Chapter 12 Pump Systems

Pump systems are only allowed if it is determined that gravity systems are not feasible and as specifically approved in writing by Environmental Services. Feasibility of all other methods of gravity conveyance, infiltration and dispersion shall first be investigated and demonstrated to be infeasible in the following order of preference:

1. Infiltration of stormwater onsite.
2. Dispersion of stormwater on site.
3. Gravity connection to the City storm drainage system.
4. Pumping to a gravity system.

12.1 Design Criteria

The pump system must convey, at a minimum, the peak design flow for the 25-year 24-hour rainfall event. Pump capacity plus system storage or overflow, must convey or store the 100-year, 24-hour storm event.

12.2 Pump Requirements

Proposed pump systems must meet the following minimum requirements:

- The gravity-flow components of the drainage system to and from the pump system must be designed so that pump failure does not result in flooding of a building or emergency access or overflow to a location other than the natural discharge point for the project site.
- The pump system must have a dual pump (alternating) equipped with emergency back-up power OR a single pump may be provided without back-up power if the design provides the 100-year 24-hour storage volume.
- Pumps, wiring, and control systems shall be intrinsically safe per IBC requirements.
- All pump systems must be equipped with an external pump failure and high water alarm system.
- The pump system will serve only one lot or business owner.
- The pump system must be privately owned and maintained.
- The pump system shall not be used to circumvent any other City of Tacoma drainage requirements. Construction and operation of the pump system shall not violate any City of Tacoma requirements.
- All pump systems shall provide a transition from pressure line to gravity line prior to connection to the City system or curb. The transition shall be made at a cleanout or similar structure located on private property if possible.

12.3 Additional Requirements

Private pumped stormwater systems will require the following additional items:

- Operations and Maintenance Manual describing the system itself and all required maintenance and operating instructions, including procedures to follow in the event of a power outage. All the requirements of Volume 1 Section 4.1 shall be included in the Operations and Maintenance manual.
• The property owner must enter into a Covenant and Easement Agreement with the City. The Covenant and Easement Agreement must be recorded to the property title with Pierce County.

All fees associated with preparing and recording documents and placing the Notice to Title shall be the responsibility of the applicant.

12.3.1 Submittal Requirements

The following information shall be provided for review:

• Plan view of proposed system
• Profile view of proposed system
• Detail of holding tank including pump on and off elevations
• Method of transition from pressure line to gravity line and location of transition from pressure line to gravity line
• Cut sheets and specifications for:
  ◦ Pump (including pump performance curve)
  ◦ Holding tank
  ◦ Control panel
  ◦ Audio visual alarm
• Engineering calculations, including:
  ◦ System head loss calculations
  ◦ Flow rate and volume as calculated from single event model using appropriate design event (see Section 12.1).
  ◦ Appropriate flow rate and head characteristics plotted on the pump performance curve
  ◦ Velocity calculations for the proposed diameter and type of pipe
  ◦ Frequency and duration of pumping cycles
  ◦ 100-year, 24-hour storage volume (if proposing a single pump)
• Operation and Maintenance Manual describing the system itself and all required maintenance and operating instructions, including procedures to follow in the event of a power outage. All requirements of Volume 1, Section 4.1 shall be included in the Operation and Maintenance Manual.
12.4 Sump Pumps

The above pump requirements do not apply to internal sump pumps. However, internal sump pumps do require a permit prior to connection to the City storm drainage system.

- Sump pumps shall be sized to properly remove water from basements and crawl spaces.
- Sump pumps shall NOT be connected to the sanitary sewer system.
- Consult the pump manufacturer or an engineer for appropriate sizing of a sump pump.
- Contaminated water shall not be discharged to the City stormwater system.
- All pump systems shall provide a gravity break prior to discharge to the City system or curb.

Environmental Services may review pump installations and may require cut sheets, proposed layout, proposed connection to the City system, and sizing calculations.