampposts, fashioned by Johann H. Tuerck (a noted Portland master iron worker), added to the overall pleasing effect of the reservoirs' completed setting. As the *Oregonian* noted in January 1895, the reservoirs gave pleasure as well as serving a utilitarian purpose:

When this work is completed the brilliantly lighted walks surrounding the reservoirs will be the most popular promenades in the city during the evenings of the warmer months of the year. . . . These walks afford a delightful promenade for visitors who are separated from the basin itself by a concrete wall surmounted by a neat iron fence. All the reservoirs have been constructed in the most substantial manner and the effect of harmony it was possible to obtain by a little attention to the adornment of the finished work has not been overlooked by the engineers in charge.⁵⁰

Construction of Reservoirs 3 and 4 in Washington Park did not proceed as trouble-free as the work on Mount Tabor. While aware that the hillside on which the reservoirs sat was unstable, the engineers did not think this would be a problem. As soon as the reservoirs were filled, however, the engineers observed cracks in the basins. Test borings revealed large subterranean water pockets and greater instability in the hillside than had originally been thought. To solve the problem, engineers installed pumps to drain the water pockets and carried out studies to determine the extent of the unstable area. As the landslide increased in

severity, adjacent landowners sued the city for damages. The city successfully defended itself by proving that the slide was of ancient origin and not directly caused by construction of the reservoirs. To solve the landslide problem, the Water Committee built an elaborate system of drainage tunnels and pumps to remove the underground water. The Committee completed the five-year effort in 1903 at a cost of \$75,000. The solution proved successful over time.⁵¹



Portland's public parks had a difficult time getting established in the last half of the nineteenth century. Portland town site proprietor, Daniel Lowndale, had dedicated eleven blocks in the 1848 plat of Portland for public parks; but neither he, his heirs, or other town site proprietors actually deeded to the city clear title to the land. In 1852, Lowndale and William Chapman also dedicated two blocks known as the Plaza Blocks as public open space, while not actually passing title to the city. On the other hand, John Couch had deeded five park blocks in his addition to the city free of charge in 1865. Finally, to gain clear title to seven of the south Park Blocks and two Plaza Blocks, the city paid \$6,250 to William Chapman in 1871. In the same year, the city also agreed to pay \$2,500 for seven other south Park Blocks owned by Stephen Coffin. Six south Park Blocks remained in private hands, but only four were for sale at an asking price of \$24,000. The city council declined to pay what they thought was a high sum and instead bought 40.78 acres

of west hills land for \$32,624 from Amos King. This forested land became the nucleus of City Park (subsequently known as Washington Park), a public open space of 145 acres after Donald Macleay donated 107 acres of land to the city in 1897.⁵²

Other cultural additions to the city came slowly in the late nineteenth century. One of the first enduring public amenities came from a bequest by druggist Stephen Skidmore. When Skidmore died in 1883, he left \$5,000 to the city for a public fountain to be built in the commercial area close to the riverfront. Henry Failing raised another \$20,000 for the project, and a nationally prominent New York sculptor, Olin Warner, executed the work. The fountain, located at southwest First and Ankeny, was dedicated amid much public fanfare in September 1888. Other private cultural activities included formation of The Library Association and the Portland Art Association. Although a private subscription library began in the early 1860s, a free public library did not open in its own space until 1891. Judge Matthew Deady spent years attempting to raise funds for the library from the city's business elite, but most money came in the form of bequests from various estates during the 1890s. The same cultural supporters within the ranks of the merchant elite that aided creation of public library also organized the Portland Art Association in 1888.

Many years would pass, however, before the Art Association assembled a respectable collection.⁵³

Stephen Skidmore's bequest for a public water fountain in the Old Town section of Portland led to a similar gift from another prominent Portlander in 1900. Investor, banker, and politician David P. Thompson much admired the Skidmore Fountain and gave the city \$20,000 for a fountain with an elk in it at S. W. Main between 3rd and 4th



avenues. The elk statue was sculpted by Roland H. Perry of New York. After Thompson's death in 1901, his family gave funds for another statue, which stands in Washington Park. It shows two Native Americans watching the *Coming of the White Man*. One figure is supposed to represent "Multnomah," Chief of the local Multnomah Tribe; the other figure is an Indian scout pointing to the Columbia River and the coming of the white man. This statue, completed in 1904, was the work of Hermon A. MacNeil, a prominent American Sculptor.⁵⁴

City government only slowly expanded its building infrastructure to accommodate the growth in its responsibilities in the late nineteenth century. In 1872, it completed a handsome, two-story jail building at southwest Second and Oak streets. After meeting in 18 different rented quarters over 44 years, city government finally moved into a new city hall on January 2, 1895. Designed by the architects William Whidden and Ion Lewis, the magnificent Renaissance Revival style building incorporated many novel features for the time. It represented an early example of a steel frame structure and was one of the first buildings in the Northwest to be fireproofed, centrally heated, wired for electricity, and to have a public elevator. Initially, the city council had adopted a design by Henry Hefty, but it had proved too expensive in execution. The city commission overseeing the project halted construction on the Hefty design in 1891 and had the uncompleted structure demolished. Work on the Whidden and Lewis plan began in 1892, and the contractor completed it late in 1894 at a cost of \$575,000.⁵⁵

Throughout Portland's steady growth during the late nineteenth century, its business and financial elite remained firmly in control of the city's destiny. They fully subscribed to the belief that what was good for business was also good for Portland. In the process of promoting both their own welfare and that of the city's, Portland's leaders kept city government lean and taxes low and—except for the creation of a municipal water system, streets, police and fire protection, and navigation improvements—relied on private enterprise to provide most of the city's infrastructure needs. Through generous franchises or contracts granted by the city council, private investors provided and profited from basic utilities and services such as gas, electricity, mass transit, sidewalks, and street paving. The city even bought two privately-built bridges that crossed the Willamette River on terms favorable to their owners and then went on to construct additional public bridges.

During the 1890s, the composition of Portland's business elite began to change. During the decade, most of the successful merchants who had arrived in the 1850's died and were replaced by second-generation family members and younger, recent arrivals that had started their careers working for the various business interests of the Portland Establishment. In the new century, these new business and professional leaders would tackle the demands of a modern urban center and support new initiatives in city planning and infrastructure development. The nationally prominent City Beautiful movement would play a major role in shaping Portland's development in the first decades of the twentieth century.⁵⁶

As Portlanders at all levels of society began to grapple with the onset of the Depression of 1893, the people of Chicago carried off one of the most important and influential civic celebrations of the nineteenth century. During the summer of that year, the Chicago World's Fair accomplished many bold feats of design, organization, technology, and inspiration. It represented a major moment in American architectural history, an assertion of American nationalism, a prod to reform of American urban life, and a paean to the morally uplifting power of art in a civic setting. Above all, the Chicago World's Fair marked a pivotal moment in urban design.

By the 1890s, American cities had moved from small-scale, coherent physical forms in terms of height, mass, and texture to more sprawling, diverse—even disorganized—assemblages, revealing new types of building materials and technologies. The chaotic appearance of the built

environment reflected a lack of coherence in architectural design in the late nineteenth century, as Victorian builders and architects employed a variety of historical revival styles and a jumble of showy ostentation in their design aesthetic. The Chicago World's Fair, however, under the guiding hand of architect Daniel Burnham, marked the triumph of disciplined architectural design based on the principals of the Ecole des Beaux-Arts of Paris. The Ecole taught architecture as an art based upon studying Classical and Renaissance architecture. As a result of systematically applying this design approach, the architecture of the Fair presented an awe-inspiring ensemble of buildings and landscape unified by common styling, color, cornice-line height, and façade treatments. It was the triumph of an architectural ideal in Classical and Renaissance form.⁵⁷

While the design and execution of the Chicago World's Fair offered an image of the ideal city, it did not represent a model for comprehensive city planning. Rather, the Fair established the power of civic art to inspire urban improvement, which became a major component of the City Beautiful movement. Although the Fair's aesthetic language could be considered derivative, and, in the hands of lesser designers, overly concerned with surface effects, it championed an urbane, cosmopolitan standard of culture for American cities. Together with the efforts of the sanitary reformers and landscape designers, the civic arts ideal stemming from the Chicago's World's Fair laid the foundation for comprehensive city planning that would flower in the early twentieth century.⁵⁸

²⁴ MacColl, *Merchants*, 205-23; Dorothy Johansen. *Empire of the Columbia: A History of the Pacific Northwest* (New York: Harper and Row, 1967), 316-18, 322; Carlos Schwantes. *The Pacific Northwest: An Interpretive History* (Lincoln: University of Nebraska Press, 1996), 184-89.

²⁵ Kimbark MacColl. *The Shaping of a City: Business and Politics in Portland, Oregon 1885-1915* (Portland: The Georgian Press, 1976), 223-24; Lansing, *Portland*, 219.

²⁶ William Willingham. *Army Engineers and the Development of Oregon: A History of the Portland District U. S. Army Corps of Engineers* (Washington, DC: Government Printing Office, 1983), 10-11, 16-18, 22-23, 70-71.

²⁷ Schwantes, *The Pacific Northwest*, 185-86; Johansen, *Empire of the Columbia*, 279-82.

²⁸ Willingham, *Army Engineers*, 12-13, 19-21, 23-25, 28-36, 50-51; William F. Willingham. "Engineering the Cascades Canal and Locks, 1876-1896," *Oregon Historical Quarterly* (Fall, 1987): 229-57.

²⁹ Willingham, *Army Engineers*, 13, 18-19, 21-23, 25, 55-58.

³⁰ Willingham, *Army Engineers*, 40-42, 60-63.

³¹ Willingham, *Army Engineers*, 71-72, 129; MacColl, *Merchants*, 292-93.

³² MacColl, *Merchants*, 181-204, 235-82; Catherine Sohm. *A History of Street Lighting in Portland, Oregon* (Portland: City of Portland, 1997), 5-6.

³³ MacColl, *Merchants*, 259-71, 283; John Labbe. *Fares, Please! Those Portland Trolley Years* (Caldwell: The Caxton Printers, 1980), 17-110.

³⁴ Lansing, *Portland*, 189-90, 193, 207-08; MacColl, *Merchants*, 261, 267; Willingham, *Army Engineers*, 51-54.

³⁵ Gordon DeMarco. *A Short History of Portland* (San Francisco: Lexikos, 1990), 47-58.

³⁶ Melosi, *The Sanitary City*, 103-48; Martin Melosi. *Effluent America: Cities, Industry, Energy, and the Environment* (Pittsburgh: University of Pittsburgh Press, 2001), 119-57; Charles D. Jacobson. *The Ties that Bind: Economic and Political Dilemmas of Urban Utility Networks, 1800-1990* (Pittsburgh: University of Pittsburgh Press, 2000), 1-73; Royce Hanson, ed. *Perspectives on Urban Infrastructure* (Washington, D.C.: National Academy Press, 1984).

³⁷ Melosi, *The Sanitary City*, 103-48.

³⁸ Melosi, *The Sanitary City*, 103-48.

³⁹ Melosi, *The Sanitary City*, 103-48.

⁴⁰ Melosi, *The Sanitary City*, 103-48.

⁴¹ E. Kimbark MacColl. *The Shaping of a City: Business and Politics in Portland, Oregon 1885 to 1915* (Portland: The Georgian Press, 1976), 64-68; MacColl, *Merchants*, 244-48.

⁴² Portland Water Bureau. *Water: Portland's Precious Heritage* (Portland, City of Portland, 1983), 1-12; MacColl, *Merchants*, 244-46; for additional background on the early development of the Portland municipal water system, see Lawrence Kaiser, "The Municipal Water System of Portland, Oregon, 1922: Historical, Descriptive, Statistical" (mimeograph copy of typescript in Oregon collection of Multnomah County Library) and Charles Oliver, "The Portland Water Supply," *Pacific Engineer*, vol. IX, no. 4 (April 1930): 3-6; Charles Oliver, "History of the Water Bureau to 1930s" (typescript in Water Bureau Technical Library, n. d.), 1-8.

⁴³ Portland Water Bureau, *Water*, 12-23.

⁴⁴ Portland Water Bureau, *Water*, 23-25.

⁴⁵ Portland Water Bureau, *Water*, 25-29; Colonel Smith, a graduate of the Virginia Military Institute, was a trained and experienced civil engineer. He had been a surveyor and construction superintendent for the City of Tacoma and for various railroads in the Pacific Northwest before designing the Portland waterworks in 1886-87. He also built the Willamette Falls Locks on the Willamette River at Oregon City from 1868 to 1873; Howard M. Corning, ed. *Dictionary of Oregon History* (Portland, OR: Binford & Mort, 1956), 227; *Oregonian*, Jan. 1, 1895, 18.

⁴⁶ Portland Water Bureau, *Water*, 29-37.

⁴⁷ Portland Water Bureau, *Water*, 29-37.

⁴⁸ The following discussion of the Mount Tabor Reservoir 1 is based on *Oregonian*, Jan. 1, 1895, 16-19; Virginia Guest Ferriday. Portland Reservoirs Nos. 1, 2, 3, 4, 5, and 6 (Thematic National Register Nomination, 1984); Oliver, "History of the Water Bureau to 1930s," 5.

⁴⁹ The discussion of reinforced-concrete technology is based on the following sources: Carl W. Condit. *American Building*, 2nd ed. (Chicago: University of Chicago Press, 1982), 240-41, 250-51, 291; Sara E. Wermiel, *The Fireproof Building: Technology and Public Safety in the Nineteenth-Century American City* (Baltimore: Johns Hopkins University Press, 2000), 164-67; Amy Slaton. *Reinforced Concrete and the Modernization of American Building, 1900-1930* (Baltimore: Johns Hopkins University Press, 2001), 15-19, 138, 144-46; Robert Gordon and Patrick Malone. *The Texture of Industry: An Archaeological View of the Industrialization of North America* (New York: Oxford University Press, 1994), 331-32; Earnest Ransome. "Reinforced Concrete Buildings," in Howard Newlon, Jr., ed., *A Selection of Historic American Papers on Concrete* (Detroit: American Concrete Institute, 1976), 285-305.

⁵⁰ *Oregonian*, Jan. 1, 1895, 16-17.

⁵¹ Portland Water Bureau, *Water*, 38-40.

⁵² MacColl, *Merchants*, 17, 57-58, 169-70; Lansing, *Portland*, 11-13, 32, 62, 108.

⁵³ MacColl, *The Shaping of a City*, 115; MacColl, *Merchants*, 194-96, 313.

⁵⁴ Eugene E. Snyder, *Portland Potpourri: Art, Fountains and Old Friends* (Portland: Binford and Mort, 1991), 1-16.

⁵⁵ Lansing, *Portland*, 194-95, 202-03, 206-07; MacColl, *Shaping*, 146.

⁵⁶ MacColl, *Merchants*, 303-14.

⁵⁷ Peterson, *City Planning*, 55-73; Norman Bolotin and Christine Laing. *The World's Columbian Exposition* (Chicago: The University of Illinois Press, 2002), 1-158; Donald Miller, *City of the Century: The Epic of Chicago and the Making of America* (New York: Simon and Schuster, 1996), 488-532; William Wilson. *The City Beautiful Movement* (Baltimore: The Johns Hopkins University Press, 1989), 53-74.

⁵⁸ Bolotin and Laing, *Columbian Exposition*, 1-158.



Portland City Hall, completed in 1894.

III. 1900-1930: Impact of Public Planning and Progressive Era Politics

In the first decades of the twentieth century, Portland experienced a period of sustained growth. Between 1900 and 1910, the city's population exploded from 90,426 to 207,214, a 129 per cent increase. By 1930, Portland had increased to 301,815 residents. The city's economy boomed, fueled by increased lumber manufacturing, shipping, wholesale distributing, construction, and financial activity. Portlanders responded to this growth by undertaking a number of projects and plans to make the city more livable, physically attractive, and better governed. Major investments in both public and private infrastructure development marked the city's coming of age between 1900 and 1930.

The celebration of the Lewis and Clark Expedition centennial began the new century with a flourish. Portland's business and civic leaders organized the Lewis and Clark Centennial Exposition of 1905 to assert the city's premier position in the Pacific Northwest and to promote its future economic growth by enhancing its international trade and attracting new immigrants, investments, and business. During the summer of 1905, this extravaganza of international mechanical, agricultural, and cultural exhibits and displays drew nearly 1.6 million visitors, almost four times the population of the entire state. Many of these visitors came from other parts of the country; liking what they saw in Portland, many decided to stay on permanently. Over the next 25 years, Portland made great strides in developing its public and private infrastructure and in comprehensive planning to accommodate this burst of population growth. Portland also physically expanded by 25 percent with the annexation of St. Johns and Linnton in 1915. By 1930, Portland was a mature city, exhibiting fine parks and a water system the envy of other urban centers.

Between 1900 and 1920, public and private building exploded. From 1905 to 1910, the value of new building permits in the city jumped by 400 percent. Wells Fargo Bank built the city's first "skyscraper" in 1907; and by the peak of the boom in 1920, Portland had ninety-five buildings of six stories and sixteen buildings of ten or more stories. The new office buildings—built of light brick and glazed terracotta in the style of the Classical and Renaissance revivals—considerably brightened the look of the downtown business core. Rising architects, such as A. E. Doyle and Whidden and Lewis, dropped the cast-iron, dark red brick, and heavy stone of the Victorian era and employed the new look for such structures as the county courthouse, the Benson and new Imperial hotels, the Meier and Frank and Lipman and Wolfe departments stores, and the United States National Bank.⁵⁹

Much of Portland's economic growth rested on its key role in processing forest products and agricultural crops from the Willamette Valley and eastern Oregon and then shipping them overseas or to other parts of the United States. For example, for the year ending in May 1906, Portland grain brokers exported almost 10 million bushels of wheat and over 1 million barrels of flour. The value of imports and exports through Portland and the lower Columbia, exclusive of rafted timber, increased from \$53.9 million in 1905 to \$222.9 million in 1920. To support this level of commerce, the Army Corps of Engineers maintained a ship channel with a controlling depth of 30 feet at low water. The Corps also carried out renewed work on the mouth of the Columbia to establish a depth of 40 feet over the bar. To achieve this depth, the engineers rebuilt and extended the south jetty and constructed a 2.5-mile long north jetty. When completed in 1917, the Columbia River jetties contained 9 million tons of stone and comprised the largest in the world. No other improvements on the Portland-to-the-sea navigation channel were needed until the 1930s.⁶⁰



The Port of Portland did its part by maintaining the authorized depth in the Willamette River portion of the ship channel and, in 1903, built the port's first floating dry dock to facilitate ship repair and cleaning. To further enhance the harbor's viability, voters approved a bond measure in 1910 to build publicly owned docks and established an independent dock commission to oversee their construction and operation. The effort to build public docks reflected the fact that shippers had begun to move operations downriver and many businessmen saw this as an

opportunity to break the railroad's monopoly of shipping facilities on the existing waterfront. Attorney Joseph Teal, a vocal supporter of publicly-owned docks, successfully argued in a report to the Chamber of Commerce that "we find that everywhere the creating of ports, the installation of modern docks, wharves and facilities has been followed by a great increase in trade. We find that substantially everywhere this work is undertaken by the city or State. In other words, it is looked upon as a public function." The city completed the first public dock, extending 663 feet along North Front Street, and a second, smaller dock on the east side in 1914. The Port of Portland also enhanced shipping operations by moving the main ship channel at Swan Island in 1928. By the late 1920s, as a result of these improvements to Portland's harbor, more wood products moved from Portland than any other city in the world; and over 50 steamship lines used the port, which consisted of 6.5 miles of docks and four modern municipal terminals built at a cost of \$10.5 million.⁶¹

Something of an adversarial relationship existed between the Port of Portland Commission and the Portland Dock Commission prior to World War II. Both were highly politicized organizations. The mayor appointed members of the dock commission, while the governor (at times the legislature) named the members of the port commission. Over time, members of both commissions were accused of conflicts of interest involving the location and development of industrial sites and rates for dredging and fill material used to expand industrial and terminal land. The major port work during the 1920s included efforts to purchase and develop Swan Island, dredge the ship channel west of Swan Island, and fill Guild's Lake for industrial sites and railroad yards. The port commission, unwilling to sell bonds because of taxpayer resistance, was chronically short of funds during the 1920s and struggled to accomplish its ambitious development plans. By 1929, however, the port had excavated 39 million cubic yards of material in deepening the west channel at Swan Island, reclaimed 130 acres of Guild's Lake, and increased the size of Swan Island. By the end of the decade, the port owned 120 acres of river frontage.⁶²

Residential development boomed in response to the economic and population growth. Handsome new residential districts flourished on both sides of the Willamette River. On the newly expanding east side, established districts such as Ladd's Addition, Holladay's Addition, and Irvington quickly filled up, and real estate developers laid out new ones such as Laurelhurst and Eastmoreland. Much of the land for the developments had once been part of banker

William S. Ladd's real-estate holdings, known as Hazelfern and Crystal Springs farms. Laurelhurst's Olmsted-influenced park, its curvilinear streets, and the restrictions on commercial development indicated that the neighborhood was designed for families of businessmen and professionals. Similarly promoted by its developers, Eastmoreland grew in close relationship to adjacent Reed College campus and Eastmoreland Golf Club, and thus attracted an upper-middle-class clientele. The rapid expansion of the electric streetcar lines facilitated the cities eastward push; and in 1906 the entire system of streetcar and interurban lines and the power companies were merged into one corporation known as the Portland Railway Light and Power Company. By 1920, Portland had 198 miles of streetcar lines.⁶³

On the west side of the Willamette, residential expansion occurred on hill sites. Portland Heights and four new housing areas in the west hills open up: Arlington Heights, King's Hill, Westover Terraces, and Willamette Heights. As with the eastside development, streetcar lines were extended to serve these new neighborhoods and in turn helped to insure



their success. Just as architects had designed commercial buildings in new styles, so they also did in their residential work. Victorian styles gave way to the newer Colonial Revival, Bungalow, and Arts and Crafts modes. Portland architects quickly adapted the popular styles to the Portland setting.⁶⁴

Population growth and residential expansion demanded heavy public expenditure to upgrade the infrastructure. Improvements to the water system, streets, and sewers cost \$29 million between 1905 and 1914. Voters approved bond issues to finance development of a park system and, in 1911, to begin municipal garbage collection. In the June 1911 election, the voters funded construction of the city's first public auditorium. To meet increasing transportation needs, Portland and Multnomah County replaced the outmoded Willamette River bridges (Morrison, Madison, and Hawthorne) prior to the First World War. The city built a new one—the Broadway Bridge—in 1913; and, in 1925, the county completed the Sellwood Bridge and rebuilt the Burnside and added the Ross Island bridges the following year. In 1912, the city replaced the 1872 police station with a four-story, brick building designed in the American Renaissance/Georgian style by Emil Schacht. The most important infrastructure developments, however, between 1900 and 1930 involved the expansion of the municipal water system and the growth and enhancement of the city parks system.⁶⁵

After successfully completing the Bull Run water system and expanding the municipal waterworks, the Portland Water Committee came to an end in 1903 when the City of Portland reorganized its government. Under a new city charter, the 15-member water committee was replaced with a 5-member water board. Four members of the newly constituted water board had previously served on the water committee. Administrative continuity was also apparent in the fact that Frank Dodge, who had joined the staff of the water committee in 1888, served as

superintendent for both water organizations from 1897 to 1914. The shift in structure did not alter the Portland water systems operations or policies. It continued, for example, waging a political campaign to restrict public access to the Bull Run Watershed to protect the purity of the supply. The water board achieved an important victory in 1904 when President Theodore Roosevelt signed Public Law 206, known as the Bull Run Trespass Act. This act established the importance of managing the Bull Run Reserve for the protection of its water supply.⁶⁶

The new water board also had to cope with the increased demands on the water supply caused by a growing population. Following the 1905 Lewis and Clark Exposition, Portland had reached an estimated population of 172,000, nearly three times the number when construction on the Bull Run system began in 1893. To meet the increased demand for water, the water board decided to build a second water line, known as Conduit No. 2, which would increase delivery capacity by 50 million gallons. The project also included two additional reservoirs in Mount Tabor (Reservoirs 5 and 6) that added 125 million gallons of storage to the existing 66 million. The entire undertaking cost \$3 million funded by municipal bonds.⁶⁷

While purchasing the land on Mount Tabor for the new reservoirs, the city also decided to acquire additional land for the creation of public parks. In the same election of 1907, when voters authorized the \$3 million bond issue for the improvements to the waterworks, they also authorized \$1 million in bonds for acquiring park land. As early as 1904, Mount Tabor had been identified as a potential park location in a report to the Portland Park Board by John Olmsted of the Olmsted Brothers' landscape architecture firm. At Mount Tabor, the city bought 125 acres for a park and 45 acres for the water reservoirs.⁶⁸

A Portland contractor, the Robert Wakefield Company, began construction on Reservoirs 5 (at el. 412) and 6 (at el. 305) at Mount Tabor in 1909 and completed them in 1911. As described by A. E. Taylor, the superintendent of construction for the project, engineers situated Reservoir 5 in a natural draw, which was excavated and lined with plain concrete. The contractor built a reinforced concrete dam with counterforts, 69 feet high and 362 feet long across the mouth of the draw and then surrounded the basin with a rolled embankment 45 feet wide across the top. The reservoir had a water surface of 6 acres. An oval shaped gatehouse sits atop the dam at its center. A reinforced concrete aqueduct conveyed the water from the new Bull Run conduit to a gate chamber at the center of the dam. From the aqueduct the water passed to the weir chamber and then to either the basin or a 19-foot in diameter steel tank built in the north half of the gate chamber. The tank was connected to the basin and Reservoirs 6 and 2 by steel and cast iron pipes. From the gate chamber, a 200-foot long, reinforced concrete conduit carried the supply, distribution, and drain pipes under the rolled embankment. At the top of the concrete slope lining, the engineers placed a longitudinal, reinforced concrete parapet, which, in turn, supported an ornamental iron fence. The parapet wall was built in sections 20 to 40 feet long. Outside of the parapet sat a concrete walk. A 700-foot long concrete tunnel with sluice gates at each end connected the basin with reservoir 1. Workers faced the Romanesque style gatehouse with rusticated reinforced concrete. The roofline had a corbelled, crenellated parapet. Windows in the gatehouse were round arched, four-over-four, double-hung wood sash, with projecting concrete sill and surround.⁶⁹



1920s streetcar.

Reservoir 6 sat 800 feet west of and 107 feet below Reservoir 5 and was oblong in shape. It was built on sloping ground and had a water surface of 12 acres. A rolled, lined embankment enclosed the south and west sides of the reservoir. It received water from Reservoir 5 through a 36-inch steel pipe. The inlet and outlet gate-chamber and division wall between the two chambers comprising Reservoir 6 were built of reinforced concrete. The top of the wall which divides the reservoir into basins was three feet below the water surface. The engineers designed the inlet chamber to accommodate two hydropower units to utilize the head of 107 feet. The outlet chamber contained two sets of three, 30-inch cast iron distribution and drain pipes. The total cost for the two reservoirs came to \$800,000.⁷⁰

In 1913, Portland adopted a new city charter based on the commission form of government. This type of municipal government transformed the independent water board into a city bureau under the supervision of a city commissioner. The new Bureau of Waterworks concentrated its energies on expanding the capacity and distribution of the Bull Run system to meet the continued growth of the city its suburbs. Though the Water Bureau would make changes to the headworks and delivery system, it made no significant modifications to the reservoir system in the city. One of the first steps it took was to begin the process of metering all city taps to encourage conservation. All new water service since 1907 had been metered, but the effort to include previous hookups met great resistance and by 1914 only one-third of all service was metered. The new Water Bureau, however, pushed ahead and finally completed the metering project by the mid-1920s.⁷¹



Construction of Bull Run Dam, 1928.

Increased demands on the water supply caused the Water Bureau to enlarge storage at the headwaters by building a small dam at the high water outlet of Bull Run Lake. Completed in 1917, the dam could store three billion gallons. Next, the bureau improved the old headworks and diversion canal that fed the conduits carrying water to the city. In 1925, the Bureau constructed a third conduit that could deliver 75 million gallons per day, which equaled the combined capacity of the two existing conduits. The next project,

building a dam on the Bull Run River that would create an ample water supply for the foreseeable future, got underway in 1927. Completed in two years at a cost of \$3 million, the structure's design combined features of both an "arch-type" and "gravity" dam and stood 200 feet above bedrock and had a crest length of 950 feet. The dam had a storage capacity of nine billion gallons. The builders included penstocks for possible future generation of hydropower.⁷²

Over time the Water Bureau located additional buildings at Reservoirs 1 and 5 to support water system operations. At the southwest corner of the basin at Reservoir 1, engineers added a Weir Building (also known as the greenhouse) in 1923. It was rectangular in form, with its cornice and wall treatments similar to the original gatehouse of 1894. The Weir Building functioned originally as the inlet chamber or screening room for filtering water from Powell Butte.

In 1951, the Water Bureau added a Weir Building at Reservoir 5. This rectangular building was sympathetic in design and materials to the gatehouse of 1911. It is constructed of poured concrete in the shape of stones with simulated stone quoins. The roof had a crenellated parapet. Windows were four-over-four, double hung wood sash.

Mount Tabor Park, of course, was only one part of the emerging city parks system. In 1903, when parks boosters heard that the Lewis and Clark Fair promoters planned to hire John Olmsted to plan the fair grounds, they proposed to pay one half of his \$10,000 fee to have him also develop a park plan while he was in Portland. As proposed by John Olmsted, of the Olmsted Brothers Landscape Architecture firm, Mount Tabor was one of a series of parks, natural areas, vistas, and connecting boulevards designed to lace Portland on both sides of the Willamette River. His comprehensive plan offered general advice on land acquisition, the attributes of good parks, importance of connecting parks by boulevards and parkways, and how to pay for and administer parks. The heart of his plan, however, consisted of a detailed inventory of the city's topography and the parts or "units" suitable for development as parks. He considered some areas in the highly urbanized portion of the city as best suited for use as formal city squares, while other more elevated and scenic locations could be developed to take advantage of their natural setting. He also recommended leaving some heavily timbered and undisturbed land as forest preserves and developing a series of waterfront parks on marshy lands along the Willamette River at Ross Island, Guild's Lake, and Swan Island.⁷³

The proposed park plan reflected the goals and visions of civic leaders such as Dr. Thomas Lamb Eliot and banker L. Leander Hawkins. These leaders, as part of a broader Progressive era planning and urban beautification ethos known as the "City Beautiful" movement, sought to ameliorate the harsher aspects of urban life through proper planning that emphasized order, beauty, and efficiency in the built environment and by providing an escape into nature through carefully designed parks and open spaces. Parks were but another example of the urban infrastructure, such as basic utilities, docks, paved streets, and public safety, which cities had to provide in order to continue growing and thriving economically. Carefully designed parks, moreover, could enhance the lives of a city's inhabitants by exposing them to the healthy benefits of nature.⁷⁴

Olmsted's plan, released in June 1904 proved to be difficult to implement. While most observers liked the plan, the city lacked the funds to carry it out immediately. Finally, in 1907, voters approved a \$1 million bond issue for parks and boulevards. In the following year, the Park Board formally adopted Olmsted's report and hired a skilled park superintendent, Emanuel Mische, who had been an employee of the Olmsted Brothers firm. Over the next six years, Mische turned Olmsted's recommendations into actual park landscapes. His initial efforts focused on the Park Blocks and Washington and Mt. Tabor parks. Mische also worked to introduce children's playgrounds to Portland's parks. This inclusion of playgrounds followed a national trend favoring equipment and playing field in parks to provide physical recreation opportunities for both boys and girls. By 1910, in spite of limited financial resources whose purchasing power had been further weakened by the rapid rise in real estate prices, Mische and the Park Board managed to build three miles of Terwilliger Boulevard and to purchase land for Sellwood, Peninsula, Laurelhurst, and Mt. Tabor parks. Between 1899 and 1910, Portland had increased its park acreage from less than 200 to 567 acres.⁷⁵

One of the early park amenities developed prior to World War I under Superintendent Mische's direction was the Wildwood Trail (1909) that connected Macleay Park and the Forestry Center, a building remaining from the Lewis and Clark Exposition grounds. In particular, Mische lavished special attention on Mt. Tabor Park, where he reforested the west slope and opened vistas toward Mount St. Helens and Mount Hood. His crews also built a shelter, bandstand, and

comfort station near the summit of Mt. Tabor. In 1910-12, Mische added swimming pools to Sellwood and Peninsula parks. In these years, he also planted Portland Parks Bureau's first rose gardens at Peninsula Park and Ladd's Circle. In addition, the bureau changed the name of Ladd Park to Laurelhurst Park and Williams Park officially became Mt. Tabor Park. In 1913, workers completed the Peninsula Park Recreation Building.⁷⁶

Superintendent Mische's design for Laurelhurst Park in 1910 was a particularly fine example of his park planning abilities. The city purchased the property for a 27-acre park in 1909, just as the Ladd brothers began developing the surrounding 442-acre residential neighborhood known as Laurelhurst. John Olmsted had prepared the preliminary plans for the subdivision in 1906. As designed by Mische, the park contained six sections for distinct uses, connected by a continuous footpath system that ran throughout the park. Carefully landscaped meadows, concert and picnic areas, and a comfort station constituted the main elements of the park. The park also held over 100 different varieties of trees and shrubs, some rare and unique to Portland and the Northwest. Laurelhurst Park is a fine example of the design principles of the Olmsted Brothers firm as practiced by Mische and is broadly reflective of the City Beautiful aesthetic.⁷⁷

A charming, yet practical addition to Portland's urban infrastructure occurred in 1912, when wealthy lumberman Simon Benson donated \$10,000 to the city for 20 bronze drinking fountains to be installed on downtown sidewalks. According to the legend, Benson, a teetotaler, wanted thirsty citizens to have public access to liquid refreshment other than the beer or whiskey provided by saloons. Designed by prominent architect A. E. Doyle, the so-called Benson bubblers provided public water from Bull Run at no cost to users. Strict rules governed the number and location of these distinctive public amenities that over time have increased to 50, four-bowl fountains.⁷⁸

As Portland civic leaders embraced the tenets of the City Beautiful movement in its park system, they also realized the value of more comprehensive city planning. In the booming aftermath of the Lewis and Clark Fair and in expectation of the economic bonanza to flow from the opening of the Panama Canal, Portland businessmen and civic leaders thought the city was poised for continued growth. They knew that Portland faced keen competition from other West Coast ports, especially Seattle. In order to achieve its promised destiny, Portland's leaders believed the city had to plan properly for its future.

In adopting the urban planning ideal, Portland was following a national trend of city planning that was transforming cities from coast to coast. At the beginning of the twentieth century, the earlier, uncoordinated responses to great city urbanism, involving sanitary reform, landscape values, and civic art coalesced into the nation's first comprehensive city planning effort—the 1902 MacMillan Plan for Washington, D.C. A committee under the leadership of Daniel Burnham crafted a plan for developing the vast spaces between the Capital and the White House by combining street planning, civic centers, landscaping, and architecture into a pleasing whole that improved city living. Over the next decade, the practitioners of the new art of comprehensive city planning fanned out across the nation, redesigning scores of cities. By 1917, more than 200 cities had undergone planning efforts designed to achieve urban greatness. Two of the most comprehensive plans had been devised by Burnham for San Francisco and Chicago in 1905 and 1909, respectively. Portland's civic leaders were determined not to be left behind in the field of urban improvement through comprehensive planning.⁷⁹

In 1909, Portland Mayor Joseph Simon created a City Beautiful Fund to pay for hiring an outside consultant to develop a plan for infrastructure improvements and physical design of the urban setting to accommodate expected growth. On the advice of the country's leading urban planner,

Daniel Burnham, Portland hired his associate, Edward Bennett. Beginning in 1910, Bennett spent a year on Portland's plan, delivering it in the summer of 1911. Planning for a future Portland of two million inhabitants, Bennett designed a city of massive scale, containing grand diagonal boulevards and highways, an expanded park system, a civic center for public buildings, a recreation and cultural center, a transportation center, and the relocation of harbor facilities down the Willamette River. Bennett's report stressed the connection between proper planning and civic greatness, stating the "the City with a plan prospers." He also noted the benefits of mobilizing all citizens in implementing the plan:

The accomplishment of the plan for Portland demands a persistent educational effort that will acquaint all citizens with both the utilitarian and aesthetic elements of the work, that will harmonize and unify public, public service, and private improvements and that will automatically produce higher standards of community living. Without a steadily elevated plane of citizenship and the active, intelligent cooperation of the people, the plan would be useless and city could never be great or greatly desirable.⁸⁰

Portland's civic and business element strongly backed Bennett's plan and, after a year-long publicity campaign, won official approval for it in 1912 by a popular vote of two-to-one. While the voters adopted the concepts of the plan, they failed to pass in the next year a bond measure to carry it out. Efforts to carry out the Bennett Plan were unsuccessful for several reasons. An economic recession from 1914 to 1916, lack of support within the municipal government, and political upheaval surrounding the implementation of the new commission form of government all served to divert attention from the plan. Even though the Bennett Plan ultimately achieved little of consequence in guiding the physical development of the city, Portlanders continued to support parks improvements and "revolutionized" city governance by abolishing the old charter and replacing it with a commission form of government. Under the new approach, the nonpartisan mayor and four commissioners would pass ordinances and administer city bureaus.



W Burnside and SW Washington, looking east from 19th, 1910. Street dividing signal drawn-in by City public works staff.

The mayor presided over council meetings and made the bureau assignments to the commissioners. All citizen boards except for civil service were abolished. The new form of

government was sold on the basis that it would be more efficient, responsible, and less susceptible to corruption than the old ward system it replaced.⁸¹

The physical expansion of Portland also increased the pressure on the city's ability to function effectively. In the years surrounding World War I, Portland grew both geographically and demographically. When it annexed Lents in 1912, the city grew to 50 square miles. In 1914, St Johns and Linnton merged with Portland; and the city's boundaries expanded by 25 percent, totaling 66 square miles. Between 1910 and 1920, Portland's population grew from 207,214 to 258,288, a 24.6 percent increase. These additions required many changes, such as merging differing street systems, which took some time to accomplish. The current system of street naming and number, for example, finally occurred in 1931-33. The added population also placed new demands on water service, necessitating planning for additional storage, which came in the 1920s (as described above).⁸²

In 1914, Paul Keyser took over from Mische as park superintendent. When Portland voters dropped the old city charter and instituted a commission form of government, they abolished existing city boards. The parks responsibilities now fell under an elected city commissioner, and Mische felt that the new organization diminished his authority and ability to carry out his work effectively. Under Keyser, the park system attempted to grow, while maintaining a balance between recreational programs and additional greenspaces. In 1917, the voters approved a small levy for purchasing new parks and developing playgrounds that included amenities such as tennis courts and swimming facilities. While the support for large public parks devoted to passive activities waned, public enthusiasm for neighborhood parks and recreational playgrounds grew. The need for such play spaces became readily apparent as increasing numbers of automobiles took over the city streets where children played. Neighborhood parks also had the added advantage of enhancing the quality of urban life and stabilizing inner-city property values as suburbanization grew in popularity.⁸³

By embracing active recreation in their parks, Portlanders were simply following a national trend. Urban residential neighborhoods increasingly desired convenient parks with active recreational facilities. In 1924, the federal government sponsored the National Conference on Outdoor Recreation in Washington, D.C. to assist in the creation of a national policy to assist outdoor recreation and resource conservation at all levels of government. Two years later, Congress authorized the Secretary of the Interior to sell, lease, or exchange unreserved public lands to states or local governments for recreational purposes.⁸⁴

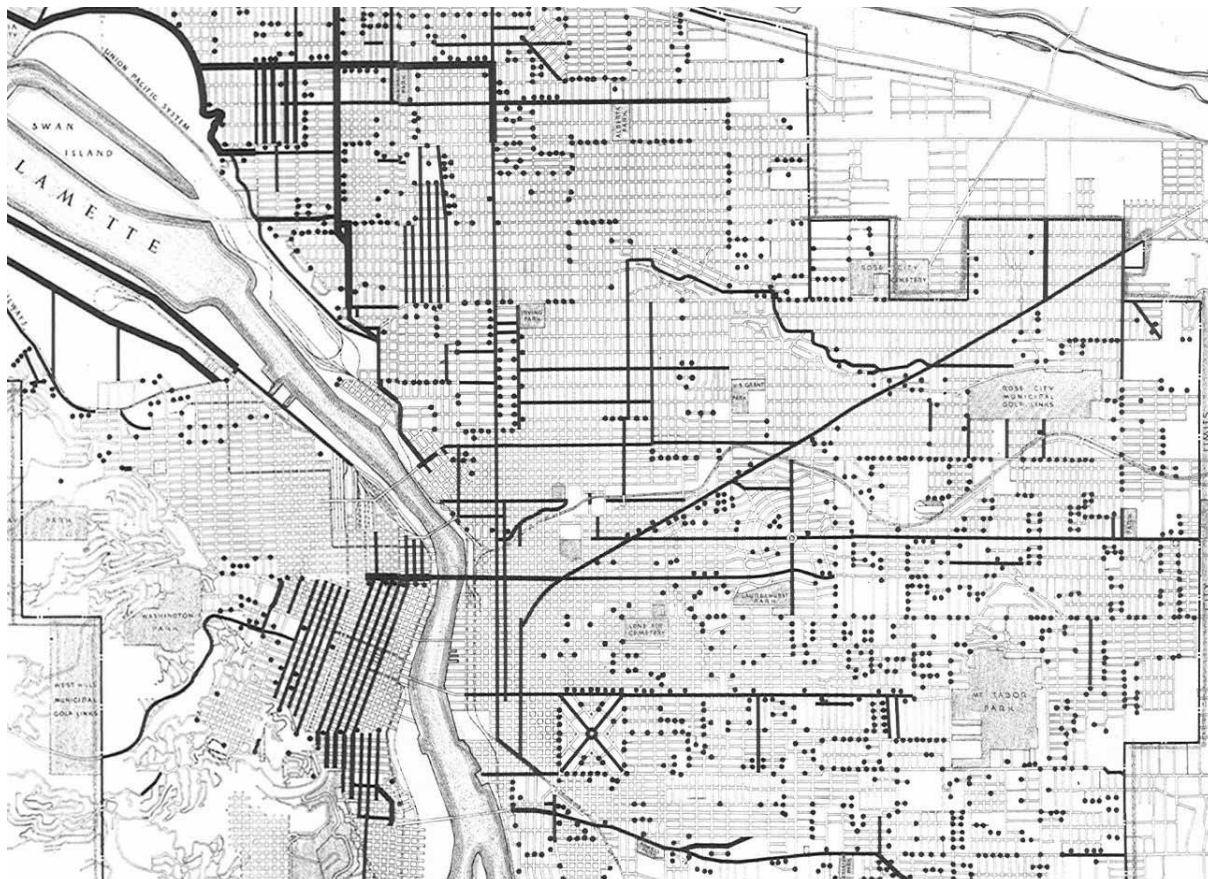
As early as 1919, the voters of Portland signaled their desire for active recreation facilities by approving another bond issue for parks and playground expansion. The era of public recreation activities such as, swimming, baseball, and tennis had arrived; and Portland's park planning and development adapted to the new recreational realities. Keyser added golf to the mix of recreation in the park system by building a golf course in the Eastmoreland neighborhood in 1917-19; and during the 1920s, he built two more municipal golf courses. The city acquired a defunct dog racing course known as the Rose City Race Track and began improving it as a golf course. In 1924, the parks bureau started building a golf links at the old county poor farm in the West Hills. In other parks development, Keyser followed the Olmsted/Mische design approach in landscaping the eastside parks such as Peninsula, Laurelhurst, Columbia, Sellwood, and Kenilworth.

The rapid growth of automobiles also had an effect on parks planning. Between 1916 and 1929, the number of automobiles registered in Multnomah County increased from fewer than 10,000 to over 90,000. In an effort to keep newly mobile citizens from using their automobiles to leave the city in search of open space and forests, parks superintendent Keyser attempted to

expand greenspace in Macleay Park and stimulate interest in developing what is now Forest Park. By pursuing the purchase of land to establish Forest Park, Keyser argued that “Portland could easily attain one of the largest and I daresay, one of the most notable parks in the country containing . . . a forest primeval, trails, viewpoints and glens, not miles away but within our urban borders.” In his efforts to enrich the park system, he located a National Rose Test Garden in Washington Park (1917) and convinced the city council to establish an arboretum for needle-bearing trees and other gymnosperms in Hoyt Park (1928). Multnomah County aided the arboretum plan by donating 145 acres for that purpose. In 1928, the parks bureau planted a Shakespeare Garden on an island in Eastmoreland Park.⁸⁵

In an attempt to take advantage of the new rage for auto travel, the city developed in 1921-22 a popular auto park on 24 acres of leased land near Albina and Portland Boulevard, across from Peninsula Park. While over 11,000 automobiles and their owners stayed at the campground in 1922, the council shortly voted to prohibit autocamps within the city and closed the camp in 1927. Of more lasting impact, private benefactors donated a number of heroic bronze statues to the city for placement in the parks. Between 1922 and 1927, prominent physician, Dr. Waldo Coe, presented statues of Theodore Roosevelt, Abraham Lincoln, which were put in the South Park Blocks, and George Washington and Joan of Arc, which were located in plazas or circles on Sandy Boulevard and N.E. Glisan streets, respectively. Joseph Shemski also donated a bronze and sandstone fountain, entitled “Rebecca at the Well,” which was placed in the South Park Blocks in 1926. Through public donations, the city installed, in 1928, the Campbell Memorial Fountain at 19th and West Burnside streets. This sculpture honored firefighters who had fallen in the line of duty.⁸⁶

Just as parks development had been influenced by the rise of the automobile, so, too, was the



Detail of map in 1932 Bartholomew Report showing street widths and “defects.” The dots indicate street jogs and dead-ends.

city's transportation system. As noted above, the automobile was commonplace in Portland by the 1920s. In 1930, Multnomah County had one car for every four residents, causing new problems for city planners. Streetcar use began to decline and traffic congestion increased.



St. Johns Bridge during construction.

With greater personal mobility, Portlanders began to move to the suburbs, which threatened real estate values in the older sections of the city. City planners responded to the auto-dominated environment by seeking to accommodate the new mode of personal transportation.⁸⁷

Instead of just focusing on a radial system of streetcar lines feeding into the central business district, planners now needed to arrange a collection of arterial and thoroughfare streets connecting all parts of the city. The new street array included cross-town connectors that linked neighborhoods without going through the congested downtown core. The new street plans, proposed in 1921 and 1927, also required improving north-south streets. The level of traffic would determine the width of the different types of streets, such as neighborhood lanes or major arterials. The planning commission also proposed six new expressways to carry traffic to nearby cities, including a new Oregon City Highway, a Johnson Creek Boulevard, a Columbia Slough Industrial Highway, waterfront highways on both sides of the Willamette River, and a Foothill Boulevard from the Ross Island Bridge past the Multnomah Stadium.⁸⁸

The city council failed to adopt either the 1921 or 1927 plan; and, as a result, each city department responded as best it could to Portland's traffic problems. The police department developed and enforced speed limits and no-parking and time control zones on downtown streets. In 1924, the police began requiring vehicles to stop before entering major streets. Automatic stoplights slowly gained public acceptance. By 1931, only a quarter of downtown intersections had two-color traffic signals. During the 1920s, the public works department spent \$7.5 million improving streets, such as West Burnside, Union Avenue, Sandy, East Burnside, and Morrison. It also widened six miles of 82nd Street. The city had so many street

improvements underway that it proved cost effective to set up a municipal paving operation, with a paving plant on the waterfront adjacent to Pacific Power and Light Company's steam generating plant.⁸⁹

Automobile drives also wanted more convenient crossings of the Willamette River. Existing bridges served the core but did little to move traffic in the outer sections of the city. Of four bridges proposed in the street plan of 1921, Multnomah County constructed two: the St. Johns-Linnton Bridge (1929-31) five miles downstream from the city core and the Sellwood Bridge (1925) five miles south of the downtown. In 1922, county voters approved a \$4 million bond issue to construct Ross Island Bridge and rebuild the Burnside Bridge. At its completion in 1931, the \$4 million St. Johns Bridge was the longest span of any suspension bridge west of the Mississippi River. With its two 2,645-foot-long suspension cables gracefully supported by twin 408-foot Gothic arch towers, the bridge has long been recognized for its architectural beauty.⁹⁰

Portlanders had responded to the explosive growth following the Lewis and Clark Fair by experimenting with plans for public works programs and park expansion. Between 1918 and 1924, the focus shifted from public planning to regulating private development activity. This movement followed another national trend in planning. Since the first national planning conference on city planning in 1909, the planning profession had moved from emphasizing beautification to efficiency. The effects of World War I hastened this shift in Portland. A wartime spike in shipbuilding employment created an acute housing shortage, causing the city to hire California planner Ed Cheney to conduct a housing survey that could guide future planning. His study decried the large number of substandard housing units and urged the adoption of a housing code and a planning commission. Based on his findings, Cheney also recommend land use zoning. To implement zoning, the city council created a planning commission in December 1918 to advise it on future public and private construction projects. Portland based its land-use zoning on a program first developed in New York in 1916 and subsequently followed by other cities. In January 1919, the city council passed a housing code ordinance modeled on regulations developed in Minneapolis. The code, designed to create decent living conditions in congested locations and to protect the character of residential neighborhoods, required all new buildings to have back yards, conform to height limits, and maintain a minimum percentage of open space on a lot.⁹¹

While zoning had the support of Portland's established business interests and large property owners, real estate brokers and the city's legion of small land owners opposed it. The opponents of zoning feared that it would take away their property rights and cost them future profits. The opponents narrowly defeated the first attempt at zoning in November 1920, and the city's piecemeal growth continued as prosperity returned in the 1920s. The opponents of city planning also succeeded in weakening the housing code by allowing exceptions to be appealed to the city council. Finally, supporters of zoning succeeded in getting the voters to approve a



Construction of seawall in downtown Portland.

revised, simplified code in November 1924. The zoning code established four zones that restricted land to single-family use (zone 1), allowed multi-family units (zone 2), permitted commercial and residential activity (zone 3), and created unrestricted land designation for industrial use (zone 4). Under the new code, rezoning property required approval of one-half of all property owners on an effected block and approval of the city council.⁹²

During the prosperous 1920s, the city also took steps to improve the downtown section of its waterfront. To address the frequent flooding during high water events and the decay of the wharves and warehouses lining Front Street caused by the movement of shipping downstream, the city, in 1928-29, cleared the area and constructed a \$2.7 million combined seawall and interceptor sewer project. Stretching for 20 blocks from S.W. Jefferson to N.W. Glisan Street, the seawall consisted of reinforced concrete 18-feet wide at the base and 32-feet high. The affected private property owners largely funded the project.⁹³

An objective measure of Portland's ability to provide basic public services appeared in 1929, when *The American City* magazine published a comparative rating of municipal services for cities across the country. Based on data drawn from 1926-27, Portland ranked twenty-second among 159 cities having populations of more than 30,000. Portland scored 84 out of a possible 100 points, with the national average at 78. Portland's highest ratings came from its schools, libraries and a low death rate. It stood above average in parks, street paving, and garbage collection but below average in sewer services and fire protection. The city placed average in street cleaning. The study did not evaluate police services, water systems, or street lighting.⁹⁴

While Portland set an enviable record on street widening and paving during the 1920s, its sewer construction and refuse disposal lagged. Sewer construction advanced slowly because such projects required approval by 50 percent of the affected property owners or the existence of a public health emergency. In addition, the major and city council were reluctant to propose expensive public works.



In spite of its fairly high rating for refuse management, Portland struggled with this service. Garbage collection was handled by unregulated private collectors, and the city incinerator plant at Guild's Lake was inadequate. For the most part, haulers dumped refuse in gulches at the base of the West Hills, along the North Greeley Avenue Cutoff, and in areas adjacent to Alberta and Fremont streets. In 1927, the city built a new incinerator for the West side garbage; but it, too, failed to serve very well.⁹⁵

Portland did not struggle alone in its efforts to cope with sewerage and refuse problems. Despite the fact that water-supply and sewerage functions were linked, American cities addressed them separately. In the United States, large cities slowly expanded sewer systems so that the serviced urban population rose from 50 percent in 1870 to 87 percent in 1920.

Portland, like other large cities, built a combined sewerage system (carrying both storm and wastewater). Unfortunately, while a combined system efficiently handled waste and stormwater, it did not solve the complicated question of disposal, resulting in the pollution of the receiving waterways. Nevertheless, disposal by dilution became the preferred method before 1920. In time, sewage disposal by simply discharging it into natural water bodies without treatment would lead to severe pollution, especially for downstream communities.⁹⁶



Civic Stadium, 1926.

Experiments with different methods for sewage treatment began in the late nineteenth century, usually involving some type of filtration or sedimentation tank. In the early twentieth century, further experimentation led to aeration processing. The expense of treatment and the continuing health debate over whether to treat sewage or simply rely on filtering water for municipal use prevented rapid adoption of sewage treatment systems. In 1900, while 73 percent of American cities (with populations over 3,000) had a sewerage system, only 89 municipal treatment plants were in operation by 1905. By 1920, the number of cities

treating sewage had increased to 860, but this amounted to only 20 percent of the population of the United States served by sewers. Portland did not have a main sewage treatment plant until 1951.⁹⁷

American cities also had to deal with the problems of solid waste collection. Before the 1890s, the public considered refuse collection a private “nuisance” rather than a necessary public function. As cities grew, however, that view changed for several reasons. Over time, the accumulation of household rubbish, ashes, horse droppings, and street sweeping became too much for individuals to deal with on their own. Sanitarians began to point out the potential dangers from unattended putrefying waste. As part of the commitment to civic improvement, people saw a clean city not only as a source of pride but also as a means of promoting further economic growth by making it a good place to live and do business. Finally, the establishment of municipal water supply and sewerage systems predisposed urbanities to accept publicly managed sanitary services.⁹⁸

The sheer volume of urban trash demanded action. In 1916, the total per capita refuse in American cities ranged from one-half to one ton per year. In addition, until the 1910s an estimated 3.5 million horses worked in cities, making manure-disposal a major concern. Most disposals relied on dumping refuse on land or into water, which only shifted the problem from one location to another. As the disposal problem grew, responsibility for refuse collection shifted from private individuals to municipal government. In 1880, only 24 percent of cities had municipal collection, while in 1920, 63 percent had such a service. Many cities still used contract collection or a combination of the two as well. The problem of disposal would prove more intractable than collection.⁹⁹

Between 1900 and 1920, the profession of sanitary or municipal engineer arose to systematically deal with refuse management issues. The engineers collected statistics and then analyzed various collection and disposal methods then available. Their debates over collection

methods focused on whether to use primary separation or combined refuse collection. Those advocating primary separation also utilized some sorting and recovery process to reclaim salable by-products to help defray the cost of collection. Proponents of combined collection, on the other hand, argued that it was cheaper and easier to accomplish.¹⁰⁰

Engineers also held divided opinions concerning the best approach to disposal. The most common disposal methods included incineration and reduction. Municipal incinerators began appearing in the United States during the 1890s, following their development in Great Britain in the previous decade. Unfortunately, they failed to meet expectations. Expensive to operate and producers of noxious smoke and odors, only 78 of the 180 furnaces built between 1885 and 1908 still operated in 1909. Plants built after 1910 showed improvement; and by 1914, about 300 incinerators operated in the United States and Canada. The reduction process, which attempted to extract salable oil, grease, or fertilizer from garbage, had its own shortcomings. Expense and foul odors from the plants caused the most complaints. By 1914, only 22 of 45 reduction plants built in the United States were still in use.¹⁰¹

In the early decades of the twentieth century, no clear solutions had been found to the problems of urban refuse collection and disposal. A survey in 1918 of 105 cities found that 27.5 percent dumped on land, 13.5 percent employed incineration, and 20 percent used reduction to get rid of garbage. While waste management would continue to be a major problem for modern cities, no one questioned that refuse collection and disposal had become a part of modern sanitary services in American cities, along with water and sewer systems.¹⁰²

Portland employed most of the standard methods of waste disposal, such as land fills and incineration, and none very effectively. As noted above, the city began municipal garbage collection in 1911. A City Club report in 1922 complained that the method of collection entailed “a form of the scavenger system,” described as a lightly regulated “collection of licensed individual contractors.” The report noted that the city’s incineration plant (north of Guild’s Lake) was inadequate and that most mixed waste simply was dumped in an unsanitary condition near the plant or at other



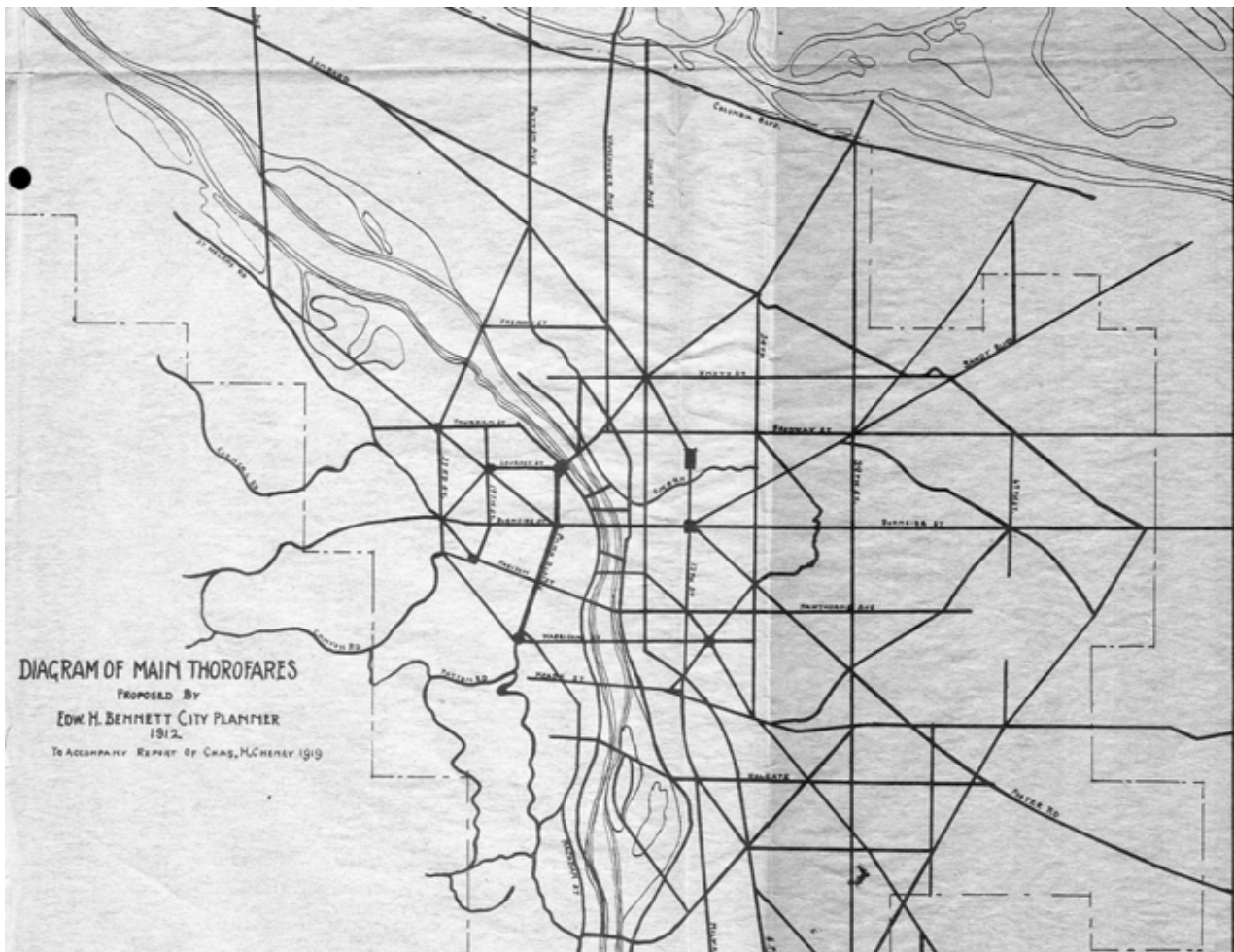
Pedestrian bridge over railroad, Sullivan’s Gulch, near NE 42nd.

locations. Marquam Gulch served as a principal dump location as did an area later reclaimed as Duniway Park. Other dumping grounds included the Greeley Avenue Cutoff and spots adjacent to Alberta and Fremont Streets in Northeast Portland’s Albina district. The current City of Portland Archives building was originally built as a municipal waste incinerator in 1927.¹⁰³

Between 1910 and 1930, Portland experienced the extremes of city planning, ranging from the City Beautiful to the City Practical—from grand designs and visions for the future to mundane housing codes and zoning regulations for the present. It had followed the lead of other cities in moving from specialized forms of urban planning to more a comprehensive approach. Over time however, the realities of politics determined that urban growth and development would result not so much from public investment as from regulating private activity. Throughout the 1920s, the planning commission had little political support and no long-term capital spending budget. Most city bureaus and other local government agencies paid little attention to its recommendations concerning growth and development, and frugal voters were reluctant to

approve bonds which would increase their taxes. The institutional weakness of planning in Portland led to problems during the 1930s, such as the response to the Bartholomew Report on transportation and waterfront development.

Portland's infrastructure development in the first third of the twentieth century also showed an uneven response. On the plus side, bridge and street improvements, water system enhancements, and park development all made Portland a more livable city. On the negative side of the balance sheet, Portland struggled with providing an adequate sewerage system and effective refuse collection and disposal. Waterfront improvements by the new dock commission and harbor maintenance by the port commission kept the city's economic engine functioning. Future enhancements to the urban infrastructure would depend on Portland's civic and business leadership, the willingness of voters to pay for improvements, and the general economic climate.



Edward Bennett's proposed plan for arterials, boulevards and parkways, 1912.

⁵⁹ Carl Abbott. *Portland Planning, Politics, and Growth in a Twentieth Century City* (Lincoln: University of Nebraska Press, 1983), 50-57; MacColl, *Merchants*, 384-86; MacColl, *Shaping*, 307-13, 389-95; Virginia Guest Ferriday. *The Last of the Handmade Buildings: Glazed Terra Cotta in Downtown Portland* (Portland: Mark Publishing Company, 1984), 7-25.

⁶⁰ Willingham, *Army Engineers*, 63-64, 70-72; U. S. Army Corps of Engineers. *Annual Report of the Chief of Engineers* (Washington, D. C.: GPO, 1867-present), 1925, 1122.

⁶¹ Willingham, *Army Engineers*, 72-73, 128-30; MacColl, *Shaping*, 429; E. Kimbark MacColl. *The Growth of a City: Power and Politics in Portland, Oregon 1915-1950* (Portland: The Georgian Press, 1979), 22-23, 213-18, 251; Lansing, *Portland*, 269, 276-77, 298, 301, 315; Abbott, *Portland Planning*, 67-68; Joseph N. Teal. "Report on Public Docks to the Portland Chamber of Commerce, Portland, Oregon" (Portland, Ore.: The Chamber of Commerce, 1910), 1-16, quote, 16.

⁶² MacColl, *Growth*, 224-40, 248, 252-55.

⁶³ Labbe, *Fares, Please! Those Portland Trolley Years*, 21-22, 111-22; MacColl, *Merchants*, 362-65; Abbott, *Portland Planning*, 27-28, 55-57; William J. Hawkins and William F. Willingham. *Classic Houses of Portland, Oregon, 1850-1950* (Portland: Timber Press, 1999), 243-478; MacColl, *Growth*, 65-80, 103-09.

⁶⁴ Hawkins and Willingham, *Classic Houses*, 65-80, 103-09.

⁶⁵ Abbott, *Portland Planning*, 57; Sharon W. Wortman. *The Portland Bridge Book* (Portland: Oregon Historical Society Press, 2001), 1-60.

⁶⁶ Portland Water Bureau, *Water*, 41-52.

⁶⁷ Portland Water Bureau, *Water*, 52-53.

⁶⁸ MacColl, *Shaping*, 345, 382, 424-25, 428; City of Portland. *Report of the Park Board, 1903* (Portland: Park Board, 1903), 13, 45-46; William H. Wilson. *The City Beautiful Movement* (Baltimore, Johns Hopkins University Press), 1994.

⁶⁹ E. A. Taylor. "The New Mt. Tabor Reservoirs, Portland, Ore.," *Engineering Record*, vol. 63, no. 18 (May 6, 1911): 488-91.

⁷⁰ Taylor, *Mt. Tabor Reservoirs*, 488-91. It is unclear if the reinforced concrete used in constructing Reservoirs 5 and 6 employed the Ransome patent or a competing approach; see, Portland Water Department, Notice to Contractors: Proposal and Specifications for Reservoirs Nos. 5 and 6, Mt. Tabor (Portland: City of Portland, 1909), 2-3, 9-15.

⁷¹ Portland Water Bureau, *Water*, 56-61; MacColl, *Shaping*, 454-55; MacColl, *Merchants, Money, and Power*, 445-50.

⁷² Portland Water Bureau, *Water*, 61-106.

⁷³ Lansing, *Portland*, 249, 256, 264-66; MacColl, *Merchants*, 357, 361-62; MacColl, *Shaping*, 261-72; Portland Park Board, *Report of the Park Board, Portland, Oregon, 1903, with the report of Messrs. Olmsted Bros., Landscape Architects, Outlining a System of Parkways, Boulevards and Parks for the City of Portland* (Portland: The Board, 1903), 13-75.

⁷⁴ MacColl, *Shaping*, 272; Wilson, *The City Beautiful Movement*, 35-52, 75-95; Cielo Lutino. The City Beautiful Movement and Civic Planning in Portland, Oregon 1897-1921, National Register of Historic Places Multiple Property Documentation Form (Portland Planning Bureau, Jan. 2000), 2-11.

⁷⁵ Abbott, *Portland Planning*, 60-61; Lansing, *Portland*, 269; Charles Keyser, History of Portland Park Development (typescript, Jan. 1958), 1-4; Cascade Anderson Geller, Mount Tabor Park, National Register of Historic Places Nomination Form (City of Portland, July 2004).

⁷⁶ www.portlandonline.com/parks/index.cfm?c+39473; Keyser, Portland Park Development, 4-6.

⁷⁷ Lansing, *Portland*, 285; *Oregonian*, Sept. 15, 2005; Snyder, *Portland Potpourri*, 17-23.

⁷⁸ Abbott, *Portland Planning*, 57-59; Peterson, *City Planning*, 77-222.

⁷⁹ Abbott, *Portland Planning*, 60-65; Lansing, *Portland*, 276, 284-85; MacColl, *Merchants*, 428, 442-43; Edward Bennett, *The Great Portland Plan* (Portland: Wells and Co., 1912), 1-46, quote, 6.

⁸⁰ Abbott, *Portland Planning*, 65-70; Lansing, *Portland*, 291-93; MacColl, *Shaping*, 438-44; MacColl, *Merchants*, 445-51.

⁸¹ Lansing, *Portland*, 287,298, 322; Portland Water Bureau, *Water*, 58-67.

⁸² Much of the material in this and following paragraphs on Portland parks is based on Portland Parks and Recreation, Chronological History, 1852-2000, <http://www.portlandonline.com/parks/index.cfm?c=39473> and Keyser, Portland Park Development, 5-7. See also Lansing, *Portland*, 301-03; Abbott, *Portland Planning*, 100-02; MacColl, *Shaping*, 30.

⁸³ Geller, Mount Tabor Park, 4-5.

⁸⁴ Abbott, *Portland Planning*, 93-95; quote in Portland Parks and Recreation, Chronological History, 1852-2000.

⁸⁵ Snyder, *Portland Potpourri*, 37-44, 93-105.

⁸⁶ Abbott, *Portland Planning*, 95-100.

⁸⁷ Abbott, *Portland Planning*, 95-100.

⁸⁸ Abbott, *Portland Planning*, 95-100; MacColl, *Growth*, 286-87.

⁸⁹ Abbott, *Portland Planning*, 95-100; Wortman, *Portland Bridge Book*, 1-6.

⁹⁰ Abbott, *Portland Planning*, 71-81; Lansing, *Portland*, 308-09; MacColl, *Growth*, 46, 296-98.

⁹¹ Abbott, *Portland Planning*, 81-92; Lansing, *Portland*, 312-13; MacColl, *Growth*, 298-307.

⁹² The following chapter discusses the consequences of the wholesale demolition of the 19th century cast-iron buildings along the old waterfront and the westward shift in the downtown business core. MacColl, *Growth*, 315-20; Lansing, *Portland*, 316.

⁹³ MacColl, *Growth*, 284-88.

⁹⁴ MacColl, *Growth*, 284-88.

⁹⁵ MacColl, *Growth*, 287-88.

⁹⁶ Melosi, *The Sanitary City*, 149-74.

⁹⁷ Melosi, *The Sanitary City*, 149-74.

⁹⁸ Melosi, *The Sanitary City*, 175-204.

⁹⁹ Melosi, *The Sanitary City*, 175-204.

¹⁰⁰ Melosi, *The Sanitary City*, 175-204.

¹⁰¹ Melosi, *The Sanitary City*, 175-204.

¹⁰² Melosi, *The Sanitary City*, 201.

¹⁰³ MacColl, *Growth*, 287-88.

IV. 1930-1945: The Depression and World War II Era

Portland, along with the rest of the nation, suffered mightily during the Depression of the 1930s. Even during the previous decade, the city's economy had been slowing after a building spurt in the first half of the 1920s. For the entire decade, the population had increased only by 16.9 percent (43,527), and the business core added only 500,000 square feet of office space. By comparison, in the years immediately after the Lewis and Clark Exposition, Portland added 2 million square feet of office space and more than doubled its population. The first two years of the Depression flattened the city's economy, putting 20 percent of the workforce on unemployment and 40,000 on relief. The hard times lasted through the winter of 1934. The census of 1940 captured the stagnation of the 1930s. Portland's population only grew from 301,815 to 305,394 (1.2 percent increase), and it aged. In 1920, residents 45 years and older comprised 24 percent of the population, while in 1940, they accounted for 36 percent.¹⁰⁴

In the early 1930s, Portland faced economic pressure on several fronts. In order to sustain the economic viability of its port, it urged the Army Corps of Engineers to increase the depth of the 30-by-300-foot shipping channel. The ever-increasing size of ocean-going vessels calling on West Coast ports made the existing channel inadequate. Ships often grounded in the river or had to sail with less than full cargos. Based on Corps' studies, Congress authorized a \$1.4 million project requiring additional dredging and more permeable dikes to establish a 35-by-500-foot channel from Portland to the Pacific Ocean. The Corps completed the new shipping lane by 1933. The Port of Portland, however, found itself unable to maintain the new channel dimensions in the Willamette River as required by federal law. Financially strapped by the hard economic times, the Port requested federal assistance; and in 1935, Congress assigned the maintenance responsibility for the entire Portland-to-the-sea channel to the Portland District of the Corps of Engineers.¹⁰⁵

As the grim effects of the Depression settled in, the Portland City council continued to wrestle with the unresolved transportation and waterfront development issues left over from the previous decade. In 1931 the council hired Harland Bartholomew and Associates from St. Louis, recognized as one of the nation's leading planning firms, to recommend solutions to these matters. The planning commission directed Bartholomew to focus on the nuts and bolts of city transit and zoning and to avoid social reform issues such as housing and quality of life that some Portlanders were beginning to raise. Specifically, the planning commission wanted the firm to study and advise on street and traffic patterns to relieve downtown congestion and on waterfront development to make the best use of the recently cleared land between the seawall and Front Avenue.¹⁰⁶

In 1932, Bartholomew produced a comprehensive plan to systematically address land use, population growth, and downtown development. His firm recommended street and traffic improvements that followed a 1927 plan by the planning commission and endorsed a proposal first put forth in 1923 by city engineer Olaf Laurgaard to devote the westside waterfront district to streets, rail lines, and parking. Others had wanted a waterfront park along the river bank. Bartholomew offered a compromise: he suggested widening Front Street but putting a railroad tunnel and parking underground with an esplanade and park on the top. The city council accepted the Bartholomew Report but promptly buried it, opting instead to widen Front and build a public market building at the foot of S. W. Morrison Street.¹⁰⁷

While the city council and established business interests focused on transportation and traditional economic development matters, the Depression forced the general public to confront

a pressing social condition. The relentless economic slide had aggravated the poor state of Portland's low-income housing. While the existence of substandard housing had been identified during World War I, nothing had been done about it. As historian Carl Abbott noted, by the 1930s

the old low-income neighborhoods suffered from abandonment and over-crowding in the remaining units. Cheap hotels along the southwest waterfront offered unventilated interior sleeping rooms served by a single toilet to a floor. Portlanders who could no longer afford any housing on the private market built Hoovervilles from scrounged lumber. Shantytowns covered much of Ross Island, the filled site of Guild's Lake, and the slopes of Sullivan's Gulch on the east side.

Housing activists had pushed for reform of the city's weak 1919 housing code throughout the 1920s to no avail. By 1934, however, the worsening conditions of housing led to code amendments, requiring better standards and enforcement mechanisms. Turnover on the city council in 1930 and 1932 helped, in part, to bring about the new housing code. A new, younger group of politicians replaced an older generation on the council and in the mayor's office. Chastened by the grim realities of the Depression, some of the new officeholders were more willing to use the power of government to ameliorate distressing social conditions.¹⁰⁸

The political changes of the early 1930s meant that for the first time city planning had a supporter on the city council with a professional background and knowledge of planning. In 1933, Ormond Bean, an engineer and architect, became the Commissioner of Public Works. He also chaired or served on such regional planning organizations as the Oregon Planning Board and the Pacific Northwest Regional Planning Commission (PNRPC). Bean reorganized the Portland planning commission to make it more representative of the community, while bringing it under the control of the public works commissioner. The planning commission now had more staff and stable funding. Using Civil Works Administration relief funds, the planning commission hired unemployed architects, draftsmen, and other technicians to gather housing, land use, and assessed value data to prepare summary land use maps for better city planning in the future. One result of the land inventory data was use of the information to identify which neighborhoods needed new playgrounds and recreation facilities. Park advocates now had the information necessary to convince voters to approve a ten-year parks levy in 1938.¹⁰⁹

Unfortunately, the new focus of city planning on shaping future growth through land use planning and more effective zoning ended in 1940 when Bean left the council to become Oregon's Public Utilities Commissioner. The major accomplishment in infrastructure improvement in the late 1930s, besides the park program, was winning voter approval in 1938 for a surcharge on water rates to finance interceptor sewers along the Columbia Slough and both sides of the Willamette River. This work was the city's response to the increasingly polluted condition of the Willamette River where it flowed through Portland. As the City Club of Portland argued in support of the project,

at the present time, 44 outlets empty Portland sewage into the Willamette River; 11 empty into Columbia Slough. The entire sewage of the city is poured into these waters. Because of ocean tides varying from 18 to 36 inches, the current of the Willamette is very small for four months of the year during the late summer and early fall. When the water is high in the Columbia River, water backs up into the Willamette, retarding the current. During low-water, Columbia Slough is practically motionless.

In responding to the pollution of the Willamette, Portland was a part of the growing national concern during the 1930s over water pollution caused by urban sewage and industrial wastes.¹¹⁰

The Depression placed heavy demands on the city's parks, as residents sought free activities for recreation. The Parks Bureau even cut golf fees in a vain effort to keep up usage of the municipal golf courses. Some federal relief funds became available in 1932 to provide work in the parks for the unemployed. These workers hard-surfaced drives in Washington and Mt. Tabor parks, cleared land and planted specimens in Hoyt Arboretum, drained swampy land in Westmorland Park, and cleaned up the city-owned property between the highway and the Columbia River in Benson Park. In 1933, with donated funds from the Scott family, the Park Bureau placed a statue of Harvey Scott, the former editor of *The Oregonian*, at the summit of Mt. Tabor Park. The Parks Bureau also reported in 1933 that its infrastructure consisted of 24 supervised playgrounds, 27 swimming pools, 60 hard-surfaced tennis courts, 2 community houses, and 2 lesser recreation centers, 13 baseball diamonds, and 3 municipal golf courses, and a zoo. In 1935, the planning commission produced a report calling for one acre of park space for every 100 people or that 10 percent of city space should be devoted to parks. The report also recommended additional public facilities for water sports.¹¹¹

Continuing to use federal relief funds and a voter-approved 0.4-mill tax levy in 1938, the Parks Bureau made further capital improvements to its system. In 1937-38, Works Progress Administration (WPA) workers cleared and graded Council Crest Park and carried out improvements at various city-owned golf courses. In 1939, the bureau built a community house at Columbia Park and WPA laborers built a 375-foot tunnel at the south entrance of Rocky Butte and completed additional amenities to Westmoreland Park, such as the earthen casting pool and the model yacht basin with a concrete bottom. In spite of tight budgets throughout the 1930s, the Parks Bureau managed to hold its own through a difficult time.

One aspect of Portland's existing infrastructure was largely unaffected by the fiscal problems of the 1930s. The Water Bureau, after a major expansion of storage and pipeline facilities in the 1920s, focused on maintenance and service issues during the 1930s. The significant growth of the city and surrounding communities prior to 1930 led to calls for Portland to supply more of the metropolitan area water needs than just its traditional service area, which consisted of urban Portland and the towns along the Bull Run pipeline route. The Water Bureau agreed to extend service to residents in the developing parts of Clackamas and Washington counties during the 1930s. Portland's shift to metropolitan water service was typical of changes in water system management across the country at the time. Some localities created special water districts, while others merged existing, separate systems into single metropolitan water districts to better serve growth. Since the Portland Water Bureau had excess capacity, it took the route of direct sales contracts to service the water demands of surrounding communities.¹¹²

Portland's planners and reformers were less successful in dealing with housing and public power issues during the 1930s. After a vicious fight over whether to create, under new federal legislation, a city housing authority to construct public housing, voters rejected such an idea in 1938. Opponents successfully convinced homeowners, apartment owners, and conservatives opposed to an activist government that public housing would lower rents and property values and usher in communism. In a like manner, private power advocates and their business allies worked successfully throughout the 1930s to prevent Portland from creating a municipal electric utility by buying the local private power companies. The battle over public versus private power raged at the state level as well. Portland apparently had little taste for extensive government planning or control of economic development.¹¹³

The ambivalence Portland's political and economic elite felt about the New Deal made it difficult for the city to effectively seek relief or public works funds. In addition, many federal relief officials in President Roosevelt's administration thought that the Portland area had received more than its fair share of relief money through the Corps of Engineers' Bonneville Dam project, located 45 miles up the Columbia River from the city. The Bonneville Dam project ultimately received \$36 million in Public Works Administration funds. Portland did receive a Reconstruction Finance Corporation loan in October 1932, which it invested in the ill-fated Public Market built on cleared waterfront property at the west base of the Morrison Street Bridge. This building was designed to accommodate a relocated popular public market that operated along S. W. Yamhill Street. After its completion in 1934, however, few produce or other vendors and their customers chose to move to the new Public Market and it failed. During World War II, the navy leased the market building; and in 1946, the *Oregon Journal* bought it for a newspaper plant.¹¹⁴

Portland's failure to take full advantage of federal public works and relief funds was not typical of American cities during the Depression. In fact, federal funding had a major impact on urban infrastructure development on the national level. Between 1932 and 1934, federal contributions to local government finances rose from 2 to 20 percent of total receipts before falling back to 10 percent by World War II. The Federal Emergency Relief Administration, Works Progress Administration, and the Public Works Administration together contributed over \$16 billion towards highways, bridges, dams, airports, sewer and water systems, public buildings, and other public works projects across the nation. The federal involvement in urban affairs in the 1930s expanded even more once World War II got underway.¹¹⁵



Widening of Burnside during the 1930s.

Portland ultimately received matching federal dollars for street widening, highway construction, and a new city airport on 700 acres of reclaimed land along the Columbia River east of the city. Completed in 1940, the new airport required four years and \$3 million to build. Using voter-approved bonds as the local match for federal funds, the city undertook highway construction in the late 1930s, including McLoughlin Boulevard, development of S. E. 82nd, and Barbur Boulevard (which was built on a former interurban railroad right-of-way). Other road work involved widening Front Avenue in 1940 and building an expressway called Harbor Drive along

the west bank waterfront. In all, 79 cast iron-fronted buildings from early-day Portland were removed for Harbor Drive, which workers completed in November 1942. The city also constructed rock-faced road tunnels on N. W. Cornell and Barnes Road in 1940.¹¹⁶

Portland's small-bore planning efforts in the 1930s rejected the grander alternative urban vision proposed by Lewis Mumford, a leading commentator on urban planning in the first half of the twentieth century. Speaking to the Portland Chamber of Commerce in 1938, Mumford advocated regional planning to prevent wasteful suburban sprawl and the location of industry in environmentally sound locations outside of the city. He argued that planned dispersal would allow growth without harming the region's unique natural environment. Mumford's ideas were a generation ahead of their time. The economic realities of survival during the hard times of the 1930s made people unreceptive to the visions of an ideal urban community. Given the stagnant economic conditions and stable population of the 1930s, most Portlanders were ill-prepared for the renewed growth brought on by the emergency of World War II.¹¹⁷

Mumford's regional planning recommendations were in line with the thinking of the PNRPC, a New Deal regional planning body that was an outgrowth of the Roosevelt Administration's cabinet-level National Resources Committee. The PNRPC, which included Portlanders Marshall Dana and Ormond Bean as members, was charged with gathering data, making studies, and recommending long-term, regional solutions for economic development, population growth, and resource use. Lacking implementation power, the PNRPC depended on other governmental agencies to adopt its recommendations. Unfortunately, most of its reports and recommendations simply sat on the shelf.¹¹⁸

The one regional agency in the Pacific Northwest to emerge from New Deal era planning with real power was the Bonneville Power Administration. President Roosevelt persuaded Congress to create the Bonneville Power Administration in 1937 to distribute the power from the new federal dams on the Columbia River at equal rates throughout the entire Northwest and to include a preference to public power entities. Roosevelt wanted the cheap hydropower to benefit rural as well as urban areas throughout the region. Business interests in Portland, however, were unhappy with this development because they hoped to keep the power rates lowest within a 50-mile radius of Bonneville Dam, the first of the Columbia River dams to come on line. They wanted the expected industrial development from cheap power to cluster around Portland.¹¹⁹



SE Foster Rd. looking north from 52nd Ave., 1937.

The onset of World War II placed unprecedented demands on Portland planning and infrastructure. Wartime mobilization created enormous pressure on municipal resources and public services. In fact, cities up and down the West Coast experienced this situation. In particular, increased shipbuilding led to extraordinary growth for Portland during the war. The Kaiser shipyards built 330 Liberty ships and 120 Victory ships between 1941 and 1945. Other,

smaller boatyards in Portland constructed minesweepers and patrol craft. In all, the Portland area shipyards turned out over 1,000 vessels costing \$2.4 billion. In addition, the beginning of the aluminum industry in the region, due to cheap hydroelectric power, and increased merchant shipping through the Port of Portland added to the booming wartime economy of the city. As a wartime security measure, the city council closed Washington and Mt. Tabor parks.¹²⁰

The wartime economic expansion drew large numbers of new workers to Portland from all parts of the country but especially from the rural sections of the West. At the peak in late 1943 and early 1944, the federal government counted 140,000 defense workers in Portland. Between 1940 and 1944, the metropolitan population had increased by 100,000. This rapid growth strained existing public facilities such as urban transit, housing, schools, and recreation. It also aggravated racial tensions, as the black population grew from 2,100 in 1940 to 15,000 in 1945; and a severe housing shortage forced most blacks into defense housing projects in north Portland and at Guild's Lake, creating de facto segregation.¹²¹



Airport construction, 1938.

Since Portland's pre-war planning effort was inadequate in staff and political support, the city had to deal with the wartime emergency by ad hoc means. Historian Carl Abbott has argued that "the city's leaders were more concerned to solve specific and pressing problems of housing supply and postwar reconversion than to develop and strengthen planning institutions. As a result, few of the important decisions were made by the Planning Commission that had been so carefully nurtured since 1919."¹²²

The most pressing matter arising from mobilization involved building housing for defense workers. The city council created a Housing Authority of Portland (HAP) composed of a realtor, a banker, an apartment owner, and a trade union leader. For six months, the housing board, unable to grasp the scale of the problem, argued over whether to request 3,100 temporary units, or 2,500 temporary and 600 permanent units. Under pressure from federal authorities, they ended up seeking 10,000 units. Concerned that the HAP was moving too slowly, the Kaiser shipyard officials took matters into their own hands and signed a contract with the federal Maritime Commission in August 1942 to construct 10,000 units at what would become the Vanport site along the south shore of the Columbia River. By December 1942, the first tenants began moving into the Vanport project. The building continued at a rapid pace throughout 1943, and the HAP soon became a real estate management organization, rather than a planning body.¹²³

To deal with the problems of demobilization and the fear of a postwar recession and mass unemployment, Portland's leaders turned, once again, to an ad hoc organization instead of the established planning bodies. Mayor Riley and Commissioner Bowes created a 47-member Portland Area Postwar Development Committee in February 1943 to deal with the problem of postwar employment and economic growth. Downtown business, real estate, and financial

interest dominated the committee. Exasperated with the slow progress of the postwar planning committee, Edgar Kaiser, head of the Kaiser shipbuilding operations in Portland, stepped in and hired New York City planner Robert Moses to come to Portland and offer his advice. Various regional government agencies shared the \$100,000 consultation fee, and dozens of outside engineers and planners descended on the city in September 1943.¹²⁴

By November 1943, Moses presented his report, which recommended a massive public works program to stimulate the postwar economy. He proposed a \$60 million construction program to employ 20,000 workers for two years. The city would build a \$20 million freeway loop around the central business core; construct \$20 million worth of sewers, public buildings, and airport improvements, spend \$12 million for streets and parks, and invest \$8 million highways on the city's edge. Interstate highways 5 and 405 generally followed Moses' plan. A suggested civic center would have consolidated city, county, and federal government offices in buildings and plazas in the area bounded by S. W. Salmon, Front, Columbia and Sixth streets, constituting major urban renewal if it had ever been built. Initially, the Moses Plan received wide-spread public acceptance, and in May 1944, voters approved \$19 million in bonds for new sewers, roads and docks and \$5 million for schools. In June 1944, however, the voters turned down a bond issue to buy land and begin the civic center portion of the Moses Plan. The planning commission was bypassed in the drafting and evaluation of the Moses Plan, and, indeed, appeared irrelevant to the whole endeavor.¹²⁵

Portland's wartime planning experience was typical of other coastal cities and military towns during World War II. Postwar demobilization planning in Portland also duplicated that of other cities. As did other cities,

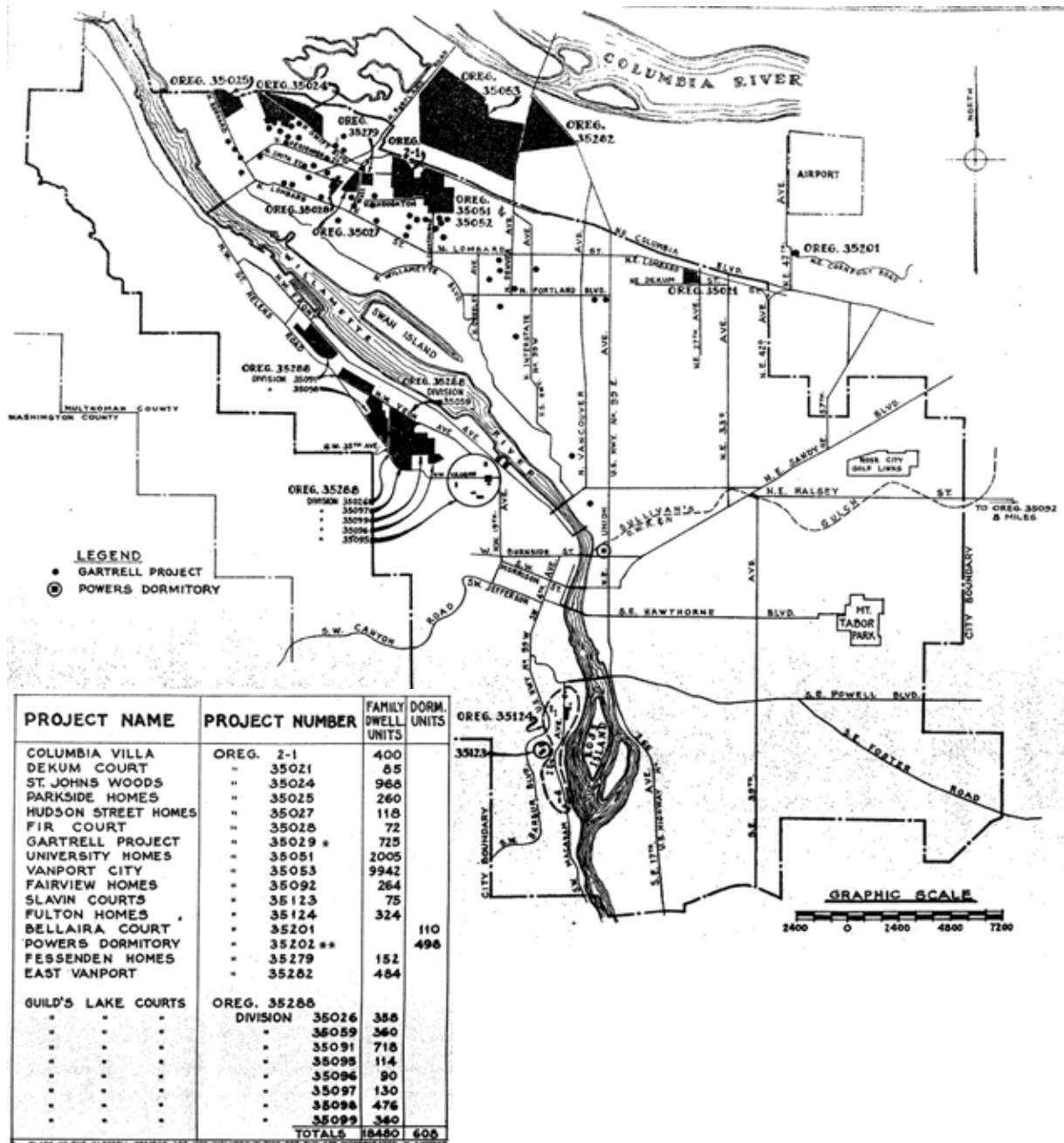


Vanport housing project, 1943.

Portland turned to an outside expert; and the goals of social reform gave way to the demands of conservative business interests, relying on improvisation rather than established planning advice. Ad hoc committees seemed better able to respond to the powerful federal bureaucrats and outside businessmen than did the existing city bureaucracies. The goal of Portland political leaders appeared to be expedient solutions to immediate problems with limited government interference in the private sector.¹²⁶

Between 1930 and 1945, Portland planning and infrastructure development was driven by the continuing broad national trend of suburbanization and increased reliance on the automobile. The major infrastructure response was to build highways, improve streets, and extend water and sewer systems to meet the demand of sprawl, as much as limited Depression-era relief and public works funds allowed. A wartime emergency in housing elicited an ad hoc response in the form of the nation's largest public housing project located in north Portland. The city took a conservative stance on race relations, accepting de facto segregation in its public and private institutions. Unwilling to rely on its own planning expertise, Portland turned to an outside consultant in devising postwar planning and got a plan narrowly focused on public works and physical amenities. The Moses Plan neglected the problems of housing, health, and other

social needs and ignored regional issues altogether. As Abbott has noted, "what triumphed in wartime Portland was a conception of planning as a prelude to civil engineering." This attitude set the stage for dealing with renewed growth in the late 1940s and again in the 1960s.¹²⁷



* PLATS OF THE GARTRELL PROJECT ARE NOT INCLUDED IN THIS REPORT SINCE SCHEMATIC & ADDRESS SET ON FILE IN THE CENTRAL OFFICE, 404 ALDERWAY BUILDING, PORTLAND, OREG. THE SET ON FILE CONSISTS OF 17 SHEETS AND COVERS THE 80 ACRES INVOLVED IN THE PROJECT.
** THIS PROJECT INVOLVED THE CONVERSION OF THE POWERS WAREHOUSE TO DORMITORIES. NO PLATS HAVE BEEN PREPARED. PLANS ARE ON FILE IN THE CENTRAL OFFICE.

NATIONAL HOUSING AGENCY
 JOHN B. BLANDFORD JR., ADMINISTRATOR
 FEDERAL PUBLIC HOUSING AUTHORITY
 HERBERT EMMERICH, COMMISSIONER

WAR HOUSING PROJECTS

HOUSING AUTHORITY OF PORTLAND

404 ALDERWAY BUILDING
 PORTLAND, OREGON

- ¹⁰⁴ Abbott, *Portland Planning*, 109-10.
- ¹⁰⁵ Willingham, *Army Engineers*, 130-31.
- ¹⁰⁶ Abbott, *Portland Planning*, 103-04.
- ¹⁰⁷ Abbott, *Portland Planning*, 104-09; MacColl, *Growth*, 499-501.
- ¹⁰⁸ Abbott, *Portland Planning*, 110-11, quote on 110; MacColl, *Growth*, 530-36.
- ¹⁰⁹ Abbott, *Portland Planning*, 111-16.
- ¹¹⁰ Abbott, *Portland Planning*, 111-16; MacColl, *Growth*, 544-47, quote on 546; Melosi, *The Sanitary City*, 225-34.
- ¹¹¹ A brief history of Portland parks during the 1930s can be found at www.portlandonline.com/parks/index.cfm?c=39473; see also, Keyser, Portland Park Development.
- ¹¹² Portland Water Bureau, *Water*, 69-72; Melosi, *The Sanitary City*, 215-17.
- ¹¹³ Abbott, *Portland Planning*, 116-18; MacColl, *Growth*, 411-36, 442-52; Lansing, *Portland*, 333-34.
- ¹¹⁴ MacColl, *Growth*, 436-52, 488-99, 501-05; Willingham, *Water Power in the "Wilderness": The History of the Bonneville Lock and Dam* (Portland: U. S. Army Engineer District, Portland, 1987), 1-7; Lansing, *Portland*, 326-29.
- ¹¹⁵ Melosi, *The Sanitary City*, 210-12.
- ¹¹⁶ MacColl, *Growth*, 507-18; Lansing, *Portland*, 335.
- ¹¹⁷ MacColl, *Growth*, 551-54; Lansing, *Portland*, 334.
- ¹¹⁸ MacColl, *Growth*, 446-47; Johansen, *Empire of the Columbia*, 516-19; Robert Fishman, ed., *The American Planning Tradition* (Baltimore: The Johns Hopkins University Press, 2000), 14-16, 173-82.
- ¹¹⁹ MacColl, *Growth*, 452, 555-66; Johansen, *Empire of the Columbia*, 519-28; Willingham, *WaterPower*, 41-43.
- ¹²⁰ Abbott, *Portland Planning*, 125-29; MacColl, *Growth*, 571-75; Lansing, *Portland*, 339-42.
- ¹²¹ Abbott, *Portland Planning*, 125-29.
- ¹²² Abbott, *Portland Planning*, 130.
- ¹²³ Abbott, *Portland Planning*, 131-36; MacColl, *Growth*, 575-84.
- ¹²⁴ Abbott, *Portland Planning*, 139-40; MacColl, *Growth*, 584-86.
- ¹²⁵ Most of the highway recommendations of the Moses Plan had been previously selected by the state highway commission. Abbott, *Portland Planning*, 139-40; MacColl, *Growth*, 587-92.
- ¹²⁶ Abbott, *Portland Planning*, 140-45.
- ¹²⁷ Abbott, *Portland Planning*, 1944.

V. 1945-1965: Post World War II and the Dawn of Urban Renewal Era



Memorial Coliseum.

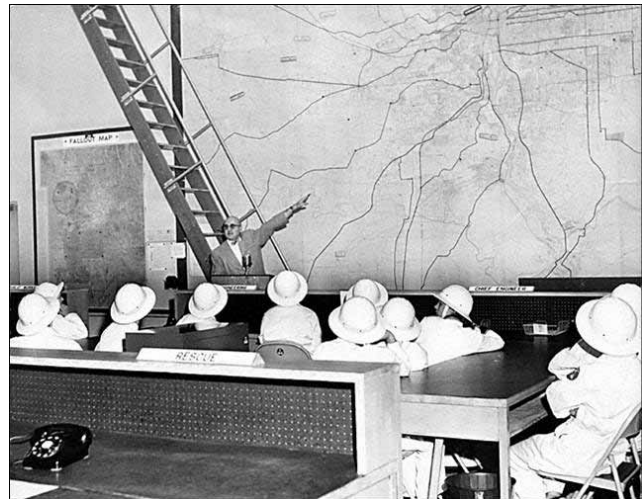
World War II thrust great social and economic changes on Portland and left its citizens unsure of how to handle the postwar period. Should it return to the old, conservative slow-growth mentality of the past or embrace the openness of a new, rapidly-changing future? Robert Moses' plan for Portland proposed traditional, massive public works programs to bridge the gap between the end of the war and the full resumption of peacetime private business activity. His approach, however, ignored regional planning concerns and offered no solution to the pressing social welfare needs. Highways and public buildings would provide short-term jobs during postwar demobilization, but no direction for the community's long-term growth needs.

Ready or not, Portland did change in the late 1940s. New industries emerged, such as metal working, chemicals, and electronics, spurred by cheap electricity rates and an abundant labor force. The change in Portland's economic base was reflected in the fact that during the postwar era 50 percent of the population worked in industry, while before the war only 17 percent were employed in that category. After the initial postwar burst of economic expansion, however, the boom had begun to fade by 1949. During the 1950s, the city experienced a decade of economic stagnation.¹²⁸

The lack of sustained economic expansion stymied the effort of planning advocates and social reformers to mobilize city government on behalf of new commercial development and modernization of infrastructure. Plans for port expansion, downtown renewal, and a civic center failed to receive majority support of the voters, as different sections of the city pursued their own agendas. The inability of the separate docks commission and port authority to work together hampered Portland's desire to achieve either comprehensive port development or modernization of its facilities. The proposals for downtown renewal and a civic center got caught in the crossfire of competing east-side and west-side economic interests. The east-side favored a civic center site near Holladay Park, while the west-side argued for the convenience of a downtown location. The voters narrowly approved the east-side plan but then refused to fund any civic center development.¹²⁹

Even the effort to revise the city's outdated zoning code ran into roadblocks. After the war, reformers sought code revisions to create a master plan of land use and transportation for the metropolitan area. The planning commission presented a set of code revision in 1946, but bureaucratic reviews and public hearings of the revisions consumed four years without producing any results. In fact, throughout the late 1940s, the planning department suffered a series of budget and personnel cuts. During the 1950s, the planning commission kept pushing for reforms of the zoning regulations. The shortcomings of the old code were clear: it greatly over zoned for multifamily development, it lacked population density regulations, it required excessive map changes to account for hundreds of lot changes, and attached too many conditions to zone changes for proper management. Finally, in 1959, Portland adopted its second zoning code. This new code had fifteen zones as opposed to the old 1924 code, which had only four. The new code emphasized the protection of single family residential areas and discouraged a mixture of different uses in most zones. Another code requirement specified that all new developments must provide on-site parking after 1973, reinforcing the automobile as the dominant mode of transportation in the city. The code also included height restrictions, setbacks, and screening for new development.¹³⁰

The controversy surrounding the siting of the Memorial Coliseum that would honor military veterans also demonstrated a lack of focused leadership on planning matters. Once again, citizens divided over the location of an important public facility more on the basis of convenience than on public interest. Backers of the Pacific International Stock Show wanted the war memorial center to replace outmoded facilities on the Columbia River near the old site of Vanport, while downtown business interests sought to spur renewal in the inner city by placing it on land south of the Civic Auditorium. After voters approved an \$8 million bond issue in May 1954 for the Coliseum, a third group sought to put it on the east-side, near land that would soon be developed as the Lloyd Center shopping mall. In May 1956, voters narrowly decided the issue in favor of the east-side location between the Steel and Broadway bridges.¹³¹



Civilian Defense planning, ca. late 1950s.

Postwar initiatives to reform public housing also suffered set backs. The future of public housing at Vanport proved to be one of the most contentious issues for the city in the immediate aftermath of the war. In 1946, Vanport had a population of about 18,000; and some public housing advocates urged converting its temporary structures to permanent, low-cost housing. Most of Portland's business and political leaders, however, wanted the community demolished and the land used for industrial development. The racial mix of Vanport's residents complicated the issue: over 25 percent were black and most Portlanders did not want African Americans in their neighborhoods. The great Columbia River Flood of May 1948 solved the issue by completely destroying Vanport. Fifteen people lost their lives in the flood and its aftermath. Few Portlanders were sorry to see Vanport disappear, and most of the displaced blacks soon moved into the nearby Albina area. Public apathy regarding public housing continued; and in 1950, voters rejected a measure to construct 2,000 units of low-income housing with federal funds. Unfortunately, public housing advocates made little progress during the 1950s, as the Portland Housing Authority was unable to provide effective leadership on the issue.¹³²

The lack of citizen interest in long-term planning and infrastructure improvements was reflected in a series of votes during the 1950s. For example, public housing and urban renewal measures failed in 1950 and 1952. While there were a few noted exceptions, voters also rejected a ten-year capital improvement levy for parks, streets, and public buildings in 1954, 1956, 1958 and defeated a public transit proposal in 1958. The public seemed wary of change and feared increased taxes. With few new attractions or public improvements, the city seemed ill-equipped to compete with the growing, unincorporated suburbs.¹³³

The dearth of dynamic leadership in city affairs during the late 1940s fed an undercurrent of public dissatisfaction with an entrenched city government controlled by long-standing business interests and officeholders. The exposure of rampant vice and police corruption in Portland also heightened the sense of urban malaise, and led to calls for the reform of city government. As a result, in 1948, Portland had a minor revolution in which a reform-minded city commissioner, Dorothy Lee, defeated the long-serving commissioner and mayor, Earl Riley, in the mayoral race. Unfortunately, Mayor Lee had little success in using her office to provide leadership on the major planning, housing, and infrastructure issues facing the city and failed to persuade her fellow commissioners to put a city manager charter reform on the ballot. A citizens group also failed to get enough signatures to refer the charter reform.¹³⁴



Vanport before and during the 1948 flood.

Portland did accomplish several important urban improvements as the Cold War era developed in the late 1940s and early 1950s. The city council, after almost 50 years of urging by planners stretching from John Olmsted to Robert Moses, finally created an urban forest on the city's North West edge. In 1947, the council voted to establish a municipal forest park, using 4,200 acres of city and county land that had reverted to public ownership through property tax foreclosure and gifts. Forest Park was formally dedicated on September 25, 1948. In 1953, voters approved a five-year, 1.2 mill levy to construct a modern zoo in Washington Park north of the Sunset Highway. At the same election, voters enacted the \$8 million bond for an Exposition-Recreation Center that became the Memorial Coliseum and a \$6.5 million bond issue for modernizing harbor facilities.¹³⁵

Terry Schunk, elected mayor in 1957, offered a new chance for Portland to address its many planning and infrastructure challenges. He inherited a stagnant economy and rising unemployment. Without strong leadership, it was clear that Portland voters would not support needed civic improvements. Previous mayors had severely weakened the planning commission and the housing authority, so Schunk created the Portland Development Commission (PDC) to push redevelopment and civic promotion. In May 1958, the voters narrowly gave the PDC urban renewal powers.¹³⁶

The new agency soon was dominated by its hard-driving, appointed chairman, Ira Keller, a prominent local businessman. As historian Carl Abbott has noted, the first PDC project—the

South Auditorium renewal effort—was “a classic example of the urban renewal era.” It identified the old neighborhood on the southern edge of the downtown as “blighted” and economic declining. Ignoring the salvageable historic buildings, many small businesses, and vital ethnic heritage of the area, the city leveled what was called South Portland and sold the cleared land for reuse as offices and high-rise housing. The city housing authority and planning commission played little role in the redevelopment process. One positive outcome of the South Auditorium project was the construction of the award-winning Lovejoy Park/Fountain (1966) and Forecourt (1970, now Keller) Fountain. Both fountains, along with Pettygrove Park (forming an ensemble of three parks), were designed by the internationally known landscape architecture firm of Lawrence Halprin and Associates. The Forecourt Fountain forms an artificial waterfall built into the city block in front of the Civic Auditorium.¹³⁷

The South Auditorium renewal effort marked the culmination of the previous 30 years of downtown planning, which focused on isolating and strengthening retail and office uses within a limited area bound by transportation arterials (later designated as the I-5/405 loop). Urban renewal, as practiced in the 1950s and 1960s, involved the preservation of a city’s office and retail core by reclaiming and reusing the rundown blocks fringing the downtown. This approach to urban planning and policy assumed that land values could be enhanced through public investment in improved automobile access and parking; the construction of public facilities such as auditoriums, stadiums, or high rise apartments to attract greater public activity in the downtown; and the acquisition of land at low cost for private developers.¹³⁸



“Blighted” housing stock in the South Auditorium Urban Renewal Area (left) and dedication of Keller Fountain (right).

According to urban renewal theory at the time, it was useless to renovate individual structures in rundown areas because small-scale improvements could not overcome the larger spread of decay. Urban renewal proponents argued that it was better to start over after clearing a blighted tract and completely rebuild it, using the best of modern design and technology. The urban renewal process also relied heavily on the use of eminent domain in assembling the large tracts necessary for renewal on the grounds that the property was held by numerous owners and the fact that urban land had to compete with cheaper, underdeveloped suburban property. In practice, urban renewal nationally was compromised by its role in maintaining racial segregation. City governments often chose blighted areas precisely to remove African American and other ethnic neighborhoods on the edge of a downtown and replaced them with facilities, such as expensive residential towers, parking garages, and civil amenities, which catered primarily to whites.¹³⁹

The mass destruction of salvageable housing and historic buildings, the loss of small businesses, and the disruption of stable, low income neighborhoods, however, caused many to question the old-style urban renewal philosophy. Some doubted that urban renewal had really improved Portland. For even with the PDC push to reinvigorate Portland's business and civic climate, outside observers noted that after a decade of activity, little had changed. National commentator, Neal Pierce, wrote in 1972 that "if any West Coast city could be said to have a monopoly on propriety and an anxiousness to 'keep things as they are,' it is Portland, a town of quiet old wealth, discreet culture, and cautious politics." Finally, in her landmark 1962 book, urban planning critic Jane Jacobs offered, perhaps, the most telling challenge to the "old-style" urban renewal philosophy. Jacobs stated that "my attack is not based on quibbles about rebuilding methods or hair-splitting about fashion in design. It is an attack rather, on the principals and aims that have shaped modern, orthodox city planning and rebuilding."¹⁴⁰

Between 1969 and 1972, Portland planners, businessmen, and citizens worked together to develop a new approach to downtown planning. The new urban planning process emphasized pedestrian uses and needs and drew heavily on citizen involvement to formulate goals and plans. The city sought to reclaim the underused downtown waterfront and link it to the retail core with pedestrian access and public transit, creating an enlarged central core of overlapping uses. The goal was to emphasize variety and livability within the city and diverse land uses where appropriate in its neighborhoods. The pivotal change in Portland's planning approach came with the decision to reduce accommodating the automobile and enhance the opportunities for pedestrians and public transit. This new policy direction resulted in the removal of the Harbor Drive freeway, the creation of Waterfront Park, and construction of the downtown transit mall. The goal was a lively, multipurpose downtown, supporting a strengthened office and retail core.¹⁴¹



Residential demolition for Lloyd Center.

During the transition away from the urban renewal as the chief focus of planning policy, the small Lair Hill neighborhood adjacent to the South Auditorium renewal district almost suffered a fate similar to that of its larger neighbor. In 1970, the PDC proposed to replace all of Lair Hill's 143 buildings and displace 20 businesses, 45 families, and 95 individuals with a new street system and subsidized housing for faculty and students from Portland State University and Oregon Health Sciences University. Residents organized a neighborhood association and fought back. Although the PDC claimed that it did not have to consult with the Lair Hill residents, the neighborhood protest delayed the project until it lost federal funding in 1971.

The Lair Hill neighborhood then was joined by the nearby Corbett and Terwilliger neighborhoods in preparing a plan, with the assistance of the planning commission, to preserve the residential character of their area. The Lair Hill experience helped mark the change in planning policy taking place in the late 1960s. In one decade, the Lair Hill neighborhood went from being characterized as extremely blighted to being a model of historic preservation and mixed income living.¹⁴²

Until the 1970s, Portland planning had applied the nationally-accepted principle that the inner city neighborhoods inevitably decline as urban growth expanded outward. According to this transitional model, housing in older districts would gradually give way to commercial, warehouse, and institutional uses and low-income residents would prevail in those aging areas. Belief in such a process of urban change justified urban renewal to finish the transition and prepare the so-called stopover neighborhoods for new uses. Planners with this mindset thought that healthy residential neighborhoods should resemble suburban tract developments, having low densities, increased open space, and few through streets. These characteristics were present in the planning commission's *Comprehensive Development Plan* written in 1958 and revised in 1966 and in its *Community Renewal Program* of 1967. The planning commission also recommended 50 miles of new east-side freeways to make existing upper-middle class neighborhoods such as Eastmoreland attractive to the suburban, auto-mindset of the era. As shown by the South Auditorium and Lair Hill urban renewal programs, this top-down planning made no effort to seek citizen or neighborhood involvement in preparing community plans. In the 1970s, Portland's neighborhood policy and planning would reflect a new attitude towards older, inner city districts.¹⁴³



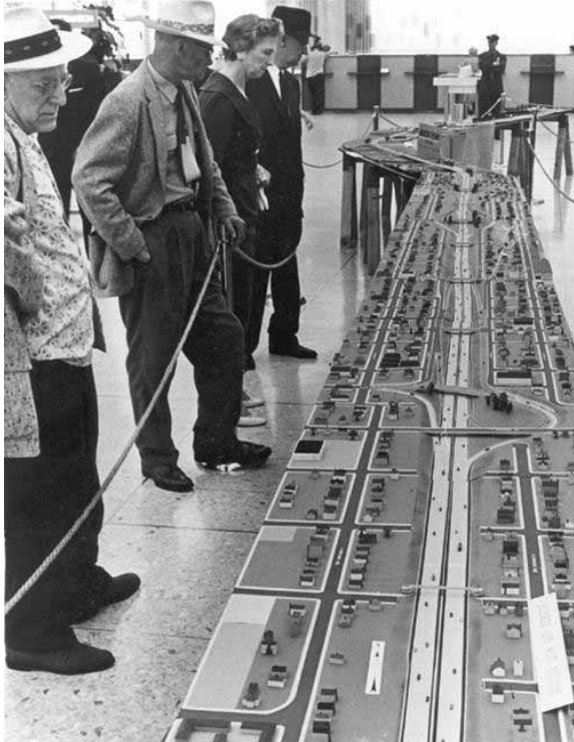
Lloyd District, 1960s.

The PDC's Albina Neighborhood Improvement Program of 1961 offers another example of the top-down, conventional planning concepts of the time. This program attempted to apply the South Auditorium renewal approach to Albina—a racially mixed, low income neighborhood. A declaration of blight resulted in multi-block land clearance in the heart of Albina for a community college and hospital development. Unfortunately, the institutional projects were never built, while large numbers of low-income black and white residents were displaced. The apparent willingness to sacrifice stopover neighborhoods such as Brooklyn, Buckman, and the Williams-Union Avenue corridor sparked a citizen revolt against the prevailing urban renewal efforts that failed to address broader set of urban housing, transportation, and social welfare needs. This type of resistance to earlier urban renewal efforts occurred across the country in the 1960s and resulted in such landmark legislation as the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969. These new laws gave neighborhood groups tools for influencing local planning and development using federal funds.¹⁴⁴

Under pressure from newly formed neighborhood organizations, Portland planners and a new generation of Portland leaders responded to a broader set of urban concerns in developing neighborhood plans and comprehensive land-use regulations in the late 1960s and early 1970s. As Abbott has noted, "by 1971 and 1972, active neighborhood associations and planning committees were a presence that politicians and planning administrators could not ignore. Indeed, their numbers required attention not as single problems or single neighborhoods but as a neighborhood movement." In the 1970s, Portland planning, under the new leadership of city

commissioner and then mayor Neil Goldschmidt and others, began to embrace a new approach to urban planning.¹⁴⁵

While Portland planning evolved during the 1950s and 1960s, the city also continued to upgrade its infrastructure. Most prominent infrastructure work included highway construction, water system expansion, and street lighting improvement. The parks bureau added property, developed a new zoo, and continued to expand its recreation facilities at existing parks.



Model of Minnesota Freeway (I-5), 1961.

Most of the highway construction in Portland from 1950 to 1970 reflected the priority given the automobile by society. Based on this assumption, the major objective of city planners and policy makers was to see that the downtown became more accessible to drivers. To accomplish this goal, transportation planners created a grid of one-way streets downtown, removed streetcars from the core area, and added new ramps for the Hawthorne, Steel, and Morrison bridges. Since the state-planned north/south and east/west freeways were part of the new federal interstate system, the Oregon Highway Commission had a major say in determining their routes. Interstate 5 crossed the Columbia River between Vancouver and north Portland, paralleling Interstate Avenue southbound on the east side of the Willamette River, before crossing on the new Marquam Bridge south of the downtown. Interstate 80 (now I-84) entered the city from the east, roughly paralleling Sandy Boulevard, and followed Sullivan's Gulch westward to a junction with I-5 on the east bank of the Willamette. Some observers criticized the I-5 alignment because it left little space along the eastbank waterfront for future public development.¹⁴⁶

While the I-5 freeway neared its completion in 1961, Portland planners and Oregon Highway Department debated the route for the so-called Foothills or Sunset-Stadium Freeway (I-405), which bypassed the downtown to the south and west. The original route of the freeway from the Marquam Bridge to Fourth and Market Street and then west to 18th Avenue would have severely hemmed in the downtown core and cut it off from the Portland State campus and the South Auditorium renewal area. The route ultimately chosen by the highway commission, largely for technical reasons, ran further south of the Auditorium renewal project area and the Portland State campus, avoiding a "concrete walled box canyon" between Clay and Market streets. Such an alignment kept the urban renewal tract and Portland State part of downtown and cleared the way for expansion of both areas in the mid-1960s. The construction of I-5 and the Marquam Bridge along with the scheduled completion of the I-405 freeway and the Fremont Bridge made it possible to remove Harbor Drive and construct Waterfront Park along a mile of downtown riverfront.¹⁴⁷

While Portland had expanded its street system to meet the city's transportation needs, its street lighting program had failed to keep up. Early in the twentieth century, Portland was recognized as one of the best lighted cities in the United States; however, by the 1950s, Portland had the

worst street light rating of cities its size in the country. A National Safety Council survey of 1953, found that out of 1,140 miles of paved street, only nine miles were lighted up to the national standard. After a thorough study of the city's lighting problem, the Portland Junior Chamber of Commerce proposed a \$1 million, four-year program to improve Portland's street lighting.¹⁴⁸

Based on the junior chamber's proposal, the city council agreed to a ballot measure calling for 1.5 million, 10-year levy. This measure also moved the lighting program outside the general fund budget, where it remained until 1990. An aggressive campaign in support of the street lighting plan won voter approval in November 1954. The street-lighting levy brought in \$1 million a year for 10 years, enabling the city to add modern mercury vapor lights to almost 300 miles of arterial streets and 2,000 intersections. In 1964, the city council proposed a new levy to bring in \$1.85 million to continue the conversion to the energy-efficient mercury vapor lights, include 60 miles of freeway lighting and 60 miles of lighting for arterials, and to add 264 ornamental lights in the downtown, as well as other lighting improvements. By November 1964, the city had approximately 23,000 street lights in service. Until 1980, Portland General Electric owned the light system and leased it to the city. At that time, the city acquired the system, saving considerable money on operations.¹⁴⁹

The Water Bureau in the 1950s undertook some system upgrades. In 1952, it constructed Conduit No. 4, which added 100 million gallons per day to the system's capacity. This addition anticipated the future construction of a second dam and allowed retirement of the original pipeline built in the early 1890s. It had become too costly to maintain the small and leak-prone original line, and the anticipated increase in storage would require additional carrying capacity. Finally, under new leadership after 1955, the Water Bureau began a program of local improvement and expansion.¹⁵⁰

As the metropolitan area population grew in the late 1940s and 1950s, supply shortages appeared and meeting the increased water demand would require new storage. In 1957, a consultant recommended a 110-foot-high, earth-filled (later changed to rock-filled), rock-faced dam capable of holding 7 billion gallons of water. The Water Bureau also decided to add three, 8,000-kilowatt generators at the Bull Run dams on the western flanks of Mount Hood to produce 100 million kilowatts of power a year. The original Bull Run Dam was to have two generators and the second Bull Run Dam would house the other generator. The city's inability to sign a sales contract with the Portland General Electric Company, however, stalled the hydropower portion of the project at the time. Dam construction proceeded in 1958 without provision for a powerhouse but with the inclusion of penstocks for the future development of power generating facilities. After numerous construction delays, officials finally dedicated Bull Run Dam No. 2 in 1962.¹⁵¹

From the late 1940s through the 1960s, the Parks Bureau continued to add land and facilities to meet the recreational needs of the city. In 1949, Fred Meyer donated four acres that became Burlingame Park. The parks program received a major boost in 1950 with the passage of a ten-year levy, raising \$200,000 a year. In 1950, the bureau also purchased 87 acres for what became Gabriel Park and made other purchases for Hancock, Wellington, and Kenton parks. In 1954, the popularity of the zoo's new elephant led voters to approve a 1.2-mill levy to build an enlarged, state-of-the-art zoo on a site next to Washington Park in the West Hills. After many delays, the new zoo was completed in the summer of 1959. Throughout the period, the bureau added, by purchase or gift, many acres to Forest Park. The bureau also purchased over 1260 acres to create Delta Park in North Portland. In 1960, the 1851 Gothic-styled Pioneer Church was donated to the city and moved from Milwaukie to the south end of Sellwood Park. In 1964,

the parks bureau acquired the former Pittock Mansion along with 47 acres of surrounding property.¹⁵²

The addition of the Pittock Mansion to the parks system was a particularly fortuitous acquisition. Located almost 1000 feet above the city in the West Hills, it commanded a spectacular view of Portland and the mountainous area to the east. Built between 1909 and 1914 by the wealthy publisher of the *Oregonian*, Henry J. Pittock, the home is the city's largest and most elaborate residence. It is a rare example of the French Renaissance Revival and Chateausque styles in Oregon and was designed by the San Francisco Architect Edward T. Foulkes. As a house museum operated by the city, the Pittock Mansion became a major tourist attraction.¹⁵³

Portland planning and infrastructure underwent great changes between the end of World War II and 1970's. Urban renewal and highway projects redefined the downtown core and ultimately led to greater citizen participation in planning the future needs of the city. Gradually, Portland came to see the dangers inherent in an over commitment to the demands of an automobile-oriented society. A new focus on neighborhood livability and pedestrian-scale development arose. The culmination of new approaches in urban planning, land use development, and the built environment would play out in the ensuing decades. Notable additions to the city's public infrastructure between 1945 and 1970 included International-styled Memorial Coliseum; Washington Park Zoo; the Pittock Mansion; modernized street lighting; the Forecourt, Lovejoy, and Pettygrove fountains; and Tom McCall Waterfront Park

¹²⁸ Lansing, *Portland*, 342; Abbott, *Portland Planning*, 148-49.

¹²⁹ Abbott, *Portland Planning*, 149-52.

¹³⁰ Abbott, *Portland Planning*, 153-54, 159-60; Laura Campos, *The Portland Planning Commission an Historical Overview* (Portland: City of Portland, Bureau of Planning, 1979), 30; Lloyd T. Keefe, *History of Zoning in Portland, 1918-1959* (Portland Bureau of Planning, 1975), 14-17.

¹³¹ Abbott, *Portland Planning*, 163-64.

¹³² Abbott, *Portland Planning*, 157-58, 163; Willingham, *Army Engineers*, 155-57; Lansing, *Portland*, 350-52; MacColl, *Growth*, 593-602.

¹³³ Abbott, *Portland Planning*, 163-66.

¹³⁴ Abbott, *Portland Planning*, 154-57; Lansing, *Portland*, 348-50, 352-63.

¹³⁵ Lansing, *Portland*, 345, 347-48, 366-67.

¹³⁶ Lansing, *Portland*, *Portland*, 370-76; Abbott, *Portland Planning*, 170-71.

¹³⁷ Abbott, *Portland Planning*, 171-73, 214; Lansing, *Portland*, 376-78.

¹³⁸ Abbott, *Portland Planning*, 172-73, 207-214; Campos, *The Portland Planning Commission*, 26-27.

¹³⁹ Fishman, ed., *The American Planning Tradition*, 16-18, 51-56, 219-39.

¹⁴⁰ Fishman, ed., *The American Planning Tradition*, 16-18; quote in Abbott, *Portland Planning*, 173; Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961), 3.

¹⁴¹ Abbott, *Portland Planning*, 214-22; Lansing, *Portland*, 383-85.

¹⁴² Abbott, *Portland Planning*, 183-85.

¹⁴³ Abbott, *Portland Planning*, 185-88; Campos, *The Portland Planning Commission*, 26-30.

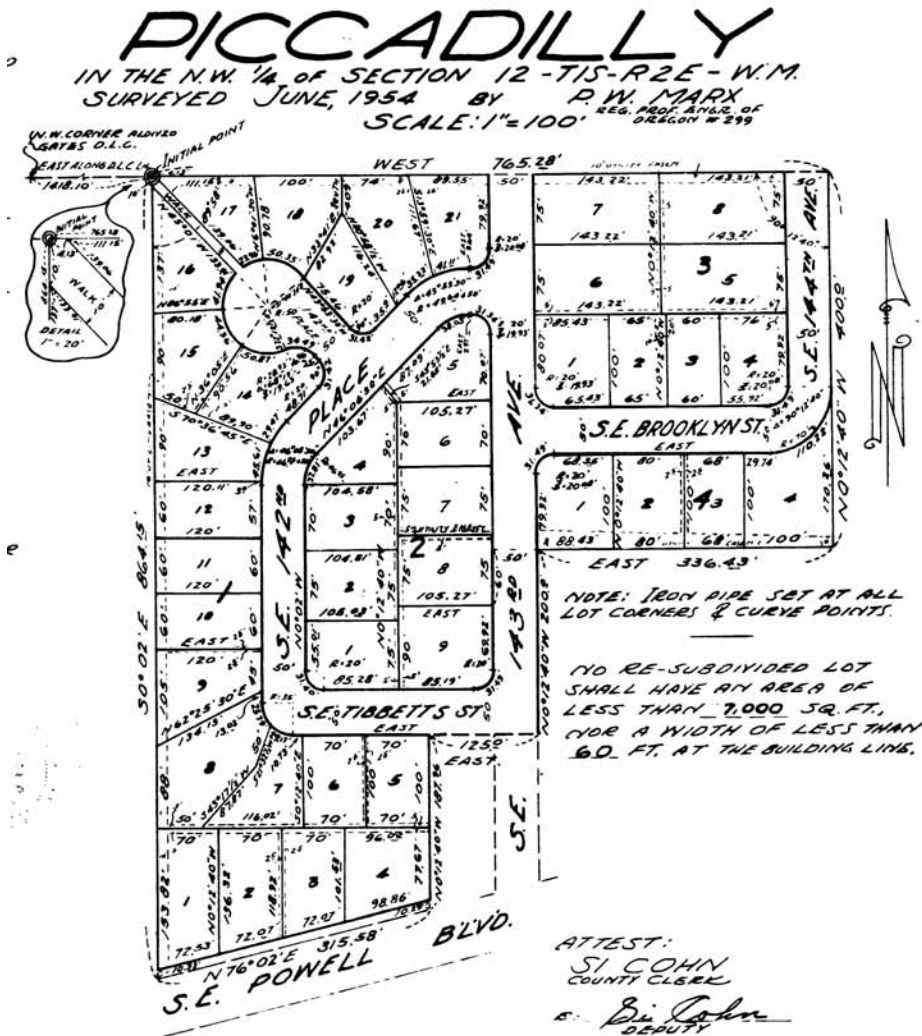
¹⁴⁴ Abbott, *Portland Planning*, 189-90; Campos, *The Portland Planning Commission*, 30-33; William J. Murtagh, *Keeping Time: The History and Theory of Preservation in America* (Hoboken: John Wiley and Sons, Inc., 2006), 47-54.

¹⁴⁵ Abbott, *Portland Planning*, quote on 191-92.

¹⁴⁶ Lansing, *Portland*, 366, 383-85.

¹⁴⁷ Abbott, *Portland Planning*, 211-13, 224-25.

- 148 Sohm, *History of Portland Street Lighting*, 15-18.
- 149 Sohm, *History of Portland Street Lighting*, 18-30, 32-33.
- 150 Portland Water Bureau, *Water*, 74.
- 151 Portland Water Bureau, *Water*, 75-92.
- 152 Portland Bureau of Parks, *History, 1940-1970*, www.portlandonline.com/parks/index.
- 153 Hawkins and Willingham, *Classic Houses*, 317-321.



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