SECTION 3
EXISTING STORM DRAINAGE SYSTEM

General

This section describes the existing facilities in the City of Sheridan's stormwater system, drainage basins, and system problems identified by City staff.

Existing Conveyance System Overview

The City's stormwater system collects and conveys flow from developed and undeveloped properties inside the City as well as runoff from agricultural and forest lands inside and outside of the City. The system consists of a wide range of facilities, including natural channels, underground storm drainage piping, roadside ditches, culverts and constructed open channels.

In many portions of the study area, development has incorporated modern standards for streets, curbs and storm sewers, forming a complete underground storm drainage system from collection point to the river outfall. In other developed areas of the City, the primary conveyance facility is an open vegetated channel, often constructed several decades ago for agricultural purposes. Runoff from development is conveyed to the open channel via roadside ditches, culverts and small pipe systems. Undeveloped portions of the City typically have overland flow, intercepted by roadside ditches with culverts, ultimately leading to a larger open channel which discharges to the river.

Many of the existing constructed storm drainage facilities within the City of Sheridan are owned by the City. The Oregon Department of Transportation (ODOT) also owns and operates local drainage systems and outfalls which serve Highway 18 and Highway 18B. Yamhill County operates several roadways throughout the City such as Mill Street, Western Street, Richard Street, Rock Creek Road and Cherry Hill Road.

In general, the system facilities were designed without guidance from an overall storm drainage master plan. Some creek drainage paths were altered to divert flow around historical parcels of agricultural land. This has resulted in improvements that were designed to address localized flooding issues without full consideration of the potential impacts on the upstream and downstream parts of the system.

These parcels were later developed for residential, commercial and industrial uses. Other creeks, especially in the western basins, were altered to provide agricultural irrigation or improve drainage. Many of these alterations occurred prior to the existing federal and state regulations governing the management of waters of the United States. Additionally, much of the drainage runs through private properties where the City does not hold easements.

Approximately eight miles of existing storm drainage pipes and channels were inventoried within the study area. The primary outfalls for these stormwater piping systems are located on the South Yamhill River. At least sixteen local storm system outfalls discharge to the South Yamhill River. An inventory of the existing stormwater facilities and their associated characteristics is shown in Table B-1 in Appendix B. It should be noted that several different sources of information were used to obtain the existing stormwater facility's characteristics. These included a review of a City inventory of storm drainage facilities conducted in the late 1990s, as-built drawings for newly constructed storm drainage facilities and site visits. Major elements of the existing storm drainage system are illustrated in Plate 1 in the appendix.

Drainage Basins

There are seventeen major definable drainage basins within the City. Ten lie to the north of the South Yamhill River, and seven lie to the south. The basins studied are listed in order from west to east as follows:

<u>North Sheridan Drainage Basins:</u>

- Rock Creek Basin
- Industrial Basin
- Orchard Avenue Basin
- Richard Street Basin
- Western Street Basin
- Viola Street Basin
- Olive Street Basin
- Evans Street Basin
- Elm Street Basin
- Cherry Hill Basin

<u>South Sheridan Drainage Basins:</u>

- Monroe Street Basin
- Mason Street Basin
- Water Street Basin
- Morgan Street Basin
- South Bridge Street Basin
- Hope Court Basin
- South Basin

These drainage basins are described in the following sections, and illustrated in Figures 2-2 and 2-3.

North Sheridan Drainage Basins

Cherry Hill Basin

The Cherry Hill Basin lies at the northeastern side of the City limits and encompasses an area of 276 acres. The western portion of the basin consists of residential development inside the City limits, while the eastern portion of the basin is undeveloped forested hillside. Road side ditches along Cherry Hill Road convey flow from the upland areas to an open channel which outfalls into the South Yamhill River. Closed conduit systems collect flow in the residential areas and route flow to road side ditches along Cherry Hill Road.

Elm Street Basin

Approximately 80% of the 217-acre Elm Street Basin lies within the City UGB. The developed areas within the basin are primarily residential. The northern portion of the basin consists of a mix of forest and open farmland. Runoff from the upland portions of the basin is collected by a open ditch along the northern edge of the City limits. This system routes flow southward to the river through the residential area in a mix of open channels and 36-inch diameter storm drains generally located outside the public right-of-way along rear lot lines. The system flows through an underground 36-inch pipe underneath the City Park before ultimately discharging to an outfall on the South Yamhill River.

Evans Street Basin

The Evans Street Basin is approximately 107 acres and is comprised mostly of residential developments with some undeveloped areas in the northern portion of the basin. A 24-inch underground storm sewer system was constructed in 1998 to serve the entire basin. Runoff from most of the developed areas of the basin are routed to this storm sewer, which discharges directly to the South Yamhill River near Washington Street. Runoff from the undeveloped areas north of the City flows south overland until it is collected in a ditch flowing east. This ditch ultimately flows to the main ditch in the Elm Street Basin. The 24-inch diameter system could be extended north to serve the undeveloped areas. A few other closed pipe conveyance systems collect flows from fully developed areas near Main Street and route to outfalls to the South Yamhill River.

Olive Street Basin

The 400-acre Olive Street Basin is primarily forest and farmland located outside the City limits. The small portion of the basin within the City limits contains residential development. Canyon Creek is a significant drainageway which collects runoff from the forest and farmland in the upper part of the basin and routes flow south to the City limits. An inlet on the north side of the Hunter's Glen subdivision collects and routes the runoff in a closed 36-inch and 42-inch diameter pipe system. The system was constructed in the 1990s, and discharges to the South Yamhill River outfall near Olive Street.

Viola Street Basin

The Viola Street Basin occupies an area of approximately 179 acres with forest and farmland areas in the upper portion of the basin, and residential development within the City limits. Sheet flow from undeveloped farmland west of Viola Street is collected by small drainage ditches and routed to an inlet of the storm drainage system at the northern end of Viola Street. The residential areas are fully piped to this system, which was constructed in the 1990s. The Viola Street storm drain runs south along Viola Street from the inlet north of Blair Street through 24-inch and 36-inch diameter pipes, to a 48-inch diameter outfall on the South Yamhill River.

Western Street Basin

The Western Street Basin is a 324-acre basin composed primarily of farm and forest land outside the UGB. The portion of the basin located in the city limits is zoned residential. Ditches and intermittent culverts along Western Street collect and convey flow from the forest and farmland areas to a pair of 48-inch diameter culverts under West Main Street at Western Street. These culverts were installed by ODOT in the 1990s. The culverts discharge to a short steep open channel which flows directly to the river. The majority of the Richard Street Basin flows are conveyed eastward in small drainage ditches across undeveloped lands to the main ditch along Western Street, where they combine with Western Basin flows to the river.

Richard Street Basin

The Richard Street Basin encompasses an area of 216 acres, most of which is undeveloped. Within the City limits, there is some residential and commercial development. The basin does not have its own underground storm drainage system or outfall. Flow from undeveloped upland areas in the basin are collected by multiple drainage ditches which generally flow east to the Western Basin. One drainage ditch is located at the north end of Richard Street, and flows east near a residential development. Another drainageway exists across a low-lying area between the north side of the railroad tracks and Western Street, approximately 500 feet north of West Main Street on Richard Street.

Orchard Avenue Basin

The upper portion of the 122-acre Orchard Avenue Basin is forest and farmland while the southern portion has mixed zoning. The basin is drained primarily by a combination of small drainage ditches, roadside ditches and culverts. Runoff is generally collected by a ditch along the north side of the railroad tracks, where it is routed to a culvert under the tracks, and through an open channel to the river via a culvert under West Main Street near Orchard Avenue. Flows south of the tracks flow along ditches near Orchard to West Main Street, where it drains to the Richard Street Basin on the north side of West Main Street. The basin also picks up some flow from the Industrial Basin via the drainage ditch on the north side of the railroad tracks. This flow is routed to the basin outfall culvert.

Industrial Basin

One-third of the 229-acre Industrial Basin is comprised mostly of industrial areas within the city limits, while the other northern two-thirds, located outside of the UGB, are a mix of farm and forest land. Runoff is collected and conveyed by open channels in the upland areas and collected by a drainage ditch on the north side of the Willamette & Pacific Railroad tracks. This ditch generally flows east to the Orchard Avenue Basin, and to culverts under the railroad tracks at Chip Yard Road.

In 2003, a new 36-inch diameter storm drain and outfall was constructed in conjunction with the Head Start school near West Main Street and Rock Creek Road. The storm drain was sized to serve the school plus future development in the basin. The drain currently terminates at a manhole on the Head Start property, approximately 200 feet south of West Main Street.

Rock Creek Basin

The 166-acre Rock Creek Basin is the study area's westernmost basin. Rock Creek forms the west edge of the basin, and Rock Creek Road generally forms the eastern edge. The land uses in this basin include the industrial use along West Valley Highway, and forest and farmland in the upland areas. Areas north of the Willamette & Pacific Railroad generally drain west along the railroad to Rock Creek. Areas south of the railroad are picked up by the private drainage system on the industrial site, where it is ultimately discharged to the South Yamhill River via a culvert near Rock Creek Road and West Valley Highway. The industrial site was the site of the former Taylor Lumber wood preserving operation, and is currently listed as a Superfund site. The site has a private stormwater system, which treats runoff prior to discharge. The United State Environmental Protection Agency (EPA) is currently engaged with cleaning up this Superfund site.

South Sheridan Drainage Basins

Monroe Street Basin

The Monroe Street Basin includes a 18-acre area at the western end of Monroe Street. It encompasses several residential properties along the north side of Monroe Street fronting the river, and a lumber mill and a large grassy area along the south side. There are two small drainage ways in the basin which flow from south to north, each with a 12-inch diameter culvert under Monroe Street.

Mason Street Basin

The Mason Street Basin is a 22-acre area along Mill Creek Road extending southwest to the City limits. The basin is nearly fully developed, and includes single- and multi-family residential units, a school, and paved right-of-way. The system is primarily open channel beginning near the intersection of Mill Street and Railroad Street, and north to the river along the Mason Street right-of-way, crossing under Monroe Street via a 36-inch diameter culvert.

Water Street Basin

The 4-acre Water Street Basin is a developed residential area, and includes a 12-inch diameter storm drain between Mill Street and the river.

Morgan Street Basin

The Morgan Street Basin includes a 5-acre developed area along Morgan Street, extending south from the river to Harrison Street. The basin is drained by a 12-inch diameter underground storm drain constructed in the Morgan Street right-of-way.

South Bridge Street Basin

The South Bridge Street Basin is fully developed basin approximately 72 acres in size. Development includes the residential area south of Madison Street, the commercial district along Bridge Street and Sheridan Road, and the Sheridan High School. A 36-inch diameter storm drain in South Bridge Street conveys all collected runoff north to an outfall just downstream of the bridge. There is an interconnection with the Jefferson Basin at a bypass manhole located at Bridge and Jefferson Streets. Here, water in the Bridge Street storm drain may bypass to the 42-inch diameter pipe in Jefferson Street during large storm events when the water level is high.

Hope Court Basin

The Hope Court Basin is an approximately 36-acre area located at the east end of Sheridan Road. This basin includes a portion of the Liberty Homes site, a portion of Sheridan Road, the River Crest apartment complex, and a new 22-home subdivision located along Hope Court off Sheridan Road. A new 12-inch diameter storm drain was constructed in Hope Court to drain the westerly portion of the basin. The easterly and southerly portions either drain directly overland to the river, or are collected in the 21-inch diameter pipe located in the River Crest apartment complex. Much of the remaining land is undeveloped and drains directly overland to the river.

South Basin

The South Basin encompasses a 832-acre area that lies south of the South Yamhill River, excluding the FCI properties. Land use is generally designated as rural outside the City limits and consists of a mix of commercial, industrial and medium density residential within the City boundary.

Much of the basin's runoff is conveyed overland through a large drainage channel flowing northeast, crossing under Highway 18 from the agricultural areas southwest of the City before it enters the City. The historical drainage way has been split and redirected several times through the years. Currently, runoff is generally conveyed east through the City via parallel and interconnecting storm drainage pipes and open channels. The basin's discharge point is at the intersection of Highway 18 and the railroad tracks where it exits the study area. From this point it flows east through constructed channels adjacent to the highway right-of-way approximately 2,200 feet to the South Yamhill River, and south along the railroad tracks where it ultimately discharges into the South Yamhill River.

As runoff enters the City through the South Basin drainage way, flows are split into two systems. The northerly system consists of open vegetated channels which flow underneath South Bridge Street in a 3-foot by 5-foot box culvert. From the east side of the South Bridge culvert, the open channel system enters an underground piped system constructed in 1996. The system conveys flow north to a 42-inch diameter storm drain in Jefferson Street, where it flows east and south through the Liberty Homes site to a main drainage way along Highway 18.

A secondary pipe and open channel system was constructed in the late 1990's to provide a southerly bypass around the box culvert in South Bridge Street. The 30-inch diameter pipe has an inlet on the South Basin drainage channel near the City Limits line, and conveys runoff east under South Bridge Street, where it discharges into a constructed trapezoidal channel routed along the north boundary of Highway 18. A 36-inch diameter pipe in Justin Street allows high flows from the northerly system to bypass south to the channel. The channel flows east along the state highway, where it joins the flows from the Jefferson Street storm drain at the intersection of the railroad and Highway 18.

Existing Stormwater Problem Areas

Several areas with recurring drainage problems were identified by City staff as part of this study. These existing problems are described in detail below. Problem locations identified by City staff are illustrated in Figure 3-1.

Richard Street Basin

Problem Number: R-O-1

Problem Type: Minor Flooding

Problem Description: A historic drainage channel near the northern City limits boundary crosses Richard Street through a metal culvert, then continues east to the Western Street Basin. The channel is relatively flat and vegetated, and flow is sluggish through the channel. During large storm events, flow backs up behind the culvert under Richard Street high water overtops the channel and floods a gravel driveway serving several homes. Drainage from the area is slow due to flat topography and poorly draining soils.

Problem Number: R-O-2

Problem Type: Flooding

Problem Description: Low elevation topography along Richard Street, approximately 400 feet north of West Main Street, creates intermittent flooding conditions during winter wet weather. Ground topography through this area is flat and an existing shallow open ditch serves as the stormwater conveyance system. During high runoff storm events, wide shallow overland flow crosses Richard Street in this area from west to east, into the main conveyance channel in the Western Street Basin. Some of this runoff is believed to be originating in other drainage basins west of the Richard Street Basin, where runoff is generally collected by the railroad track embankment, then flows east. A poorly defined channel along the tracks allows some water to escape the channel and flow overland. Complete drainage of excess flow from the low-lying area is slow.

Western Street Basin

Problem Number: W-O-1

Problem Type: Minor Flooding

Problem Description: A historic drainage channel near the northern City limits boundary exits a metal culvert under Richard Street and continues east toward Western Street. The channel is relatively flat and vegetated, and flow is sluggish through the channel. During large storm events, high water overtops the channel and floods a gravel driveway serving several homes. Drainage from the area is slow due to flat topography and poorly draining soils.

Problem Number: W-O-2

Problem Type: Flooding

Problem Description: A conveyance ditch runs eastward between Richard Street to Western Street in an area of naturally low topography. The ditch is relatively small, does not appear to be maintained frequently. Excess flows crossing Richard Street from Problem Number R-O-2 overwhelm the ditch. The adjacent properties and Richard Street roadway are periodically underwater during larger winter storm events.

Olive Street Basin

Problem Number: OL-O-1

Problem Type: Flooding

Problem Description: The Canyon Creek system terminates in a field north of the properties just north of Blair Street. From there, a system of 42-inch diameter corrugated aluminum piping conveys water over to Olive Street and south to the river. A 2001 study by Murray, Smith and Associates, Inc. found the downstream drainage piping to be inadequate to convey the 25-year design flows under gravity flow. Flooding is observed near the inlet area under typical winter storms. Under more extreme storms, runoff will overtop the inlet area and flow overland through the subdivision and south towards the river along Olive Street.

Elm Street Basin

Problem Number: EL-O-1

Problem Type: Flooding

Problem Description: A system of piping and open channels collects stormwater along northern edge of the developed areas east of Bridge Street and west of Hill Street. The open channel portions are vegetated and generally flat, and flow through them is often slow. The open channel overflows its banks in this area during high-runoff storm events, causing minor flooding around developed areas.

Problem Number: EL-O-2

Problem Type: Debris and maintenance nuisance

Problem Description: An open channel (approximately 6-8 feet deep and 6-8 feet wide at the base) conveys stormwater from the Elm Basin across and behind numerous private properties north of Sherman Street and east of Hill Street. This open channel has been reported by City staff to be a nuisance, due to vegetative overgrowth and the on-going accumulation of trash and debris. The City has frequently expressed their concern regarding safety around the open channel, and annually removes vegetation and trash from the ditch to reduce hazards and minimize flooding potential.

South Basin

Problem Number: S-O-1

Problem Type: Sediment management

Problem Description: The constructed open channel east of Bridge Street and south of Justin Way suffers from considerable sediment deposition. The sediment originates from the upstream agricultural areas, and is suspended in the runoff. Some sediment settles out in the bottom of the slow-moving channel as high flows recede. The sedimentation build-up ultimately causes water to back up into the upstream piping, and reduces the overall capacity of the conveyance system.