

# CITY OF MERCER ISLAND

## COMMUNITY PLANNING & DEVELOPMENT

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### SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

#### Narrative and Plan Submittal

**Instructions:** This is a template for a simplified Stormwater Report. This form or an equivalent must accompany your Building Permit Application if the answer is "Yes" to each statement below. If "No" is the answer to one or more of the statements below, a full Drainage Report is required and the project does not qualify for use of the Small Project Stormwater Site Plan/Report template.

Select "yes" or "no" for each statement below. Answer "yes" if the statement accurately describes your project.

Yes	No	Statement
✓		This project disturbs less than 1 acre and is not part of a larger common plan of development.
✓		This project converts less than 3/4 acre to lawn or landscape areas.
✓		This project will create, add, or replace (in any combination) 2,000 square feet or greater, but less than 5,000 square feet, of new plus replaced hard surface <b>OR</b> will have a land disturbing activity of 7,000 square feet or greater <b>OR</b> will result in a net increase of impervious surface of 500 square feet or greater.
✓		This project will not adversely impact a wetland, stream, water of the state, or change a natural drainage course.

#### Basic Project Information

Project Name: Qian Yang Residence

Site Address: 8456 SE 40th St (northwest corner of intersection of SE 40th St and 86th Ave SE)

Total Lot Size: 11,930 sf

Total Proposed Area to be Disturbed (including stockpile area): 7932 sq ft

Total Volume of Proposed Cut and Fill: 42 cy sq ft

Total Proposed New Hard Surface Area: 1,123 sq ft

Total Proposed Replaced Hard Surface Area: 2,947 sq ft

Total Proposed Converted Pervious Surface Area <sup>0</sup>  
(Native vegetation to lawn or landscape): \_\_\_\_\_ sq ft

Net Increase in Impervious Surface: 261 sq ft



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #1 : Preparation of Stormwater Site Plan

#### Written Project Description:

The applicant proposes to construct a new single-family residence on a developed lot located at the northwest corner of intersection of SE 40th St and 86th Ave SE. The property is zoned R-8.4. The project site is a 11,930 sf rectangular lot (Parcel No. 502190-0790) that is nearly level to slightly sloping in the northeastern direction, towards 86th Ave SE. The project site loses approximately 5' of elevation between corners of the site. The lot is presently developed with a single family residence, driveway, walkways and patio with lawn and landscaping. A new single-family residence will be constructed in the central portion of the lot. Access will be maintained by the driveway on the east side of the lot connecting to 86th Ave SE and this driveway will be improved and extended.

The City of Mercer Island GIS Portal identifies the site as being infeasible for infiltration. The site is also identified as a Wind Speed-Up area and Potential Seismic Hazard. Runoff from the site flows overland to the northeast and enters the existing City of Mercer Island drainage system offsite.

#### Calculate new or replaced areas by surface type:

Lawn or Landscape Areas: <u>7860</u> sq ft	Roof Area: <u>3255</u> sq ft
Other Hard Surface Areas:	
Driveway: <u>815</u> sq ft	Patio: _____ sq ft Sidewalk: _____ sq ft
Parking Lot: _____ sq ft	Other: _____ sq ft

Attach Drainage Plan

#### Drainage Plan shall include the following:

- Scaled drawing with slopes, lot lines, any public-right-of-way and any easements, location of each on-site stormwater management BMP selected above and the areas served by them, buildings, roads, parking lots, driveways, landscape features, and areas of disturbed soils to be amended.
- The scaled drawing must be suitable to serve as a recordable document that will be attached to the property deed for each lot that includes on-site BMPs. Document submittal must follow the "Standard Formatting Requirements for Recording Documents" per King County: [www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx](http://www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx)
- Identify design details and maintenance instructions for each on-site BMP, and attach them to this Small Project Stormwater Site Plan/Report.



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #2 : Construction Stormwater Pollution Prevention

- Complete Section B of this submittal package: Construction Stormwater Pollution Prevention Plan Narrative (SWPPP)
- Attach construction SWPPP

### Minimum Requirement #3 : Source Control of Pollution

This section contains practices and procedures to reduce the release of pollutants. Provide a description of all known, available and reasonable source control BMPs that will be, or are anticipated to be, used at this location to prevent stormwater from coming into contact with pollutants. Additional BMPs are found in Volume IV of the 2014 Stormwater Management Manual for Western Washington (SWMMWW).

Check the BMPs you will use:

- BMP S411 for Landscaping and Lawn/ Vegetation Management  
Operational practices for sites with landscaping
- BMP S421 for Parking and Storage of Vehicles.  
Public and commercial parking lots can be sources of suspended solids, metals, or toxic hydrocarbons such oils and greases.
- BMP S433 for Pools, Spas, Hot Tubs, Fountains  
Discharge from pools, hot tubs, and fountains can degrade ambient water quality. Routine maintenance activities generate a variety of wastes. Direct disposal of these waters to drainage system and waters of the state are not permitted without prior treatment and approval.
- Other BMPs found in Volume IV of SWMMWW applicable to project:

- No source control BMPs are applicable for this project.



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #4 : Preservation of Natural Drainage Systems

Natural drainage patterns shall be maintained and discharges from the project site shall occur at the natural location, to the maximum extent practicable. All outfalls require energy dissipation.

Choose the option below that best describes your project:

This site has existing drainage systems or outfalls. These items are shown on the Drainage Plan. Include the following items on the Drainage Plan:

- Pipe invert elevations, slopes, cover, and material
- Locations, grades, and direction of flow in ditches and swales, culverts, and pipes

Describe how these systems will be preserved:

This site does not have any existing drainage systems or outfalls.

Additional Comments:

Under existing conditions runoff from the project site flows overland to the northeast. These flows travel along 86th Ave SE and are collected by an existing City of Mercer Island catch basin about 140 ft away, in front of 3918 86th Ave SE.

Under proposed conditions an on-site detention system will be utilized to mitigate runoff from proposed roof and paved areas. The proposed detention tank will be placed on the south side of the property. All roof tightlines as well as flows collected from the driveway by a yard drain will be routed to this detention system. Due to site topography, the project detention system will require a pump to discharge flows to a City of Mercer Island Storm Drain found in SE 40th St to the south of the lot that, following the natural grade, discharges directly to Lake Washington approximately 3/4 of a mile west of the project site. SWMMWW soil classification most accurately places the site soils as Type C soils. The detention tank was sized for 4001-5000 sf of impervious surface and soil Type C.





# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management

All projects meeting the thresholds for this Small Project Stormwater Report shall employ on-site stormwater management BMPs (See Small Project Stormwater Requirements Tip Sheet) to infiltrate, disperse, and retain stormwater runoff on-site to the extent feasible without causing flooding or erosion impacts.

### List #1

For each category select the *first* feasible item on the list below. Document your justification for each infeasible BMP in Section C of this submittal package.

Check one option for each category below:



#### Lawn and Landscape Areas

- My project does not have *Lawn or Landscape* areas
- Post-construction soil quality and depth
- Post-construction soil quality and depth is infeasible (see Section C of this submittal package)



#### Roofs

- My project does not have *Roof* areas
- 1. Full dispersion or downspout full infiltration
- 2. Rain garden or bioretention
- 3. Downspout dispersion system
- 4. Perforated stub-out connections
- 5. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-4 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- 6. No Roof BMP (applicable if options #1-4 are infeasible and on-site detention is not required)

Measured Infiltration Rate: \_\_\_\_\_ in/ hr

If #5 or #6 is selected, briefly describe why no Roof BMP is feasible (include detailed information in Section C of this submittal package):

There is neither adequate soil types, space, or vegetation to fully and properly infiltrate or disperse runoff on this project site. As a result, an on-site detention system will be utilized to mitigate runoff from impervious surfaces for this project. The project detention system then discharges to a City of Mercer Island Storm Drain that, following the natural grade, discharges directly to Lake Washington approximately 3/4 of a mile west of the project site.



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management (cont.)



#### Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- My project does not have *Other Hard Surface* areas
- 1. Full dispersion
- 2. Permeable pavement, rain gardens, or bioretention
- 3. Sheet flow dispersion or concentrated flow dispersion
- 4. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-3 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- 5. No Other Hard Surface BMP (applicable if options #1-3 are infeasible and on-site detention is not required)

Measured Infiltration Rate: \_\_\_\_\_ in/ hr

If #4 or #5 is selected, briefly describe why no Other Hard Surface BMP is feasible (include detailed information in Section C of this submittal package):

There is neither adequate soil types, space, or vegetation to fully and properly infiltrate or disperse runoff on this project site. As a result, an on-site detention system will be utilized to mitigate runoff from impervious surfaces for this project. The project detention system then discharges to a City of Mercer Island Storm Drain that, following the natural grade, discharges directly to Lake Washington approximately 3/4 of a mile west of the project site.

### Flow Control Exempt List

Proceed with this list if your project discharges directly to Lake Washington or if findings from a downstream analysis confirm that the downstream system is free of capacity constraints for a minimum of 1/4 mile and a maximum of 1 mile.

For flow control exempt discharges, the BMPs listed below for Roofs and Other Hard Surfaces do not need to be evaluated in priority order. You can select any BMP from the lists provided below and do not need to document infeasibility in Section C of this submittal package.

Check one option for each category below:



#### Lawn and Landscape Areas

- My project does not have *Lawn or Landscape* areas
- Post-construction soil quality and depth



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management (cont.)



#### Roofs

- My project does not have *Roof* areas
- Downspout full infiltration
- Downspout dispersion system
- Perforated stub-out connections
- Each item above is infeasible

If “Each item above is infeasible” is selected, briefly describe why no Roof BMP is feasible:

Geotechnical report from Geotech Consultants Inc. for a neighboring lot found soil conditions and groundwater presence infeasible for infiltration. Due to the impervious nature of glacial till and the presence of uncompacted fill, infiltration of stormwater is infeasible for this project. This site does not contain adequate space or vegetation for dispersion of runoff.



#### Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- My project does not have *Other Hard Surface* areas
- Sheet flow dispersion
- Concentrated flow dispersion
- Each item above is infeasible

If “Each item above is infeasible” is selected, briefly describe why no Other Hard Surface BMP is feasible:

Due to the impervious nature of glacial till and the presence of uncompacted fill, infiltration of stormwater is infeasible for this project. Additionally, this site does not contain adequate space or vegetation for dispersion of runoff.



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Instructions

This is a template for a simplified Construction Stormwater Pollution Prevention Plan (“Construction SWPPP”). If “No” is the answer to one or more of the statements on the first page of Section A of this submittal package, then a full Construction SWPPP is required and the project does not qualify for the use of the Small Project Construction SWPPP Narrative template. If the project is less than the thresholds on the first page of Section A of this submittal package, then Minimum Requirement #2 still applies, but this section (Section B) or a full construction SWPPP is not required. You should include your Construction SWPPP in your contract with your builder. A copy of the Construction SWPPP must be located at the construction site or within reasonable access to the site for construction and inspection personnel at all times.

### General Information on the Existing Site and Project

Describe the following in the Project Narrative box below (attach additional pages if necessary):

- Nature and purpose of the construction project
- Existing topography, vegetation, and drainage, and building structures
- Adjacent areas, including streams, lakes, wetlands, residential areas, and roads that might be affected by the construction project
- How upstream drainage areas may affect the site
- Downstream drainage leading from the site to the receiving body of water
- Areas on or adjacent to the site that are classified as critical areas
- Critical areas that receive runoff from the site up to one-quarter mile away
- Special requirements and provisions for working near or within critical areas
- Areas on the site that have potential erosion problems

Project Narrative:

The applicant proposes to construct a new single-family residence on a developed lot located at the northwest corner of intersection of SE 40th St and 86th Ave SE. The property is zoned as R-8.4. The project site is a 11,930 sf rectangular lot (Parcel No. 502190-0790) that is nearly level to slightly sloping in the northeastern direction, towards 86th Ave SE. The project site loses approximately 5’ of elevation between corners of the site. The lot is presently developed with a single family residence, driveway, walkways and patio with lawn and landscaping. A new single-family residence will be constructed in the central portion of the lot. Access will be maintained by the driveway on the east side of the lot connecting to 86th Ave SE and this driveway will receive improvements and be extended.

The City of Mercer Island GIS Portal identifies the site as being infeasible for infiltration. The site is also identified as a Wind Speed-Up area and Potential Seismic Hazard. Runoff from the site flows overland to the northeast and enters the existing City of Mercer Island drainage system offsite.



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Construction SWPPP Drawings

Refer to the general Drawing Requirements in Stormwater Management Manual for Western Washington (SWMMWW) Volume I, Chapter 3.

### Vicinity Map

Provide a map with enough detail to identify the location of the construction site, adjacent roads, and receiving waters.

### Site Map

Include the following (where applicable):

- |  |   |
|--|---|
| <input type="checkbox"/> Legal description of the property boundaries or an illustration of property lines (including distances) on the drawings.          | <input type="checkbox"/> Final and interim grade contours as appropriate, drainage basins, and the direction of stormwater flow during and upon completion of construction. |
| <input type="checkbox"/> North arrow.  | <input type="checkbox"/> Areas of soil disturbance, including all areas affected by clearing, grading, and excavation.  |
| <input type="checkbox"/> Existing structures and roads.  | <input type="checkbox"/> Locations where stormwater will discharge to surface waters during and upon completion of construction.  |
| <input type="checkbox"/> Boundaries and identification of different soil types.  | <input type="checkbox"/> Existing unique or valuable vegetation and vegetation to be preserved.   |
| <input type="checkbox"/> Areas of potential erosion problems.  | <input type="checkbox"/> Cut-and-fill slopes indicating top and bottom of slope catch lines.  |
| <input type="checkbox"/> Any on-site and adjacent surface waters, critical areas, buffers, flood plain boundaries, and Shoreline Management boundaries.    | <input type="checkbox"/> Total cut-and-fill quantities and the method of disposal for excess material.  |
| <input type="checkbox"/> Existing contours and drainage basins and the direction of flow for the different drainage areas.                                 | <input type="checkbox"/> Stockpile; waste storage; and vehicle storage, maintenance, and washdown areas.  |
| <input type="checkbox"/> Where feasible, contours extend a minimum of 25 feet beyond property lines and extend sufficiently to depict existing conditions. |   |

### Temporary and Permanent BMPs

Include the following on site map (where applicable):

- |   |  |
|---|--|
| <input type="checkbox"/> Locations for temporary and permanent swales, interceptor trenches, or ditches.                                      | <input type="checkbox"/> Details for bypassing off-site runoff around disturbed areas.   |
| <input type="checkbox"/> Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management. | <input type="checkbox"/> Locations of temporary and permanent stormwater treatment and/or flow control best management practices (BMPs).   |
| <input type="checkbox"/> Temporary and permanent pipe inverts and minimum slopes and cover.   | <input type="checkbox"/> Details for all structural and nonstructural erosion and sediment control (ESC) BMPs (including, but not limited to, silt fences, construction entrances, sedimentation facilities, etc.) |
| <input type="checkbox"/> Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes.                            | <input type="checkbox"/> Details for any construction-phase BMPs or techniques used for Low Impact Development (LID) BMP protection.   |
| <input type="checkbox"/> Locations and outlets of any dewatering systems.   |  |



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 1: Preserve Vegetation / Mark Clearing Limits

The goal of this element is to preserve native vegetation and to clearly show the limits of disturbance.

This element **does not** apply to my project because:

The site was cleared as part of clearing activity that is subject to an enforcement action and is re-vegetated. Restoration may be necessary to comply with Critical Area Regulations or NPDES requirements. Buffer Zones-BMP C102 may apply if Critical Areas exist on-site and buffer zones shall be protected.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the best management practices (BMPs) you will use:

The perimeter of the area to be cleared shall be marked prior to clearing operation with visible flagging, orange plastic barrier fencing and/or orange silt fencing as shown on the SWPPP site map. The total disturbed area shall be less than 7,000 square feet. Vehicles will only be allowed in the areas to be graded, so no compaction of the undeveloped areas will occur.

Additional Comments:

Limits of work will be clearly marked with High Visibility Fence. Existing vegetation will be maintained to the greatest extent practicable. Trees within the limits of work that are to remain will be individually protected by a High Visibility Fence around the approximate root zone/trunk of the trees.

Check the BMPs you will use:

- C101 Preserving Natural Vegetation       C102 Buffer Zones       C103 High Visibility Fence



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 2: Construction Access

The goal of this element is to provide a stabilized construction entrance/exit to prevent or reduce or sediment track out.

This element **does not** apply to my project because:

The driveway to the construction area already exists and will be used for construction access. All equipment and vehicles will be restricted to staying on that existing impervious surface.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

A stabilized construction entrance will be installed prior to any vehicles entering the site, at the location shown on the SWPPP site map.

Additional Comments:

Check the BMPs you will use:

C105 Stabilized Construction Entrance / Exit

C106 Wheel Wash

C107 Construction Road / Parking Area Stabilization



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 3: Control Flow Rates

The goal of this element is to construct retention or detention facilities when necessary to protect properties and waterways downstream of development sites from erosion and turbid discharges.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Flow rates will be controlled by using SWPPP Element 4 sediment controls and BMP T5.13 Post-Construction Soil Quality and Depth if necessary.

Additional Comments:





# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 4: Sediment Control

The goal of this element is to construct sediment control BMPs that minimize sediment discharges from the site.

This element **does not** apply to my project because:

The site has already been stabilized and re-vegetated.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Sediment control BMPs shall be placed at the locations shown on the SWPPP site map

Additional Comments:

Check the BMPs you will use:

C231 Brush Barrier

C233 Silt Fence

C235 Wattles

C232 Gravel Filter Berm

C234 Vegetated Strip



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 5: Stabilize Soils

The goal of this element is to stabilize exposed and unworked soils by implementing erosion control BMPs.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

- Exposed soils shall be worked during the week until they have been stabilized. Soil stockpiles will be located within the disturbed area shown on the SWPPP site map. Soil excavated for the foundation will be backfilled against the foundation and graded to drain away from the building. No soils shall remain exposed and unworked for more than 7 days from May 1 to September 30 or more than 2 days from October 1 to April 30. Once the disturbed landscape areas are graded, the grass areas will be amended using BMP T5.13 Post-Construction Soil Quality and Depth. All stockpiles will be covered with plastic or burlap if left unworked.

Additional Comments:

Check the BMPs you will use:

- C120 Temporary & Permanent Seeding
- C122 Nets & Blankets
- C124 Sodding
- C131 Gradient Terraces
- C235 Wattles
- C121 Mulching
- C123 Plastic Covering
- C125 Topsoil / Composting
- C140 Dust Control



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 6: Protect Slopes

The goal of this element is to design and construct cut-and-fill slopes in a manner to minimize erosion.

This element **does not** apply to my project because:

No cut slopes over 4 feet high or slopes steeper than 2 feet horizontal to 1 foot vertical, and no fill slopes over 4 feet high will exceed 3 feet horizontal to 1 foot vertical. Therefore, there is no requirement for additional engineered slope protection.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Additional Comments:

Check the BMPs you will use:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> C120 Temporary & Permanent Seeding | <input type="checkbox"/> C205 Subsurface Drains | <input type="checkbox"/> C207 Check Dams  |
| <input type="checkbox"/> C204 Pipe Slope Drains             | <input type="checkbox"/> C206 Level Spreader    | <input type="checkbox"/> C208 Triangular Silt Dike (Geotextile-Encased Check Dam) |



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 7: Protect Permanent Drain Inlets

The goal of this element is to protect storm drain inlets during construction to prevent stormwater runoff from entering the conveyance system without being filtered or treated.

*This element **does not** apply to my project because:*

- The site has open ditches in the right-of-way or private road right-of-way.
- There are no catch basins on or near the site.
- Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

- Catch basins on the site or immediately off site in the right-of-way are shown on the SWPPP site map. Storm drain inlet protection shall be installed.

Additional Comments:

*Check the BMPs you will use:*

- C220 Storm Drain Inlet Protection



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 8: Stabilize Channels and Outlets

The goal of this element is to design, construct, and stabilize on-site conveyance channels to prevent erosion from entering existing stormwater outfalls and conveyance systems.

This element **does not** apply to my project because:

Construction will occur during the dry weather. No storm drainage channels or ditches shall be constructed either temporary or permanent. A small swale shall be graded to convey yard drainage around the structure using a shallow slope; it shall be seeded after grading and stabilized.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

A wattle shall be placed at the end of the swale to prevent erosion at the outlet of the swale.

Additional Comments:

Check the BMPs you will use:

C202 Channel Lining     C207 Check Dams     C209 Outlet Protection     C235 Wattles



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 9: Control Pollutants

The goal of this element is to design, install, implement and maintain BMPs to minimize the discharge of pollutants from material storage areas, fuel handling, equipment cleaning, management of waste materials, etc.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Any and all pollutants, chemicals, liquid products and other materials that have the potential to pose a threat to human health or the environment will be covered, contained, and protected from vandalism. All such products shall be kept under cover in a secure location on-site. Concrete handling shall follow BMP C151.

Additional Comments:

Check the BMPs you will use:

C151 Concrete Handling

C152 Sawcutting and Surfacing Pollution Prevention

C153 Material Delivery, Storage, and Containment

C154 Concrete Washout Area



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 10: Control De-watering

The goal of this element is to handle turbid or contaminated dewatering water separately from stormwater.

This element **does not** apply to my project because:

No dewatering of the site is anticipated.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Additional Comments:

Check the BMPs you will use:

C203 Water Bars

C236 Vegetated Filtration

C206 Level Spreader



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 11: Maintain Best Management Practices

The goal of this element is to maintain and repair all temporary and permanent erosion and sediment control BMPs to assure continued performance.

*Describe the steps you will take:*

- Best Management Practices or BMPs shall be inspected and maintained during construction and removed within 30 days after the City Inspector or Engineer determines that the site is stabilized, provided that they may be removed when they are no longer needed.

### Element 12: Manage the Project

The goal of this element is to ensure that the construction SWPPP is properly coordinated and that all BMPs are deployed at the proper time to achieve full compliance with City regulations throughout the project.

If it **does** apply, describe the steps you will take and select the BMPs you will use:

The Construction SWPPP will be implemented at all times. The applicable erosion control BMPs will be implemented in the following sequence:

1. Mark clearing limits
2. Install stabilized construction entrance
3. Install protection for existing drainage systems and permanent drain inlets
4. Establish staging areas for storage and handling polluted material and BMPs
5. Install sediment control BMPs
6. Grade and install stabilization measures for disturbed areas
7. Maintain BMPs until site stabilization, at which time they may be removed

Additional Comments:





# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 13: Protect Low Impact Development BMPs

The goal of this element is to protect on-site stormwater management BMPs (also known as “Low Impact Development BMPs”) from siltation and compaction during construction. On-site stormwater management BMPs used for runoff from roofs and other hard surfaces include: full dispersion, roof downspout full infiltration or dispersion systems, perforated stubout connections, rain gardens, bioretention systems, permeable pavement, sheetflow dispersion, and concentrated flow dispersion. Methods for protecting on-site stormwater management BMPs include sequencing the construction to install these BMPs at the latter part of the construction grading operations, excluding equipment from the BMPs and the associated areas, and using the erosion and sedimentation control BMPs listed below.

*Describe the construction sequencing you will use:*

Additional Comments:

There are no proposed LID BMPs on the project site.

*Select the BMPs you will use:*

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> C102 Buffer Zone           | <input checked="" type="checkbox"/> C103 High Visibility Fence | <input type="checkbox"/> C231 Brush Barrier |
| <input checked="" type="checkbox"/> C233 Silt Fence | <input type="checkbox"/> C234 Vegetated Strip                  |   |



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

### Minimum Requirement #5 (On-Site Stormwater Management)

The following tables summarize infeasibility criteria that can be used to justify not using various on-site stormwater management best management practices (BMPs) for consideration for Minimum Requirement #5. This information is also included under the detailed descriptions of each BMP in the 2014 Stormwater Management Manual for Western Washington (Stormwater Manual), but is provided here in this worksheet for additional clarity and efficiency. Where any inconsistencies or lack of clarity exists, the requirements in the main text of the Stormwater Manual shall be applied. If a project is limited by one or more of the infeasibility criteria specified below, but an applicant is interested in implementing a specific BMP, a functionally equivalent design may be submitted to the City for review and approval. Evaluate the feasibility of the BMPs in priority order based on List #1 or #2 (Small Project Stormwater Requirements Tip Sheet and Stormwater Manual). Select the first BMP that is considered feasible for each surface type. Document the infeasibility (narrative description and rationale) for each BMP that was not selected. Only one infeasibility criterion needs to be selected for a BMP before evaluating the next BMP on the list. Attach additional pages for supporting information if necessary.

Note: If your project discharges directly to Lake Washington (flow control exempt) or a downstream analysis confirms that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile, then you do not need to complete this worksheet, but should still refer to the infeasibility criteria when selecting BMPs.

Lawn and Landscaped Areas		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Post-construction Soil Quality and Depth List #1 and #2	<input type="checkbox"/> Siting and design criteria provided in BMP T5.13 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved.  <input type="checkbox"/> Lawn and landscape area is on till slopes greater than 33 percent.	
Roofs		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Full Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.30 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved.  <input checked="" type="checkbox"/> A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved.  <input checked="" type="checkbox"/> A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	
Downspout Full Infiltration List #1 and #2	<input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards.  <input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10A ( <b>Stormwater Manual</b> Volume III, Section 3.1.1) cannot be achieved.  <input checked="" type="checkbox"/> The lot(s) or site does not have out-wash or loam soils.  <input type="checkbox"/> There is not at least 3 feet or more of permeable soil from the proposed final grade to the seasonal high groundwater table or other impermeable layer.  <input type="checkbox"/> There is not at least 1 foot or more of permeable soil from the proposed bottom of the infiltration system to the seasonal high groundwater table or other impermeable layer.	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
<p>Bioretention or Rain Gardens</p> <p>List #1 (both) and List #2 (bioretention only)</p>	<p><i>Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.</i></p> <p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces.</li> <li><input type="checkbox"/> Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system.</li> <li><input type="checkbox"/> Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects.</li> <li><input type="checkbox"/> Where infiltrating water would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> </ul> <p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards</li> <li><input type="checkbox"/> Within setback provided for BMP T7.30 (<b>Stormwater Manual</b> Volume V, Section 7.4)</li> <li><input type="checkbox"/> Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060).</li> <li><input type="checkbox"/> Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> <li><input type="checkbox"/> Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated):             <ul style="list-style-type: none"> <li>o 5,000 square feet of pollution-generating impervious surface (PGIS)</li> <li>o 10,000 square feet of impervious area</li> <li>o 0.75 acres of lawn and landscape.</li> </ul> </li> <li><input type="checkbox"/> Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds.</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply.</li> <li><input type="checkbox"/> Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Downspout Dispersion Systems List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10B ( <b>Stormwater Manual</b> Volume III, Section 3.1.2) cannot be achieved.  <input checked="" type="checkbox"/> For splash blocks, a vegetated flowpath at least 50 feet in length from the downspout to the downstream property line, structure, stream, wetland, slope over 15 percent, or other impervious surface is not feasible.  <input type="checkbox"/> For trenches, a vegetated flowpath of at least 25 feet in between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface is not feasible. A vegetated flowpath of at least 50 feet between the outlet of the trench and any slope steeper than 15 percent is not feasible.	
Perforated Stub-Out Connections List #1 and #2	<input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards  <input type="checkbox"/> For sites with septic systems, the only location available for the perforated portion of the pipe is located up-gradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.  <input type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10C ( <b>Stormwater Manual</b> Volume III, Section 3.1.3) cannot be achieved.  <input type="checkbox"/> There is not at least 1 foot of permeable soil from the proposed bottom (final grade) of the perforated stub-out connection trench to the highest estimated groundwater table or other impermeable layer.  <input type="checkbox"/> The only location available for the perforated stub-out connection is under impervious or heavily compacted soils.	
On-site Detention List #1 and #2	<input type="checkbox"/> Project discharges directly to Lake Washington.  <input type="checkbox"/> Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints.  <input type="checkbox"/> Site setbacks and design criteria provided in the <b>Stormwater Manual</b> (Volume III, Section 3.2.2) cannot be achieved.	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Full Dispersion List #1 and #2	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.30 (<b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved.</li> <li><input checked="" type="checkbox"/> A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved.</li> <li><input checked="" type="checkbox"/> A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.</li> </ul>	
Permeable Pavement List #1 and #2	<p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where infiltrating and ponded water below the new permeable pavement area would compromise adjacent impervious pavements.</li> <li><input type="checkbox"/> Where infiltrating water below a new permeable pavement area would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> <li><input type="checkbox"/> Down slope of steep, erosion prone areas that are likely to deliver sediment.</li> <li><input type="checkbox"/> Where fill soils are used that can become unstable when saturated.</li> <li><input type="checkbox"/> Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface.</li> <li><input type="checkbox"/> Where permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities such as ports.</li> <li><input type="checkbox"/> Where installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing road subgrades.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards</li> <li><input type="checkbox"/> Within an area designated as an erosion hazard, or landslide hazard.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under MTCA):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply, if the pavement is a pollution-generating surface.</li> <li><input type="checkbox"/> Within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> <li><input type="checkbox"/> Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> <li><input type="checkbox"/> At multi-level parking garages, and over culverts and bridges.</li> <li><input type="checkbox"/> Where the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).</li> </ul>	





# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where the site cannot reasonably be designed to have:               <ul style="list-style-type: none"> <li>• Porous asphalt surface &lt; 5% slope</li> <li>• Pervious concrete surface &lt; 10% slope</li> <li>• Permeable interlocking concrete pavement surface &lt; 12% slope</li> <li>• Grid systems &lt; 6-12% slope (check with manufacturer and local supplier to confirm maximum slope)</li> </ul> </li> <li><input type="checkbox"/> Where the subgrade soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. See soil suitability criteria for treatment in the <b>Stormwater Manual</b> Volume III, Section 3.3.7. Note: In these instances, the city may approve installation of a 6 inch sand filter layer meeting city specifications for treatment as a condition of construction.</li> <li><input type="checkbox"/> Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5 percent are considered suitable for residential access roads.</li> <li><input type="checkbox"/> Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of 4 inches per hour or greater.</li> <li><input type="checkbox"/> Where appropriate field testing indicates soils have a measured (a.k.a., initial) subgrade soil saturated hydraulic conductivity less than 0.3 inches per hour. Only small-scale PIT or large-scale PIT methods in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to evaluate infeasibility of permeable pavement areas. (Note: In these instances, unless other infeasibility restrictions apply, roads and parking lots may be built with an underdrain, preferably elevated within the base course, if flow control benefits are desired.)</li> <li><input type="checkbox"/> Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO 2001) (U.S. Department of Transportation, 2013). Areas with very low truck traffic volumes are roads and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. (Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial).</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> At sites defined as “high-use sites” (refer to the Glossary in the <b>Stormwater Manual</b> Volume I).</li> <li><input type="checkbox"/> In areas with “industrial activity” as identified in 40 CFR 122.26(b)(14).</li> <li><input type="checkbox"/> Where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites.</li> <li><input type="checkbox"/> Where routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation.</li> <li><input type="checkbox"/> Where the seasonal high groundwater or an underlying impermeable/low permeable layer would create saturated conditions within 1 foot of the bottom of the lowest gravel base course.</li> </ul>	
Bioretention or Rain Gardens  List #1 (both) and List #2 (bioretention only)	<p><i>Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.</i></p> <p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces.</li> <li><input type="checkbox"/> Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system.</li> <li><input type="checkbox"/> Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects.</li> <li><input type="checkbox"/> Where infiltrating water would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards.</li> <li><input type="checkbox"/> Within setback provided for BMP T7.30 (<b>Stormwater Manual</b> Volume V, Section 7.4)</li> <li><input type="checkbox"/> Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).</li> <li><input type="checkbox"/> Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060).</li> <li><input type="checkbox"/> Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.</li> <li><input type="checkbox"/> Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): <ul style="list-style-type: none"> <li>o 5,000 square feet of pollution-generating impervious surface (PGIS)</li> <li>o 10,000 square feet of impervious area</li> <li>o 0.75 acres of lawn and landscape.</li> </ul> </li> <li><input type="checkbox"/> Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply.</li> <li><input type="checkbox"/> Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> </ul>	



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Sheet Flow Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.12 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input type="checkbox"/> Positive drainage for sheet flow runoff cannot be achieved. <input type="checkbox"/> Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15 percent slope. <input checked="" type="checkbox"/> For flat to moderately sloped areas, at least a 10 foot-wide vegetation buffer for dispersion of the adjacent 20 feet of contributing surface cannot be achieved. For variably sloped areas, at least a 25 foot vegetated flowpath between berms cannot be achieved.	
Concentrated Flow Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.11 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input type="checkbox"/> A minimum 3 foot length of rock pad and 50 foot flowpath OR a dispersion trench and 25 foot flowpath for every 700 square feet of drainage area followed with applicable setbacks cannot be achieved. <input type="checkbox"/> More than 700 square feet drainage area drains to any dispersion device.	
On-site Detention List #1 and #2	<input type="checkbox"/> Project discharges directly to Lake Washington. <input type="checkbox"/> Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. <input type="checkbox"/> Site setbacks and design criteria provided in the <b>Stormwater Manual</b> (Volume III, Section 3.2.2) cannot be achieved.	



# CITY OF MERCER ISLAND

## SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

### Attachments Required *(Check off required items that are attached)*

- Site Plan showing, to scale:
  - Areas of undisturbed native vegetation (no amendment required)
  - New planting beds (amendment required)
  - New turf areas (amendment required)
  - Type of soil improvement proposed for each area

Soil test results (required if proposing custom amendment rates)

Product test results for proposed amendments

### Total Amendment / Topsoil / Mulch for All Areas

Calculate the quantities needed for the entire site based on all of the areas identified on the Site Plan and the calculations on the following page(s):

Product	Total Quantity (CY)	Test Results
Product #1: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>
Product #2: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>
Product #3: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>

CY = cubic yards, C:N = Carbon:Nitrogen



# CITY OF MERCER ISLAND

## SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

### Amendment / Topsoil / Mulch by Area

For each identified area on your Site Plan, provide the following information: (Use additional sheets if necessary)

Area # All disturbed  (should match identified Area # on Site Plan)

Planting type:  Turf  Undisturbed native vegetation  
 Planting Beds  Other: \_\_\_\_\_

### Pre-Approved Amendment Method

<input checked="" type="checkbox"/>	Amend with compost Turf: <u>7860</u> <input checked="" type="checkbox"/> SF x 5.4 CY ÷ 1,000 SF = <u>42.44</u> <input checked="" type="checkbox"/> CY Planting beds: <u>0</u> <input checked="" type="checkbox"/> SF x 9.3 CY ÷ 1,000 SF = <u>0</u> <input checked="" type="checkbox"/> CY Total Quantity = <u>42.44</u> <input checked="" type="checkbox"/> CY Scarification depth: 8 inches	Product: _____
<input type="checkbox"/>	Stockpile and amend Turf: _____ SF x 5.4 CY ÷ 1,000 SF = _____ CY Planting beds: _____ SF x 9.3 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY Scarification depth: 8 inches	Product: _____
<input type="checkbox"/>	Topsoil import Turf: _____ SF x 18.6 CY ÷ 1,000 SF = _____ CY Planting beds: _____ SF x 18.6 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY Scarification depth: 6 inches	Product: _____

### Custom Amendment

<input type="checkbox"/>	Amend with compost Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____
<input type="checkbox"/>	Stockpile and amend Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____

### Mulch

<input type="checkbox"/>	Amend with compost Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____
<input type="checkbox"/>	Stockpile and amend Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____
<input type="checkbox"/>	Topsoil import Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____

CY = cubic yards, C:N = Carbon:Nitrogen



# CITY OF MERCER ISLAND

## SECTION E: SIGNATURE PAGE

### Project Engineer's Certification for Section B

For Stormwater Site Plans with engineered elements, the Construction SWPPP is stamped by a professional engineer licensed in the State of Washington in civil engineering.

If required, attach a page with the project engineer's seal with the following statement:

SE 40th St SFR

*"I hereby state that this Construction Stormwater Pollution Prevention Plan for \_\_\_\_\_  
(name of project)  
has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Mercer Island does not and will not assume liability for the sufficiency, suitability, or performance of Construction SWPPP BMPs prepared by me."*

### Applicant Signature for Full Stormwater Package (Sections A through D)

I have read and completed the Stormwater Submittal Package and know the information provided to be true and correct.

Matthew J. Haringa, P.E.

Print Applicant Name: \_\_\_\_\_

Applicant Signature: Matthew J Haringa Date 3/28/2023



**WWHM2012**  
**PROJECT REPORT**

# General Model Information

Project Name: default[7]  
Site Name:  
Site Address:  
City:  
Report Date: 5/19/2023  
Gage: Seatac  
Data Start: 1948/10/01  
Data End: 2009/09/30  
Timestep: 15 Minute  
Precip Scale: 1.000  
Version Date: 2021/08/18  
Version: 4.2.18

## POC Thresholds

---

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

---

## Landuse Basin Data

### Predeveloped Land Use

#### Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use C, Forest, Flat	acre 0.27
Pervious Total	0.27
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.27

Element Flows To:		
Surface	Interflow	Groundwater

## Mitigated Land Use

### Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use C, Forest, Flat	acre 0.18
Pervious Total	0.18
Impervious Land Use ROADS FLAT	acre 0.09
Impervious Total	0.09
Basin Total	0.27

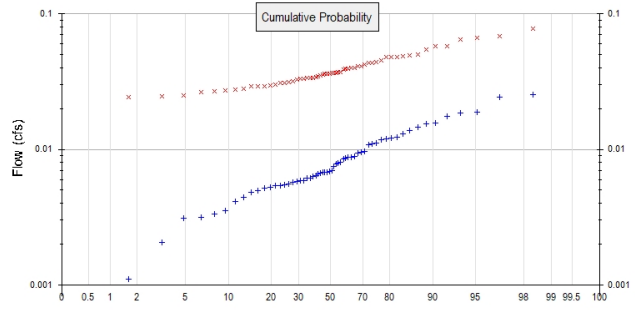
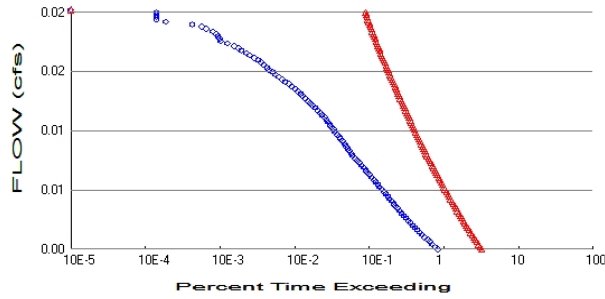
Element Flows To:		
Surface	Interflow	Groundwater

*Routing Elements*  
*Predeveloped Routing*

## *Mitigated Routing*

# Analysis Results

## POC 1



+ Predeveloped    x Mitigated

### Predeveloped Landuse Totals for POC #1

Total Pervious Area: 0.27  
 Total Impervious Area: 0

### Mitigated Landuse Totals for POC #1

Total Pervious Area: 0.18  
 Total Impervious Area: 0.09

Flow Frequency Method: Log Pearson Type III 17B

### Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.007938
5 year	0.012467
10 year	0.015034
25 year	0.017753
50 year	0.019436
100 year	0.020867

### Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.036779
5 year	0.046784
10 year	0.053619
25 year	0.062523
50 year	0.069363
100 year	0.076389

## Annual Peaks

### Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.008	0.050
1950	0.010	0.048
1951	0.017	0.034
1952	0.006	0.025
1953	0.004	0.027
1954	0.007	0.031
1955	0.011	0.033
1956	0.009	0.033
1957	0.007	0.040
1958	0.008	0.030

1959	0.007	0.029
1960	0.012	0.036
1961	0.007	0.033
1962	0.004	0.026
1963	0.006	0.032
1964	0.007	0.030
1965	0.005	0.039
1966	0.005	0.027
1967	0.011	0.044
1968	0.007	0.048
1969	0.007	0.034
1970	0.005	0.035
1971	0.006	0.040
1972	0.013	0.043
1973	0.006	0.024
1974	0.006	0.037
1975	0.009	0.041
1976	0.006	0.031
1977	0.001	0.029
1978	0.006	0.036
1979	0.003	0.049
1980	0.012	0.050
1981	0.005	0.037
1982	0.009	0.054
1983	0.009	0.041
1984	0.005	0.028
1985	0.003	0.036
1986	0.014	0.036
1987	0.012	0.048
1988	0.005	0.029
1989	0.003	0.036
1990	0.025	0.078
1991	0.015	0.058
1992	0.006	0.028
1993	0.006	0.023
1994	0.002	0.024
1995	0.009	0.033
1996	0.019	0.043
1997	0.016	0.039
1998	0.004	0.033
1999	0.015	0.068
2000	0.006	0.037
2001	0.001	0.037
2002	0.007	0.045
2003	0.009	0.039
2004	0.011	0.064
2005	0.008	0.034
2006	0.009	0.031
2007	0.019	0.066
2008	0.024	0.058
2009	0.012	0.044

### Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0254	0.0781
2	0.0244	0.0682
3	0.0189	0.0664



4	0.0186	0.0643
5	0.0175	0.0580
6	0.0155	0.0579
7	0.0153	0.0545
8	0.0146	0.0503
9	0.0138	0.0496
10	0.0130	0.0489
11	0.0123	0.0481
12	0.0122	0.0479
13	0.0120	0.0477
14	0.0118	0.0451
15	0.0111	0.0444
16	0.0109	0.0437
17	0.0108	0.0432
18	0.0097	0.0425
19	0.0095	0.0412
20	0.0094	0.0411
21	0.0088	0.0398
22	0.0087	0.0397
23	0.0087	0.0395
24	0.0086	0.0391
25	0.0085	0.0390
26	0.0080	0.0374
27	0.0079	0.0371
28	0.0078	0.0368
29	0.0075	0.0366
30	0.0070	0.0364
31	0.0068	0.0363
32	0.0068	0.0362
33	0.0067	0.0359
34	0.0067	0.0357
35	0.0067	0.0350
36	0.0066	0.0344
37	0.0064	0.0343
38	0.0063	0.0338
39	0.0062	0.0335
40	0.0061	0.0335
41	0.0059	0.0331
42	0.0059	0.0331
43	0.0058	0.0325
44	0.0057	0.0320
45	0.0055	0.0312
46	0.0055	0.0310
47	0.0054	0.0307
48	0.0054	0.0300
49	0.0052	0.0298
50	0.0052	0.0292
51	0.0049	0.0291
52	0.0048	0.0290
53	0.0045	0.0279
54	0.0041	0.0278
55	0.0035	0.0272
56	0.0033	0.0267
57	0.0031	0.0264
58	0.0031	0.0251
59	0.0021	0.0245
60	0.0011	0.0242
61	0.0007	0.0226



## Duration Flows

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0040	17547	68551	390	Fail
0.0041	16164	65150	403	Fail
0.0043	14966	61963	414	Fail
0.0044	13854	58905	425	Fail
0.0046	12816	56146	438	Fail
0.0048	11809	53579	453	Fail
0.0049	10900	51034	468	Fail
0.0051	10121	48660	480	Fail
0.0052	9385	46456	495	Fail
0.0054	8729	44360	508	Fail
0.0055	8145	42328	519	Fail
0.0057	7593	40489	533	Fail
0.0058	7060	38757	548	Fail
0.0060	6588	37067	562	Fail
0.0062	6145	35441	576	Fail
0.0063	5777	33987	588	Fail
0.0065	5431	32554	599	Fail
0.0066	5099	31206	612	Fail
0.0068	4808	29837	620	Fail
0.0069	4524	28575	631	Fail
0.0071	4252	27420	644	Fail
0.0072	4017	26244	653	Fail
0.0074	3782	25217	666	Fail
0.0076	3546	24191	682	Fail
0.0077	3337	23207	695	Fail
0.0079	3138	22266	709	Fail
0.0080	2950	21359	724	Fail
0.0082	2785	20520	736	Fail
0.0083	2599	19661	756	Fail
0.0085	2447	18876	771	Fail
0.0087	2304	18133	787	Fail
0.0088	2160	17434	807	Fail
0.0090	2025	16756	827	Fail
0.0091	1898	16138	850	Fail
0.0093	1790	15522	867	Fail
0.0094	1687	14904	883	Fail
0.0096	1584	14307	903	Fail
0.0097	1483	13777	928	Fail
0.0099	1380	13267	961	Fail
0.0101	1292	12761	987	Fail
0.0102	1225	12335	1006	Fail
0.0104	1155	11899	1030	Fail
0.0105	1098	11454	1043	Fail
0.0107	1049	11058	1054	Fail
0.0108	997	10630	1066	Fail
0.0110	930	10286	1106	Fail
0.0112	884	9907	1120	Fail
0.0113	837	9565	1142	Fail
0.0115	790	9234	1168	Fail
0.0116	743	8932	1202	Fail
0.0118	713	8615	1208	Fail
0.0119	671	8331	1241	Fail
0.0121	632	8036	1271	Fail
0.0122	597	7792	1305	Fail

0.0124	567	7546	1330	Fail
0.0126	539	7296	1353	Fail
0.0127	498	7069	1419	Fail
0.0129	473	6838	1445	Fail
0.0130	434	6596	1519	Fail
0.0132	401	6397	1595	Fail
0.0133	367	6203	1690	Fail
0.0135	348	6015	1728	Fail
0.0137	323	5803	1796	Fail
0.0138	296	5570	1881	Fail
0.0140	273	5390	1974	Fail
0.0141	256	5219	2038	Fail
0.0143	235	5061	2153	Fail
0.0144	217	4932	2272	Fail
0.0146	196	4774	2435	Fail
0.0147	181	4624	2554	Fail
0.0149	158	4483	2837	Fail
0.0151	145	4314	2975	Fail
0.0152	130	4167	3205	Fail
0.0154	119	4030	3386	Fail
0.0155	109	3903	3580	Fail
0.0157	97	3784	3901	Fail
0.0158	91	3683	4047	Fail
0.0160	82	3578	4363	Fail
0.0162	76	3467	4561	Fail
0.0163	69	3343	4844	Fail
0.0165	61	3238	5308	Fail
0.0166	54	3138	5811	Fail
0.0168	48	3029	6310	Fail
0.0169	41	2950	7195	Fail
0.0171	38	2875	7565	Fail
0.0172	33	2783	8433	Fail
0.0174	27	2710	10037	Fail
0.0176	22	2633	11968	Fail
0.0177	21	2569	12233	Fail
0.0179	20	2490	12450	Fail
0.0180	19	2421	12742	Fail
0.0182	17	2351	13829	Fail
0.0183	14	2282	16300	Fail
0.0185	12	2224	18533	Fail
0.0187	9	2167	24077	Fail
0.0188	4	2103	52575	Fail
0.0190	3	2047	68233	Fail
0.0191	3	1987	66233	Fail
0.0193	3	1941	64700	Fail
0.0194	3	1902	63400	Fail

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.

The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

## Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

# LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

## *Model Default Modifications*

Total of 0 changes have been made.

### *PERLND Changes*

No PERLND changes have been made.

### *IMPLND Changes*

No IMPLND changes have been made.

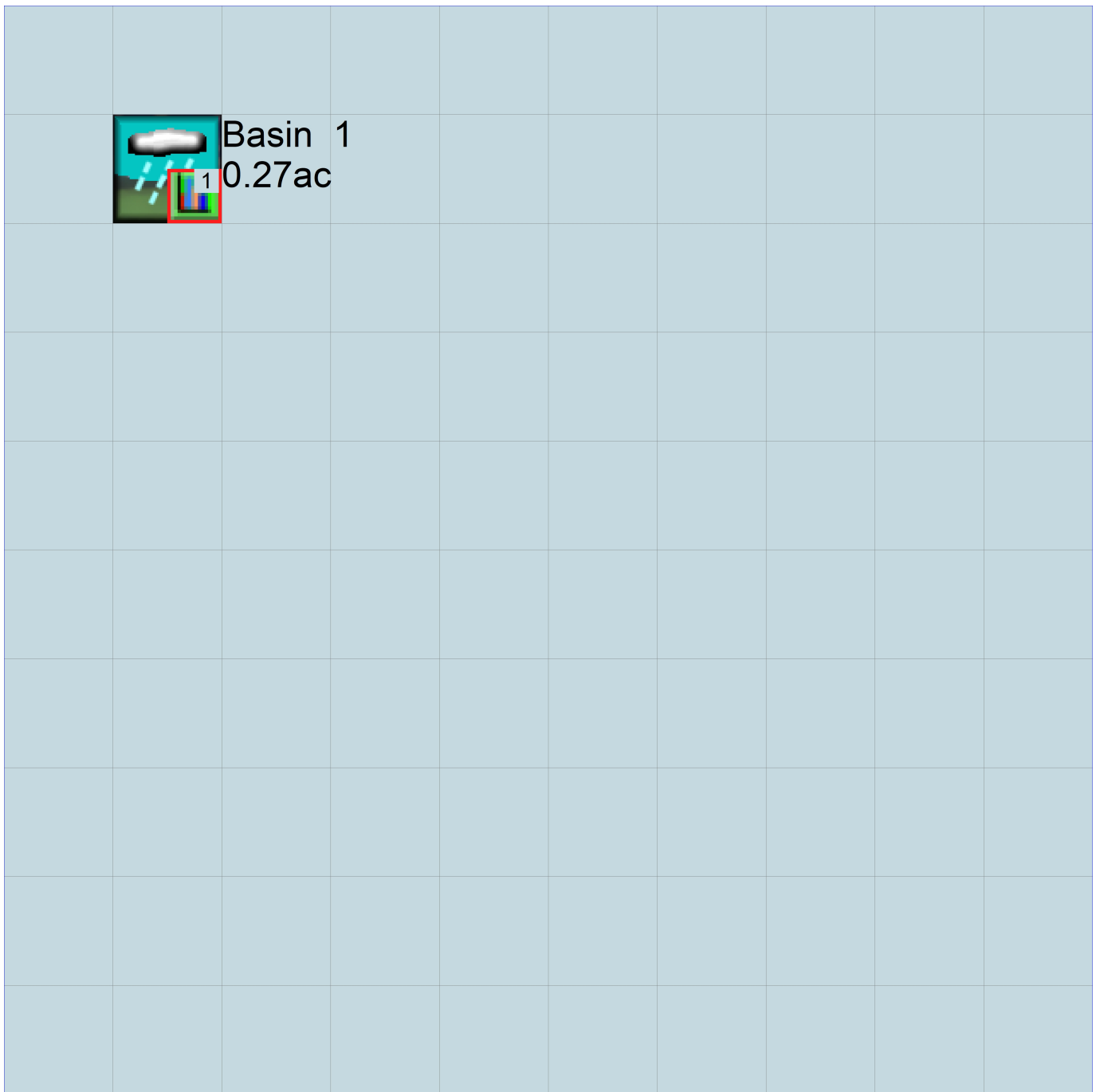
*Appendix*  
*Predeveloped Schematic*



Basin 1  
0.27ac



## Mitigated Schematic



# Predeveloped UCI File

RUN

GLOBAL

```
WVHM4 model simulation
START      1948 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL   3      0
RESUME     0 RUN         1
UNIT SYSTEM 1
```

END GLOBAL

FILES

```
<File> <Un#> <-----File Name----->***
<-ID->                                     ***
WDM      26      default[7].wdm
MESSU    25      Predefault[7].MES
          27      Predefault[7].L61
          28      Predefault[7].L62
          30      POCdefault[7]1.dat
```

END FILES

OPN SEQUENCE

```
INGRP              INDELT 00:15
  PERLND           10
  COPY             501
  DISPLY           1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INFO1

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
1      Basin 1              MAX              1      2      30      9
```

END DISPLY-INFO1

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501    1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCODE ***
```

END OPCODE

PARAM

```
#      #          K ***
```

END PARAM

END GENER

PERLND

GEN-INFO

```
<PLS ><-----Name----->NBLKS  Unit-systems  Printer ***
# - #                               User  t-series  Engl Metr ***
                               in  out      ***
```

```
10      C, Forest, Flat      1      1      1      1      27      0
```

END GEN-INFO

\*\*\* Section PWATER\*\*\*

ACTIVITY

```
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL PEST NITR PHOS TRAC ***
10      0      0      1      0      0      0      0      0      0      0      0      0
```

END ACTIVITY

PRINT-INFO

```
<PLS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL PEST NITR PHOS TRAC *****
10      0      0      4      0      0      0      0      0      0      0      0      0      1      9
```

END PRINT-INFO

```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
10 0 0 0 0 0 0 0 0 0 0 0
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
10 0 4.5 0.08 400 0.05 0.5 0.996
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
10 0 0 2 2 0 0 0
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
10 0.2 0.5 0.35 6 0.5 0.7
END PWAT-PARM4

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
10 0 0 0 0 2.5 1 0
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***

END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
END PRINT-INFO

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
END IWAT-PARM1

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC
END IWAT-PARM2

IWAT-PARM3
<PLS > IWATER input info: Part 3 ***
# - # ***PETMAX PETMIN
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # *** RETS SURS
END IWAT-STATE1

```

END IMPLND

SCHEMATIC

<-Source->	<Name> #	<--Area-->	<-factor-->	<-Target->	<Name> #	MBLK	Tbl#	***
Basin	1***							
PERLND	10	0.27		COPY	501	12		
PERLND	10	0.27		COPY	501	13		

\*\*\*\*\*Routing\*\*\*\*\*  
END SCHEMATIC

NETWORK

<-Volume->	<-Grp>	<-Member->	<--Mult-->	Tran	<-Target vols>	<-Grp>	<-Member->	***	
<Name> #		<Name> #	#	<-factor-->strg	<Name> #	#	<Name> #	***	
COPY	501	OUTPUT	MEAN	1 1	48.4	DISPLY	1	INPUT	TIMSER 1

<-Volume->	<-Grp>	<-Member->	<--Mult-->	Tran	<-Target vols>	<-Grp>	<-Member->	***
<Name> #		<Name> #	#	<-factor-->strg	<Name> #	#	<Name> #	***

END NETWORK

RCHRES

GEN-INFO

RCHRES	Name	Nexits	Unit	Systems	Printer	***
# - #	<----->	<---->	User	T-series	Engl Metr	LKFG
				in out		

END GEN-INFO  
\*\*\* Section RCHRES\*\*\*

ACTIVITY

<PLS > \*\*\*\*\* Active Sections \*\*\*\*\*

# - #	HYFG	ADFG	CNFG	HTFG	SDFG	GQFG	OXFG	NUFG	PKFG	PHFG	***

END ACTIVITY

PRINT-INFO

<PLS > \*\*\*\*\* Print-flags \*\*\*\*\* PIVL PYR

# - #	HYDR	ADCA	CONS	HEAT	SED	GQL	OXRX	NUTR	PLNK	PHCB	PIVL	PYR	*****

END PRINT-INFO

HYDR-PARM1

RCHRES	Flags for each HYDR Section	***	ODGTFG for each	FUNCT for each	***
# - #	VC A1 A2 A3	ODFVFG for each	*** possible exit	*** possible exit	possible exit
	FG FG FG FG	possible exit	*** possible exit	possible exit	***
	* * * *	* * * *	* * * *	* * * *	

END HYDR-PARM1

HYDR-PARM2

# - #	FTABNO	LEN	DELTH	STCOR	KS	DB50	***
<----->	<----->	<----->	<----->	<----->	<----->	<----->	***

END HYDR-PARM2

HYDR-INIT

RCHRES	Initial conditions for each HYDR section	***
# - #	*** VOL	Initial value of COLIND
	*** ac-ft	for each possible exit
		Initial value of OUTDGT
		for each possible exit
	<----->	<----->
	<----->	<----->

END HYDR-INIT

END RCHRES

SPEC-ACTIONS

END SPEC-ACTIONS

FTABLES

END FTABLES

EXT SOURCES

<-Volume->	<Member>	SsysSgap	<--Mult-->	Tran	<-Target vols>	<-Grp>	<-Member->	***
<Name> #	<Name> #	tem	strg	<-factor-->strg	<Name> #	#	<Name> #	***
WDM	2	PREC	ENGL	1	PERLND	1 999	EXTNL	PREC
WDM	2	PREC	ENGL	1	IMPLND	1 999	EXTNL	PREC

```
WDM      1 EVAP      ENGL      0.76          PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP      ENGL      0.76          IMPLND   1 999 EXTNL  PETINP
```

END EXT SOURCES

EXT TARGETS

```
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>      #          <Name> # #<-factor->strg <Name>  # <Name>   tem strg strg***
COPY   501 OUTPUT MEAN  1 1      48.4    WDM    501 FLOW    ENGL    REPL
```

END EXT TARGETS

MASS-LINK

```
<Volume>   <-Grp> <-Member-><--Mult--> <Target>          <-Grp> <-Member->***
<Name>     #          <Name> # #<-factor-> <Name>          <Name> # #***
MASS-LINK  12
PERLND     PWATER SURO          0.083333    COPY          INPUT  MEAN
END MASS-LINK 12
```

```
MASS-LINK  13
PERLND     PWATER IFWO          0.083333    COPY          INPUT  MEAN
END MASS-LINK 13
```

END MASS-LINK

END RUN

# Mitigated UCI File

RUN

GLOBAL

```
WVHM4 model simulation
START      1948 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL   3      0
RESUME     0 RUN      1
UNIT SYSTEM      1
END GLOBAL
```

FILES

```
<File> <Un#> <-----File Name----->***
<-ID->                                     ***
WDM      26      default[7].wdm
MESSU    25      Mitdefault[7].MES
          27      Mitdefault[7].L61
          28      Mitdefault[7].L62
          30      POCdefault[7]1.dat
END FILES
```

OPN SEQUENCE

```
INGRP          INDELT 00:15
  PERLND        10
  IMPLND         1
  COPY          501
  DISPLY         1
END INGRP
```

END OPN SEQUENCE

DISPLY

```
DISPLY-INFO1
# - #<-----Title----->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
1   Basin 1          MAX          1   2   30   9
END DISPLY-INFO1
```

END DISPLY

COPY

```
TIMESERIES
# - # NPT NMN ***
1   1   1
501 1   1
END TIMESERIES
```

END COPY

GENER

```
OPCODE
#   # OPCD ***
END OPCODE
PARM
#   #           K ***
END PARM
```

END GENER

PERLND

```
GEN-INFO
<PLS ><-----Name----->NBLKS  Unit-systems  Printer ***
# - #      User  t-series  Engl Metr ***
          in  out      ***
10      C, Forest, Flat      1   1   1   1   27   0
END GEN-INFO
*** Section PWATER***
```

ACTIVITY

```
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL PEST NITR PHOS TRAC ***
10   0   0   1   0   0   0   0   0   0   0   0   0   0
END ACTIVITY
```

PRINT-INFO

```
<PLS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL PEST NITR PHOS TRAC *****
10   0   0   4   0   0   0   0   0   0   0   0   0   1   9
END PRINT-INFO
```

```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
10 0 0 0 0 0 0 0 0 0 0 0
END PWAT-PARM1

```

```

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
10 0 4.5 0.08 400 0.05 0.5 0.996
END PWAT-PARM2

```

```

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
10 0 0 2 2 0 0 0
END PWAT-PARM3

```

```

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
10 0.2 0.5 0.35 6 0.5 0.7
END PWAT-PARM4

```

```

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
10 0 0 0 0 2.5 1 0
END PWAT-STATE1

```

END PERLND

IMPLND

```

GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***
1 ROADS/FLAT 1 1 1 27 0
END GEN-INFO
*** Section IWATER***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
1 0 0 1 0 0 0
END ACTIVITY

```

```

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
1 0 0 4 0 0 0 1 9
END PRINT-INFO

```

```

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
1 0 0 0 0 0
END IWAT-PARM1

```

```

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC
1 400 0.01 0.1 0.1
END IWAT-PARM2

```

```

IWAT-PARM3
<PLS > IWATER input info: Part 3 ***
# - # ***PETMAX PETMIN
1 0 0

```

```

END IWAT-PARM3

IWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
  # - # *** RETS      SURS
  1      0      0
END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->
<Name> #
Basin 1***
PERLND 10
PERLND 10
IMPLND 1
      <--Area-->      <-Target->      MBLK      ***
      <-factor->      <Name> #      Tbl#      ***
      0.18      COPY 501      12
      0.18      COPY 501      13
      0.09      COPY 501      15

*****Routing*****
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
COPY 501 OUTPUT MEAN 1 1 48.4 DISPLAY 1 INPUT TIMSER 1

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
END NETWORK

RCHRES
GEN-INFO
  RCHRES Name Nexits Unit Systems Printer ***
  # - #<-----><----> User T-series Engl Metr LKFG ***
  in out ***

END GEN-INFO
*** Section RCHRES***

ACTIVITY
  <PLS > ***** Active Sections *****
  # - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
END ACTIVITY

PRINT-INFO
  <PLS > ***** Print-flags ***** PIVL PYR
  # - # HYDR ADCA CONS HEAT SED GQL OXRX NUTR PLNK PHCB PIVL PYR *****
END PRINT-INFO

HYDR-PARM1
  RCHRES Flags for each HYDR Section ***
  # - # VC A1 A2 A3 ODFVFG for each *** ODGTFG for each FUNCT for each
  FG FG FG FG possible exit *** possible exit possible exit
  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
END HYDR-PARM1

HYDR-PARM2
  # - # FTABNO LEN DELTH STCOR KS DB50 ***
  <-----><-----><-----><-----><-----><-----> ***
END HYDR-PARM2

HYDR-INIT
  RCHRES Initial conditions for each HYDR section ***
  # - # *** VOL Initial value of COLIND Initial value of OUTDGT
  *** ac-ft for each possible exit for each possible exit
  <-----><-----> <-----><-----><-----><-----> *** <-----><-----><-----><-----><----->
END HYDR-INIT
END RCHRES

SPEC-ACTIONS

```



END SPEC-ACTIONS  
FTABLES  
END FTABLES

EXT SOURCES

<-Volume->	<Member>	SsysSgap	<--Mult-->	Tran	<-Target	vols>	<-Grp>	<-Member->	***	
<Name>	#	<Name>	#	tem strg	<-factor->	strg	<Name>	#	#	***
WDM	2	PREC	ENGL	1	PERLND	1 999	EXTNL	PREC		
WDM	2	PREC	ENGL	1	IMPLND	1 999	EXTNL	PREC		
WDM	1	EVAP	ENGL	0.76	PERLND	1 999	EXTNL	PETINP		
WDM	1	EVAP	ENGL	0.76	IMPLND	1 999	EXTNL	PETINP		

END EXT SOURCES

EXT TARGETS

<-Volume->	<-Grp>	<-Member->	<--Mult-->	Tran	<-Volume->	<Member>	Tsys	Tgap	Amd	***	
<Name>	#	<Name>	#	#	<-factor->	strg	<Name>	#	<Name>	tem strg	strg***
COPY	1	OUTPUT	MEAN	1 1	48.4	WDM	701	FLOW	ENGL	REPL	
COPY	501	OUTPUT	MEAN	1 1	48.4	WDM	801	FLOW	ENGL	REPL	

END EXT TARGETS

MASS-LINK

<Volume>	<-Grp>	<-Member->	<--Mult-->	<Target>	<-Grp>	<-Member->	***	
<Name>	#	<Name>	#	<-factor->	<Name>	#	#	***
MASS-LINK		12						
PERLND	PWATER	SURO		0.083333	COPY	INPUT	MEAN	
END MASS-LINK		12						
MASS-LINK		13						
PERLND	PWATER	IFWO		0.083333	COPY	INPUT	MEAN	
END MASS-LINK		13						
MASS-LINK		15						
IMPLND	IWATER	SURO		0.083333	COPY	INPUT	MEAN	
END MASS-LINK		15						

END MASS-LINK

END RUN

*Predeveloped HSPF Message File*

*Mitigated HSPF Message File*

## *Disclaimer*

### *Legal Notice*

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Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



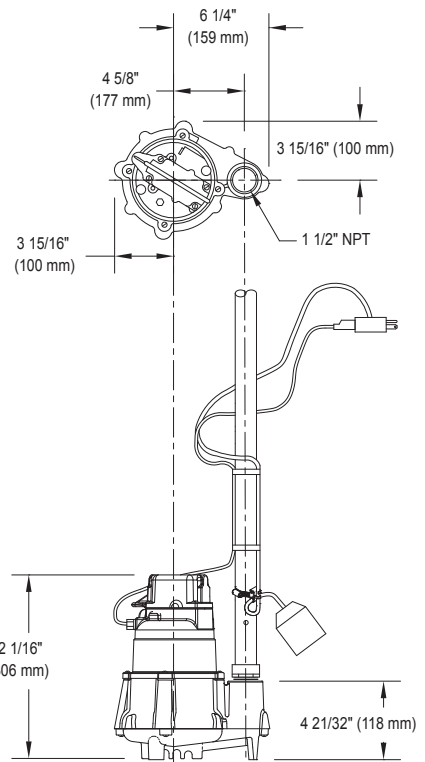
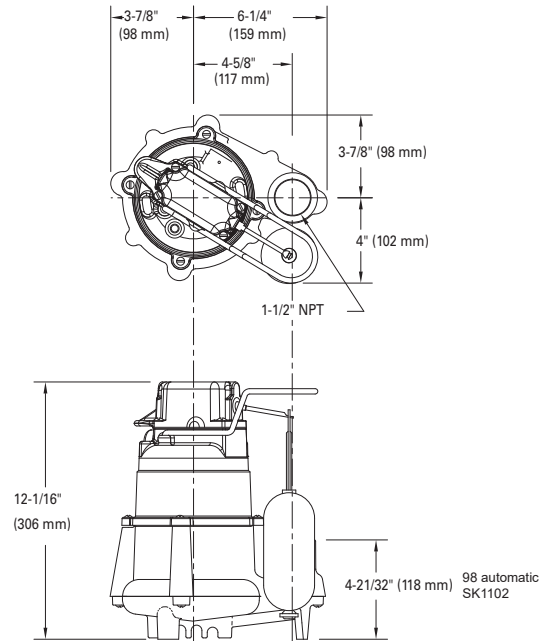
# TECHNICAL DATA SHEET

## FLOW-MATE SERIES

### Model 98 Submersible Effluent/Dewatering Pump

#### PRODUCT SPECIFICATIONS

<b>MOTOR</b>	Horse Power	1/2
	Voltage	115 or 230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	1725
	Type	Permanent split capacitor
	Insulation	Class B
	Amps	4.7 - 9.4
<b>PUMP</b>	Operation	Automatic or nonautomatic
	Auto On/Off Points	9-1/2" (24 cm) / 3" (7.6 cm)
	Discharge Size	1-1/2" NPT
	Solids Handling	1/2" (13 mm) spherical solids
	Cord Length	9' (3 m) automatic, 15' (5 m) nonautomatic
	Cord Type	UL listed
	Max. Head	23' (7 m)
	Max. Flow Rate	72 GPM (273 LPM)
	Max. Operating Temp.	130° F (54° C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload
	<b>MATERIALS</b>	Cap
Motor Housing		Cast iron
Pump Housing		Cast iron
Base		Engineered thermoplastic
Upper Bearing		Oil-fed cast iron
Lower Bearing		Oil-fed cast iron
Mechanical Seals		Carbon and ceramic
Impeller Type		Non-clogging vortex
Impeller		Engineered plastic
Hardware		Stainless steel
Motor Shaft		AISI 1215 cold rolled steel
Gasket		Neoprene

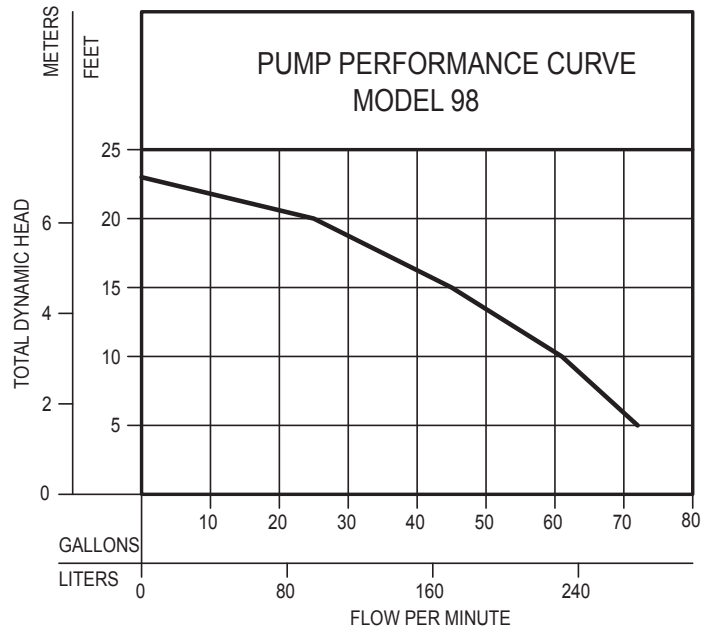


NOTE: See model comparison chart for specific details.



## TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODEL		98	
Feet	Meters	Gal.	Liters
5	1.5	72	273
10	3.0	61	231
15	4.6	45	170
20	7.1	25	95
Shut-off Head:		23 ft.(7.0m)	



009971

Model	MODEL COMPARISON										
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex
M98	Single	Auto	115	1	9.4	1/2	60	36	16	1	4
N98	Single	Non	115	1	9.4	1/2	60	36	16	2 or 3	4
D98	Single	Auto	230	1	4.7	1/2	60	36	16	1	4
E98	Single	Non	230	1	4.7	1/2	60	35	16	2 or 3	4
BN98	Single	Auto	115	1	9.4	1/2	60	37	17	*	--
BE98	Single	Auto	230	1	9.4	1/2	60	40	18	*	--

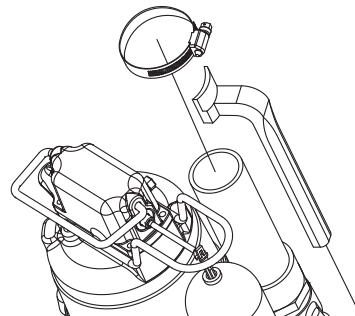
\*BN and BE models include a 20' (6 m) piggyback variable level pump switch. Additional cord lengths are available in 25' (8 m) and 35' (11 m). 50' (15 m) cords are available for 230 V units only.

## SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. For automatic, use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel or FM1663 for a residential alternator system.

### OPTIONAL PUMP STAND P/N 10-2421

- Reduces potential clogging by debris
  - Replaces rocks or bricks under the pump
  - Made of durable, noncorrosive ABS
  - Raises pump 2" (5 cm) off bottom of basin
  - Provides the ability to raise intake by adding sections of 1½" or 2" (DN40 or DN50) PVC piping
  - Attaches securely to pump
  - Accommodates sump, dewatering and effluent applications
- NOTE: Make sure float is free from obstruction.



All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

**Notice to installing contractor: Instructions must remain with installation.**

Trusted. Tested. Tough.®

FM2676  
0419  
Supersedes  
0117

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



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Zoeller Pump Company  
Product on our website:  
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**TEL:** (502) 778-2731 • 1 (800) 928-PUMP • **FAX:** (502) 774-3624

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## INSTALLATION INSTRUCTIONS

### RECOMMENDED MODELS

DATE INSTALLED:
MODEL NUMBER:

EFFLUENT*/SUMP/DEWATERING	SEWAGE
53® / 57 Series, 98 Series	264 Series
137 Series, 151 / 152 / 153 Series	266 / 267 Series



**NOTICE: VENT HOLE FOR CHECK VALVE**  
**SEE #3 IN CAUTION SECTION BELOW AND #4 ON PAGE 3**

PIN 151797

\* Effluent systems should specify that pumps should not handle solids exceeding 3/4" (19.1 mm) in order to prevent large solids from entering leaching fields, mound systems, etc. (Model 49 Series has 3/8" [9.5 mm] solids capability. 50, 90, and 151 Series have 1/2" [12.7 mm], 130 Series has 5/8" [15.9 mm], 152 and 153 models have 3/4" [19.1 mm].) Where code permits, sewage pumps can be used for effluent systems. Nonautomatic pumps with external-level controls are recommended for septic tank effluent applications.

## PREINSTALLATION CHECKLIST - ALL INSTALLATIONS

1. Inspect your pump. Occasionally, products are damaged during shipment. If the unit is damaged, contact your dealer before using. DO NOT remove the test plugs in the cover nor the motor housing.
2. Carefully read the literature provided to familiarize yourself with specific details regarding installation and use. These materials should be retained for future reference.

 <b>WARNING</b>	SEE BELOW FOR LIST OF WARNINGS	 <b>CAUTION</b>	SEE BELOW FOR LIST OF CAUTIONS
<ol style="list-style-type: none"> <li>1. Make certain that the receptacle is within the reach of the pump's power supply cord. DO NOT USE AN EXTENSION CORD. Extension cords that are too long or too light do not deliver sufficient voltage to the pump motor, and they could present a safety hazard if the insulation were to become damaged or the connection end were to fall into a wet or damp area.</li> <li>2. <b>Make sure the pump electrical supply circuit is equipped with fuses or circuit breakers of proper capacity.</b> A separate branch circuit is recommended, sized according to the "National Electrical Code" for the current shown on the pump nameplate.</li> <li>3. <b>Testing for ground.</b> As a safety measure, each electrical outlet should be checked for ground using an Underwriters Laboratory Listed circuit analyzer which will indicate if the power, neutral and ground wires are correctly connected to your outlet. If they are not, call a qualified, licensed electrician.</li> <li>4. <b>For Added Safety.</b> Pumping and other equipment with a 3-prong grounded plug must be connected to a 3-prong grounded receptacle. For added safety the receptacle may be protected with a ground-fault circuit interrupter. When a pump needs to be connected in a watertight junction box, the plug can be removed and spliced to the supply cable with proper grounding. For added safety this circuit may be protected by a ground-fault circuit interrupter. The complete installation must comply with the National Electrical Code and all applicable local codes and ordinances.</li> <li>5. <b>FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.</b> Single phase pumps are supplied with a 3-prong grounded plug to help protect you against the possibility of electrical shock. <b>DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE THE GROUND PIN.</b> The 3-prong plug must be inserted into a mating 3-prong grounded receptacle. If the installation does not have such a receptacle, it must be changed to the proper type, wired and grounded in accordance with the National Electrical Code and all applicable local codes and ordinances. Three phase pumps require motor starting devices with motor overload protection. See FM0486 for duplex installations.</li> <li>6. The tank is to be vented in accordance with local plumbing code. Pumps <b>must</b> be installed in accordance with the National Electrical Code and all applicable local codes and ordinances. Pumps are not to be installed in locations classified as hazardous in accordance with National Electrical Code, ANSI/NFPA 70.</li> <li>7. <b>Risk of electrical shock.</b> Do not remove power supply cord and strain relief or connect conduit directly to the pump.</li> <li>8. Installation and servicing of electrical circuits and hardware should be performed by a qualified licensed electrician.</li> <li>9. Pump installation and servicing should be performed by a qualified person.</li> <li>10. Risk of electrical shock - These pumps have not been investigated for use in swimming pool and marine areas.</li> <li>11. Prop65 Warning for California residents: Cancer and Reproductive Harm - <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>.</li> </ol>		<ol style="list-style-type: none"> <li>1. Check to be sure your power source is capable of handling the voltage requirements of the motor, as indicated on the pump name plate.</li> <li>2. The installation of automatic pumps with variable level float switches or nonautomatic pumps using auxiliary variable level float switches is the responsibility of the installing party and care should be taken that the tethered float switch will not hang up on the pump apparatus or pit peculiarities and is secured so that the pump will shut off. It is recommended to use rigid piping and fittings and the pit be 18" (46 cm) or larger in diameter.</li> <li>3. <b>Information - vent hole purpose.</b> It is necessary that all submersible sump, effluent, and sewage pumps capable of handling various sizes of solid waste be of the bottom intake design to reduce clogging and seal failures. If a check valve is incorporated in the installation, a vent hole (approx. 3/16" [5 mm]) must be drilled in the discharge pipe below the check valve and pit cover to purge the unit of trapped air. Trapped air is caused by agitation and/or a dry basin. Vent hole should be checked periodically for clogging. The 53® / 57, and 98 Series pumps have a vent located in the pump housing opposite the float, adjacent to a housing lug, but an additional vent hole is recommended. The vent hole on a High Head application may cause too much turbulence. You may not want to drill one. If you choose not to drill a vent hole, be sure the pump case and impeller is covered with liquid before connecting the pipe to the check valve and no inlet carries air to the pump intake. <b>NOTE: THE HOLE MUST ALSO BE BELOW THE BASIN COVER AND CLEANED PERIODICALLY.</b> Water stream will be visible from this hole during pump run periods.</li> <li>4. Pump should be checked frequently for debris and/or buildup which may interfere with the float "on" or "off" position. Repair and service should be performed by Zoeller Pump Company Authorized Service and Warranty Center.</li> <li>5. Dewatering and effluent sump pumps are not designed for use in pits handling raw sewage.</li> <li>6. Maximum operating temperature for standard model pumps must not exceed 130 °F (54 °C).</li> <li>7. Pump models 266, 267, and 137 must be operated in an upright position. Do not attempt to start pump when tilted or laying on its side.</li> <li>8. Do not operate a pump in an application where the Total Dynamic Head is less than the minimum Total Dynamic Head listed on the Pump Performance Curves.</li> </ol>	
<p>NOTE: Pumps with the "UL" mark and pumps with the "US" mark are tested to UL Standard UL778. CSA Certified pumps are certified to CSA Standard C22.2 No. 108.</p>			
<p><b>REFER TO WARRANTY ON PAGE 2.</b></p>			

## Limited Warranty

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, every new product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of three years from the date of purchase. Proof of purchase is required. Parts that fail within the warranty period, that inspections determine to be defective in material or workmanship, will be repaired, replaced or remanufactured at Manufacturer's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or act of nature; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that has been exposed to outside substances including but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons, hydrocarbon derivatives (oil, gasoline, solvents, etc.), or other abrasive or corrosive substances, wash towels or feminine sanitary products, etc. in all pumping applications. The warranty set out in the paragraph above is

in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products.

Contact Manufacturer at, 3649 Cane Run Road, Louisville, Kentucky 40211, Attention: Customer Service Department to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

**MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.**

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

**In instances where property damages are incurred as a result of an alleged product failure, the property owner must retain possession of the product for investigation purpose.**

## EASY DO'S & DON'T'S FOR INSTALLING A SUMP PUMP

1. **DO** read thoroughly all installation material provided with the pump.
2. **DO** inspect pump for any visible damage caused by shipping. Contact dealer if pump appears to be damaged.
3. **DO** clean all debris from the sump. Be sure that the pump will have a hard, flat surface beneath it. **DO NOT** install on sand, gravel or dirt.
4. **DO** be sure that the sump is large enough to allow proper clearance for the level control switch(es) to operate properly.
5. **DO Always Disconnect Pump From Power Source Before Handling.**  
**DO** always connect to a separately protected and properly grounded circuit.  
**DO NOT** ever cut, splice, or damage power cord (Only splice in a watertight junction box).  
**DO NOT** carry or lift pump by its power cord.  
**DO NOT** use an extension cord with a sump pump.
6. **DO** install a check valve and a union in the discharge line.  
**DO NOT** use a discharge pipe smaller than the pump discharge.
7. **DO NOT** use a sump pump as a trench or excavation pump, or for pumping sewage, gasoline, or other hazardous liquids.
8. **DO** test pump immediately after installation to be sure that the system is working properly.
9. **DO** cover sump with an adequate sump cover.
10. **DO** review all applicable local and national codes and verify that the installation conforms to each of them.
11. **DO** consult manufacturer for clarifications or questions.
12. **DO** consider a two pump system with an alarm where an installation may become overloaded or primary pump failure would result in property damages.
13. **DO** consider a D.C. Backup System where a sump or dewatering pump is necessary for the prevention of property damages from flooding due to A.C. power disruptions, mechanical or electrical problems or system overloading.
14. **DO** inspect and test system for proper operations at least every three months.

## SERVICE CHECKLIST



**⚠ WARNING ELECTRICAL PRECAUTIONS-** Before servicing a pump, always shut off the main power breaker and then unplug the pump - making sure you are wearing insulated protective sole shoes and not standing in water. Under flooded conditions, contact your local electric company or a qualified licensed electrician for disconnecting electrical service prior to pump removal.

**⚠ WARNING** Submersible pumps contain oils which becomes pressurized and hot under operating conditions. **Allow 2-1/2 hours after disconnecting before attempting service.**

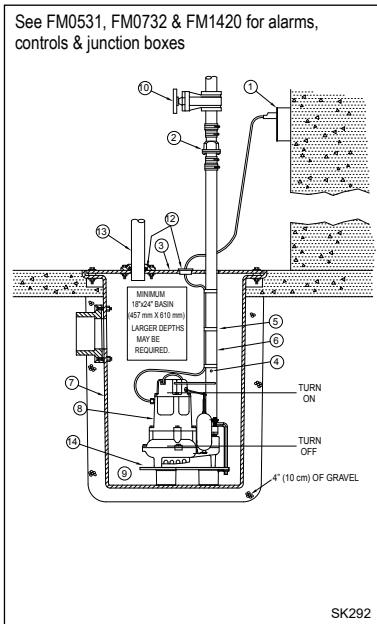
CONDITION	COMMON CAUSES
<b>A. Pump will not start or run.</b>	Check fuse, low voltage, overload open, open or incorrect wiring, open switch, impeller or seal bound mechanically, defective capacitor or relay when used, motor or wiring shorted. Float assembly held down. Switch defective, damaged, or out of adjustment.
<b>B. Motor overheats and trips overload or blows fuse.</b>	Incorrect voltage, negative head (discharge open lower than normal) impeller or seal bound mechanically, defective capacitor or relay, motor shorted.
<b>C. Pump starts and stops too often.</b>	Float tight on rod, check valve stuck or none installed in long distance line, overload open, level switch(s) defective, sump pit too small.
<b>D. Pump will not shut off.</b>	Debris under float assembly, float or float rod bound by pit sides or other, switch defective, damaged or out of adjustment.
<b>E. Pump operates but delivers little or no water.</b>	Check strainer housing, discharge pipe, or if check valve is used vent hole must be clear. Discharge head exceeds pump capacity. Low or incorrect voltage. Incorrect motor rotation. Capacitor defective. Incoming water containing air or causing air to enter pumping chamber.
<b>F. Drop in head and/or capacity after a period of use.</b>	Increased pipe friction, clogged line or check valve. Abrasive material and adverse chemicals could possibly deteriorate impeller and pump housing. Check line. Remove base and inspect.

If the above checklist does not uncover the problem, consult the factory. Do not attempt to service or otherwise disassemble pump. Service must be performed by Zoeller Authorized Service and Warranty Centers. Go to [www.zoellerpumps.com](http://www.zoellerpumps.com) to find the Authorized Service Center in your area.

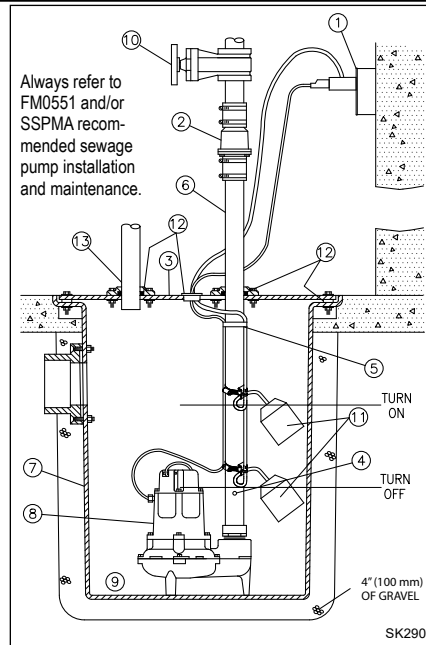


# RECOMMENDED INSTALLATION FOR ALL APPLICATIONS

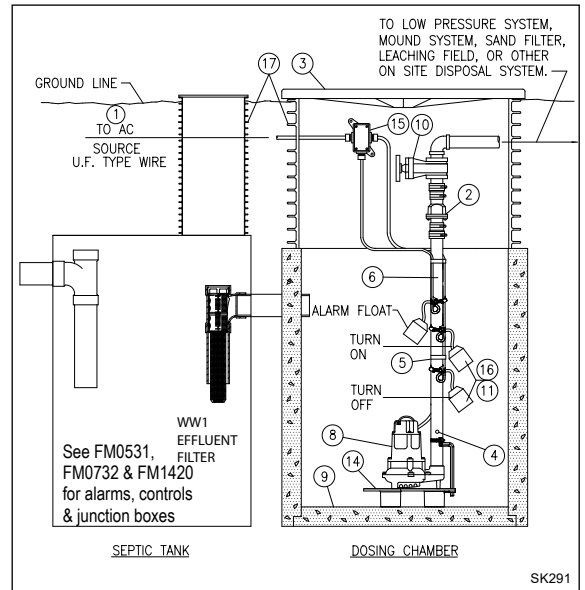
- (1) Electrical wiring and protection must be in accordance with National Electrical Code and any other applicable state and local electrical requirements.
  - (2) Install proper Zoeller unichek (combination union and check valve), preferably just above the basin to allow easy removal of the pump for cleaning or repair. On sewage, effluent or dewatering, if high head or below cover installation is required use 30-0164 on 1-1/2" pipe, 30-0152 on 2" pipe and 30-0160 on 3" pipe. See (4) below.
  - (3) All installations require a basin cover to prevent debris from falling into the basin and to prevent accidental injury.
  - (4) When a Unichek is installed, drill a 3/16" (5 mm) dia. hole in the discharge pipe even with the top of the pump. **NOTE: THE HOLE MUST ALSO BE BELOW THE BASIN COVER AND CLEANED PERIODICALLY.** (High Head unit see #3 under "Caution" on front page). Water stream will be visible from this hole during pump run periods.
  - (5) Securely tape or clamp power cord to discharge pipe, clear of the float mechanism(s).
  - (6) Use full-size discharge pipe.
  - (7) Basin must be in accordance with applicable codes and specifications.
  - (8) Pump must be level and float mechanism(s) clear of sides of basin before starting pump.
  - (9) Basin must be clean and free of debris after installation.
  - (10) Gate Valve or Ball Valve to be supplied by installer and installed according to any and all codes.
  - (11) Locate float switches as shown in sketches. The best place for the "off" point is above the motor housing and positioned 180° from the inlet. Never put "off" point below discharge on pump (Sewage & Effluent only). **NOTE: FOR AUTOMATIC PUMPS, USE DEWATERING INSTALLATION SKETCH.**
  - (12) Gas tight seals required to contain gases and odors.
  - (13) Vent gases and odors to the atmosphere through vent pipe. Must comply with local codes but not required for dewatering.
  - (14) Install Zoeller Pump Stand (10-2421) under pump to provide a settling basin. (Effluent & Dewatering only.)
- For Effluent Only:**
- (15) Wire pump to power through a Zoeller watertight junction box or watertight splice. **NOTE: Watertight enclosure is a must in damp areas. See No. 8 on front page of FM0732.**
  - (16) Refer to SSPMA Effluent Sizing Manual for determining "on" - "off" switches.
  - (17) Septic tank risers must be used for easy pump and filter access.
- NOTE:** Double seal pumps offer extra protection from damage caused by seal failure.



TYPICAL DEWATERING INSTALLATION



TYPICAL SEWAGE INSTALLATION

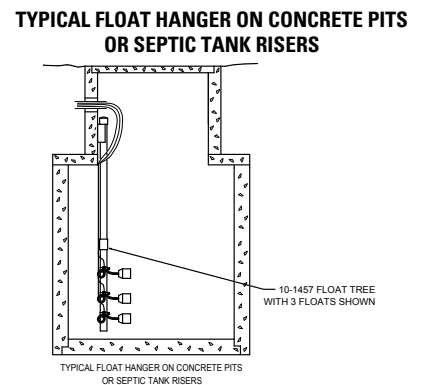
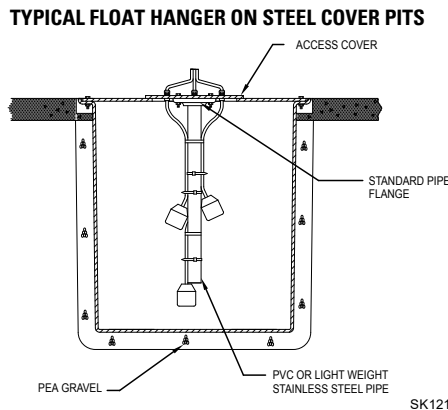


TYPICAL EFFLUENT INSTALLATION

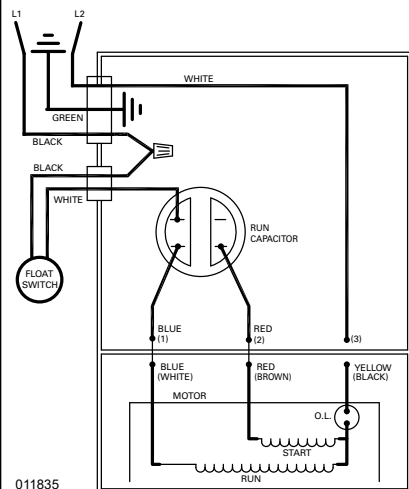
All installations must comply with all applicable electrical and plumbing codes, including, but not limited to, National Electrical Code, local, regional, and/or state plumbing codes, etc. Not intended for use in hazardous locations.

# SUGGESTED METHODS OF FLOAT INSTALLATION

On some installations it may be desirable to install an independent hanger for the level control switches to avoid possible hang ups on the pumps, piping, valves, etc. Float hangers are available from Zoeller Company on Catalog Sheet FM0526 or can be fabricated from standard pipe and fittings.



# WD & WH MODEL INSTALLATION



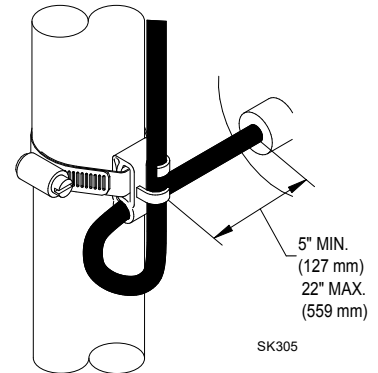
011835  
**WIRING DIAGRAM FOR MODELS**  
 WD - 230 V, 1 Ph, 60 Hz.  
 WH - 200/208 V, 1 Ph, 60 Hz.

**Determining Pumping Range in Inches (1 inch - 2.5 cm)**

Tether Length	5	10	15	20	22
	min.				max.
Pumping Range	9	13.5	18	22	24

Use only as a guide. Due to weight of cable, pumping range above horizontal is not equal to pumping range below horizontal. Ranges are based on testing in nonturbulent conditions. Range may vary due to water temperature and cord shape. As tether length increases, so does the variance of the pumping range.

Models WD & WH are fully automatic. A float switch is included and factory wired in the pump circuit to provide automatic operation once the float switch is secured properly to the outlet pipe. Use the diagram above to secure the float switch properly and obtain the proper tether to customize the on-off cycle to each application.



20 AMP SWITCH (WD & WH MODELS)  
 Note: Failure to keep within proper tether limits may prevent reliable switch operation.  
 Note: Cable must be mounted in horizontal position.

## SINGLE PHASE WIRING INSTRUCTIONS



**⚠ WARNING** FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING. Single phase pumps are supplied with a 3-prong grounded plug to help protect you against the possibility of electrical shock. **DO NOT UNDER ANY CIRCUMSTANCES REMOVE THE GROUND PIN.** The 3-prong plug must be inserted into a mating 3-prong grounded receptacle. If the installation does not have such a receptacle, it must be changed to the proper type, wired and grounded in accordance with the National Electrical Code and all applicable local codes and ordinances.



**⚠ WARNING** Risk of electrical shock. Do not remove power supply cord and strain relief or connect conduit directly to the pump.  
**⚠ WARNING** Installation and checking of electrical circuits and hardware should be performed by a qualified licensed electrician.  
**⚠ WARNING** Units supplied without a plug (single and three phase) and single phase nonautomatic units with a 20 amp plug must have a motor control and liquid level control provided at time of installation. The control device should have suitable voltage, ampere, frequency, grounding and horsepower rating for the pump to which it is connected.

## THREE PHASE WIRING INSTRUCTIONS



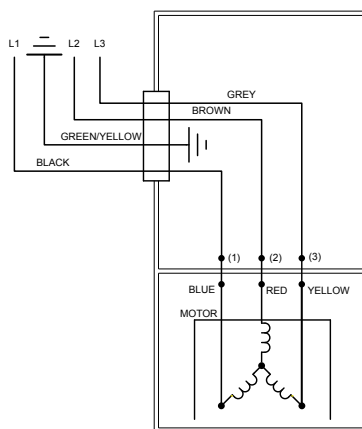
**⚠ WARNING** FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.

To automatically operate a nonautomatic three phase pump, a control panel is required. Follow the instructions provided with the panel to wire the system. For automatic three phase pumps see automatic 3 phase wiring diagram located to the far right.

Before installing a pump, check the pump rotation to ensure that wiring has been connected properly to power source, and that the green lead of power cord (See wiring diagram), is connected to a valid ground. Momentarily energize the pump, observing the directions of kick back due to starting torque. Rotation is correct if kick back is in the opposite direction of rotation arrow on the pump casing. If rotation is not correct, switching of any two power leads other than ground, should provide the proper rotation.

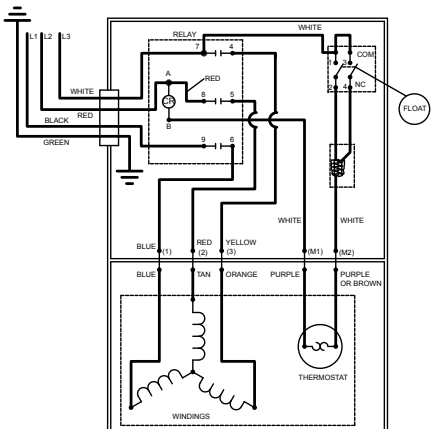
All three phase pumps require motor starting devices with motor overload protection. See FM0486 for duplex installations. Pumps must be installed in accordance with the National Electrical Code and all applicable local codes and ordinances. Pumps are not to be installed in locations classified as hazardous in accordance with National Electrical Code, ANSI/NFPA 70.

### NONAUTOMATIC 3 PHASE



006848

### AUTOMATIC 3 PHASE



013071

**IMPORTANT NOTICE:** Some insurance policies, both commercial and residential, extend coverage for damages incurred by product failure. You will need to have possession of the product to support your claim in most cases. Zoeller Pump Co. will exchange the unit or refund the original purchase price once the claim is settled with the insurer in the case where you need to retain possession of the product to support a damage claim you submit to your insurance company.

These are the original installation instructions.

La información presentada adentro refleja condiciones al tiempo de publicación. Consultar la fábrica sobre discrepancias o contradicciones.



Registre en línea su producto de Zoeller Pump Company: <http://reg.zoellerpumps.com/>



DIRECCIÓN POSTAL: P.O. BOX 16347 • Louisville, KY 40256-0347 EEUU  
 DIRECCIÓN PARA ENVÍOS: 3649 Cane Run Road • Louisville, KY 40211-1961 EEUU  
 TEL: +1 (502) 778-2731 • FAX: +1 (502) 774-3624

Visite a nuestro sitio web: [zoellerpumps.com](http://zoellerpumps.com)

## INSTRUCCIONES DE INSTALACIÓN

### MODELOS RECOMENDADOS

FECHA DE INSTALACIÓN:

NÚMERO DE MODELO:

EFLUENTES*/SUMIDERO/ACHIQUE	AGUAS NEGRAS
Serie 53® / 57, Serie 98	Serie 264
Serie 137, Series 151 / 152 / 153	Serie 266 / 267

**AVISO: AGUJERO DE VENTILACIÓN PARA LA VÁLVULA DE RETENCIÓN, VEA EL NRO. 3 EN LA SECCIÓN DE PRECAUCIONES A CONTINUACIÓN Y EL NRO. 4 EN LA PÁGINA 7.**

\* Los sistemas de efluentes deben especificar que las bombas no deben manipular sólidos superiores a 19.1 mm (3/4 pulg.) con el fin de evitar que entren partículas sólidas grandes en los campos de drenaje, sistemas de montículo, etc. (El modelo serie 49 tiene una capacidad para sólidos de 9.5 mm (3/8 pulg.) Los modelos serie 50, 90 y 151 tienen una capacidad para sólidos de 12.7 mm (1/2 pulg.), el serie 130 de 15.9 mm (5/8 pulg.), los modelos 152 y 153 de 19.1 mm (3/4 pulg.). Cuando lo permita el código, se pueden utilizar bombas de aguas negras para sistemas de efluentes. Se recomiendan bombas no automáticas con controles a nivel externo para aplicaciones de efluentes de fosas sépticas.

## LISTA DE VERIFICACIÓN DE PRE-INSTALACIÓN - TODAS LAS INSTALACIONES

- Inspeccione su bomba. Ocasionalmente, los productos se dañan durante el envío. Si la unidad está dañada, comuníquese con su vendedor antes de usarla. NO quite los tapones de prueba de la cubierta ni del cárter del motor.
- Lea cuidadosamente toda la literatura provista para familiarizarse con los detalles específicos relacionados con la instalación y uso. Estos materiales deberán guardarse para referencia futura.

 <b>AVERTISSEMENT</b>	<b>VER ABAJO LA LISTA DE ADVERTENCIAS</b>	 <b>PRECAUCIÓN</b>	<b>VER ABAJO LA LISTA DE PRECAUCIONES</b>
<ol style="list-style-type: none"> <li>Asegúrese de que el tomacorriente esté al alcance del cable de alimentación eléctrica de la bomba. <b>NO USE UN CABLE DE EXTENSIÓN.</b> Los cables de extensión que son demasiado largos o livianos no suministran voltaje suficiente al motor de la bomba, presentan un peligro a la seguridad si el aislante se daña o el extremo de conexión cae dentro de un área mojado.</li> <li><b>Asegúrese de que el circuito de alimentación eléctrica de la bomba esté equipado con fusibles o interruptores de circuito de capacidad adecuada.</b> Se recomienda un circuito auxiliar, del tamaño de acuerdo al "Código Eléctrico Nacional" para la corriente que se muestra en la etiqueta de nombre de la bomba.</li> <li><b>Prueba de puesta a tierra.</b> Como medida de seguridad, cada tomacorriente debe verificarse para puesta a tierra usando un analizador de circuitos aprobado por el Underwriters Laboratory, el cual indicará si los alambres de energía, neutrales y de puesta a tierra están conectados correctamente a su tomacorriente. Si no lo están, llame a un técnico electricista calificado.</li> <li><b>Para mayor seguridad.</b> El equipo de bombeo y otro equipo eléctrico con enchufes de 3 patillas deben conectarse a un tomacorriente para 3 patillas con puesta a tierra. Para mayor seguridad, el tomacorriente puede estar protegido con un interruptor de circuito de falla a tierra. Cuando una bomba necesita ser conectada a una caja de conexión hermética, el enchufe puede ser retirado y empalmado al cable de alimentación eléctrica propiamente conectado a tierra. Para mayor seguridad, este circuito puede ser protegido mediante un interruptor de circuito de falla a tierra. La instalación completa deberá cumplir con el Código Eléctrico Nacional y todas las ordenanzas y códigos locales aplicables.</li> <li><b>PARA SU PROTECCIÓN, SIEMPRE DESCONECTE LA BOMBA DE LA FUENTE DE ALIMENTACIÓN ELÉCTRICA ANTES DE MANIPULARLA.</b> Las bombas monofásicas se suministran con enchufes de 3 patillas con puesta a tierra para ayudar a protegerle contra la posibilidad de choque eléctrico. <b>NO RETIRE BAJO NINGUNA CIRCUNSTANCIA LA CLAVIJA DE PUESTA A TIERRA.</b> Los enchufes de 3 patillas se deben introducir en un tomacorriente para 3 patillas apropiado. Si la instalación no posee un tomacorriente de este tipo, se debe cambiar por uno apropiado, cableado y con puesta a tierra de acuerdo al Código Eléctrico Nacional y a todas las ordenanzas y códigos locales aplicables. Las bombas trifásicas requieren dispositivos de arranque del motor con protección contra sobrecarga. Vea FM0486 para instalaciones duplex.</li> <li>El tanque se debe ventilar conforme a los códigos de plomería locales. Las bombas se deben instalar conforme al Código Eléctrico Nacional y a todos los códigos y ordenanzas locales que correspondan. Las bombas no se deben instalar en sitios peligrosos conforme a la clasificación del Código Eléctrico Nacional, ANSI/NFPA 70.</li> <li><b>Riesgo de choque eléctrico.</b> No quite el cable de alimentación eléctrica ni el dispositivo de alivio de tensión y no conecte un conductor directamente a la bomba.</li> <li>La instalación y verificación de los circuitos eléctricos y del equipo deberán llevarse a cabo por un técnico electricista calificado.</li> <li>La instalación y verificación de la bomba deberá llevarse a cabo por una persona calificada.</li> <li><b>Riesgo de choque eléctrico.</b> No se ha investigado el uso de estas bombas en áreas marinas y en piscinas.</li> <li>Advertencia para residentes de California sobre la Prop65: Advertencia: Cáncer y daños reproductivos- <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>.</li> </ol>	<ol style="list-style-type: none"> <li>Asegúrese de que la fuente de energía eléctrica sea capaz de manejar los requisitos de voltaje del motor, según se indica en la etiqueta de nombre de la bomba.</li> <li>La instalación de bombas automáticas con interruptores de flotador de nivel variable o las bombas no automáticas que usan interruptores de flotador de nivel variable auxiliares es responsabilidad del instalador y deberá verificarse que el interruptor de flotador atado no se enganchará en el aparato de la bomba ni en las peculiaridades del foso y que está fijado de manera que permita la parada de la bomba. Se recomienda usar tubería y empalmes rígidos y que el foso tenga 45 cm (18 pulg.) o más de diámetro.</li> <li><b>Información - Objetivo del agujero de ventilación.</b> Es necesario que todas las bombas sumergibles de sumidero, efluentes y de aguas cloacales capaces de manejar residuos sólidos de varios tamaños tengan la entrada en la parte inferior para reducir el atascamiento y las fallas del sello. Si se incorpora a la instalación una válvula de retención, deberá perforarse un agujero de ventilación [de aprox. 5 mm (3/16 pulg.)] en la tubería de descarga debajo de la válvula de retención y de la tapa del foso a fin de purgar la unidad del aire atrapado. La causa de aire atrapado puede ser agitación y/o un estanque seco. Deberá revisarse periódicamente el agujero de ventilación para verificar que no esté atascado. Las bombas de las series 53®, 57 ó 98 poseen una ventilación ubicada en la caja de la bomba del lado opuesto al flotador, junto a una aleta de la caja. Sin embargo, se recomienda un agujero de ventilación adicional. Un agujero de ventilación en una aplicación de carga elevada podría causar demasiada turbulencia. Es posible que usted prefiera no perforar uno. Si decide no perforar un agujero de ventilación, asegúrese de que la caja de la bomba y el impulsor estén cubiertos de líquido antes de conectar la tubería a la válvula de retención y que no haya ningún tipo de entrada de aire en la vía de entrada de la bomba. <b>NOTA: EL AGUJERO TAMBIÉN DEBERÁ ESTAR POR DEBAJO DE LA TAPA DEL SUMIDERO Y SE DEBERÁ LIMPIARLO PERIÓDICAMENTE.</b> Se verá un chorro de agua saliendo del agujero durante los períodos de bombeo.</li> <li>Se debe revisar la bomba frecuentemente para asegurarse de que no hay escombros y/o acumulación que pueda interferir con la posición "on" (encendido) o "off" (apagado) del flotador. La reparación y servicio deberá hacerse solamente por personal de una Estación de servicio autorizada por Zoeller Pump Company.</li> <li>Las bombas de achique y de efluentes no se diseñan para uso en fosos con aguas negras crudas.</li> <li>La temperatura de funcionamiento máxima para bombas de modelo estándar no debe superar 54 °C (130 °F).</li> <li>Las bombas modelos 266, 267, y 137 se deben operar en posición vertical. No intente encender la bomba cuando esté inclinada o apoyada sobre uno de sus lados.</li> <li>No opere la bomba en una aplicación donde la carga dinámica total sea menor que la carga dinámica total mínima que se indica en la Curva de rendimiento de la bomba.</li> </ol> <p>AVISO: Las bombas con la marca "UL" y "US" han sido probadas de acuerdo al estándar UL778. Las bombas "aprobadas por CSA" están certificadas de acuerdo al estándar CSA C22.2 No. 108.</p>		

REFIÉRASE A LA GARANTÍA EN LA PÁGINA 6.

## GARANTÍA LIMITADA

El Fabricante garantiza, al comprador y el propietario subsiguiente durante el período de garantía, que cada producto nuevo está libre de defectos en materiales y mano de obra bajo condiciones de uso y servicio normales, cuando se usa y mantiene correctamente, durante un período de tres años a partir de la fecha de compra. Se requiere evidencia de compra. Las partes que fallen durante el período de garantía, un año a partir de la fecha de compra por parte del usuario final, lo que ocurra primero, cuyas inspecciones determinen que presentan defectos en materiales o mano de obra, serán reparadas, reemplazadas o remanufacturadas a opción del Fabricante, con la condición sin embargo de que por hacerlo no estemos en la obligación de reemplazar un ensamblaje completo, el mecanismo entero o la unidad completa. No se dará concesión alguna por costos de envío, daños, mano de obra u otros cargos que pudieran surgir por falla, reparación o reemplazo del producto.

Esta garantía no aplica a y no se ofrecerá garantía alguna por ningún material o producto que haya sido desarmado sin aprobación previa del Fabricante, o que haya sido sometido a uso indebido, aplicación indebida, negligencia, alteración, accidente o acto fortuito; que no haya sido instalado, usado o mantenido según las instrucciones de instalación del Fabricante; que haya sido expuesto a sustancias foráneas que incluyen pero no se limitan a lo siguiente: arena, grava, cemento, lodo, alquitrán, hidrocarburos, derivados de hidrocarburos (aceite, gasolina, solventes, etc.), u otras sustancias abrasivas o corrosivas, toallas para lavar o productos sanitarios

femeninos, etc. en todas las aplicaciones de bombeo. La garantía presentada en el párrafo anterior deja sin efecto cualquier otra garantía expresa o implícita; y no autorizamos a ningún representante u otra persona para que asuma por nosotros ninguna otra responsabilidad con respecto a nuestros productos.

Comuníquese con el Fabricante en 3649 Cane Run Road, Louisville, KY 40211 EE.UU., Attention: Customer Service Department, para obtener cualquier reparación necesaria o reemplazo de partes o información adicional sobre nuestra garantía.

**EL FABRICANTE EXPRESAMENTE RECHAZA RESPONSABILIDAD POR DAÑOS ESPECIALES, EMERGENTES O INCIDENTALES O POR INCUMPLIMIENTO DE LA GARANTÍA EXPRESA O IMPLÍCITA; Y CUALQUIER GARANTÍA IMPLÍCITA DE IDONEIDAD PARA UN FIN PARTICULAR Y DE COMERCIALIZACIÓN SE LIMITARÁ A LA DURACIÓN DE LA GARANTÍA EXPRESA.**

Algunos estados no permiten limitaciones en la duración de una garantía implícita, de forma que la limitación anterior podría no aplicar a usted. Algunos estados no permiten la exclusión o limitación de daños incidentales o emergentes, de forma que la limitación o exclusión anterior podría no aplicar a usted.

Esta garantía le otorga a usted derechos legales específicos y podría tener otros derechos que varían de un estado a otro.

En aquellas instancias en que haya daños causados por una presunta falla de la bomba, el propietario deberá conservar la bomba a fin de investigar dicha falla.

## LO QUE DEBE Y NO DEBE HACER PARA INSTALAR UNA BOMBA DE SUMIDERO

1. **LEA** completamente todo el material sobre la instalación provisto con la bomba.
2. **INSPECCIONE** la bomba para ver si hay cualquier daño visible causado durante el envío. Comuníquese con el vendedor si la bomba está dañada.
3. **RETIRE** todos los escombros del sumidero. Asegúrese de que la bomba se apoyará sobre una superficie dura, plana y estable. **NO LA INSTALE** sobre arena, grava o tierra.
4. **ASEGÚRESE** de que el sumidero sea suficientemente grande para permitir el funcionamiento correcto de los interruptores de control de nivel.
5. **SIEMPRE desconecte la bomba de la fuente de alimentación eléctrica antes de manipularla.**  
**SIEMPRE** conecte la bomba a un circuito protegido separadamente y con puesta a tierra adecuado.  
**JAMÁS** corte, empalme o dañe el cable de alimentación eléctrica. (Empalme únicamente cuando hay una caja de conexión hermética.)  
**JAMÁS** transporte o levante la bomba por su cable de alimentación eléctrica.  
**JAMÁS** use un cable de extensión con una bomba de sumidero.
6. **INSTALE** una válvula de retención y una unión en la tubería de descarga.  
**JAMÁS** use una tubería de descarga de menor tamaño que la descarga de la bomba.

7. **JAMÁS** use una bomba de sumidero como una bomba excavadora o para zanjas, ni para bombear aguas cloacales, gasolina u otros líquidos peligrosos.
8. **PRUEBE** la bomba inmediatamente después de su instalación para asegurarse de que el sistema funciona correctamente.
9. **CUBRA** el foso con una tapa adecuada para sumidero.
10. **EXAMINE** todos los códigos nacionales y locales aplicables y verifique que la instalación esté de acuerdo a cada uno de ellos.
11. **CONSULTE** con el fabricante si necesita aclaraciones o tiene preguntas.
12. **CONSIDERE** un sistema de dos bombas con alarma en donde la instalación puede sobrecargarse o la falla de una bomba primaria causaría daños a la propiedad.
13. **CONSIDERE** un sistema de apoyo de CD en donde una bomba de achique o sumidero es necesaria para prevenir daños a la propiedad debido a inundación causada por interrupciones en el suministro de energía eléctrica, problemas mecánicos o eléctricos, o sobrecarga del sistema.
14. **INSPECCIONE** y pruebe el funcionamiento del sistema por lo menos cada 3 meses.

## LISTA DE VERIFICACIÓN DE SERVICIO



**▲ ADVERTENCIA PRECAUCIONES ELÉCTRICAS** - Antes de proporcionar algún servicio a la bomba, desactive siempre el interruptor principal de suministro de energía eléctrica y desenchufe la bomba. Asegúrese de usar zapatos protectores con suelas aislantes y de no estar parado en el agua. Bajo condiciones de inundación, llame a su compañía eléctrica local o a un técnico electricista calificado para desconectar el servicio eléctrico antes de quitar la bomba.



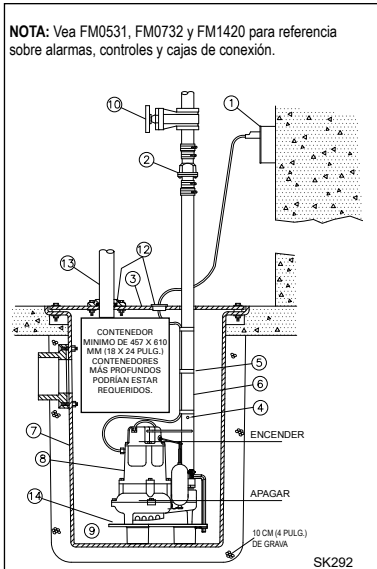
**▲ ADVERTENCIA** Las bombas sumergibles contienen aceites que se presurizan y calientan bajo condiciones operativas. **Deje que pasen 2-1/2 horas después de apagarla antes de proceder con el servicio.**

CONDICIÓN	CAUSAS COMUNES
<b>A. La bomba no arranca o no funciona.</b>	Verifique el fusible, voltaje bajo, protección contra sobrecarga abierta, cableado abierto o incorrecto, interruptor abierto, impulsor o sello trabado mecánicamente, capacitor o relé defectuoso, motor o cableado eléctrico en corto circuito. Conjunto del flotador enganchado. Interruptor defectuoso, dañado o fuera de punto.
<b>B. El motor se sobrecalienta y activa la protección contra sobrecarga o desconecta el fusible.</b>	Voltaje incorrecto, carga negativa (descarga abierta menos de lo normal), impulsor o sello trabado mecánicamente, capacitor o relé defectuoso, motor en corto circuito.
<b>C. La bomba se enciende y se apaga muy a menudo.</b>	El flotador está apretado en la varilla, la válvula de retención está atascada o no hay una instalada en una línea de larga distancia, protección contra sobrecarga abierta, interruptores defectuosos, foso del sumidero demasiado pequeño.
<b>D. La bomba no se apaga.</b>	Hay escombros debajo del conjunto del flotador, el flotador o la varilla del flotador están trabados por los lados del foso u otros, interruptor defectuoso, dañado o fuera de punto.
<b>E. La bomba funciona pero sin o con poca agua.</b>	Verifique la caja del filtro y la tubería de descarga, o si se usa una válvula de retención, el agujero de ventilación debe estar abierto. La carga de descarga excede la capacidad de la bomba. Voltaje bajo o incorrecto. Rotación incorrecta del motor. Capacitor defectuoso. El agua de entrada contiene aire o hace que el aire entre en la bomba.
<b>F. Caída en la carga y/o capacidad después de un período de uso.</b>	Aumento de fricción en la tubería, línea o válvula de retención atascada. Material abrasivo o productos químicos adversos podrían haber deteriorado el impulsor o el cárter de la bomba. Revise la línea. Quite la base e inspeccione.

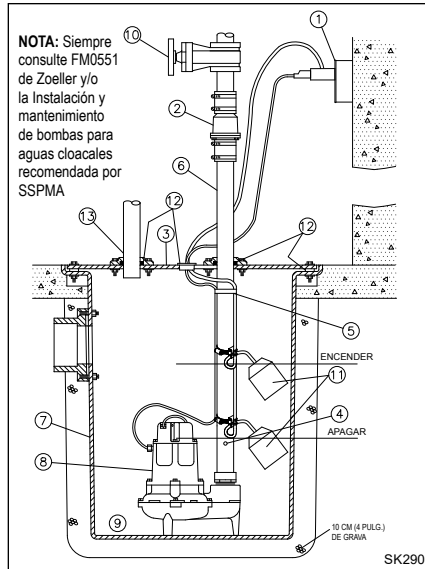
Si la lista de verificación arriba mencionada no revela el problema, consulte con la fábrica. No intente proporcionar algún servicio o desarmar la bomba. Las Estaciones de servicio autorizadas por Zoeller deberán proporcionar dicho servicio. Visite a [www.zoellerpumps.com](http://www.zoellerpumps.com) para encontrar la estación de servicio autorizada para su zona.

# INSTALACIÓN RECOMENDADA PARA TODAS LAS APLICACIONES

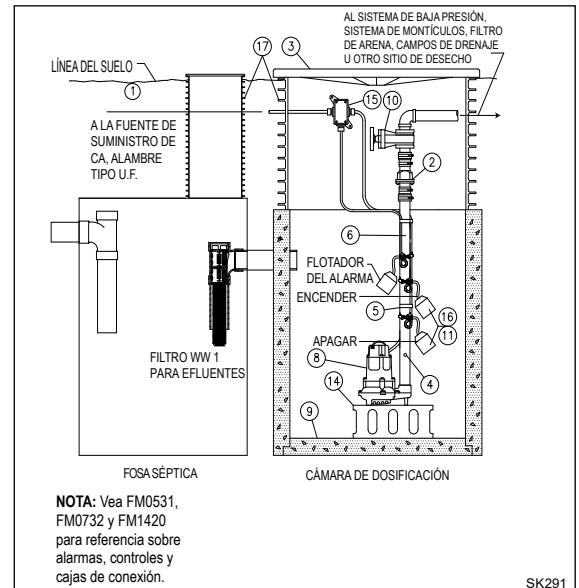
- El cableado y la protección eléctrica deben estar de acuerdo con el Código Eléctrico Nacional y todos los otros requisitos eléctricos locales y estatales aplicables.
- Instale el "Unicheck" (combinación de unión y válvula de retención) apropiado de Zoeller, luego arriba del estanque para que se pueda quitar fácilmente la bomba para su limpieza o reparación. Si los sistemas para aguas cloacales, efluentes o achique requieren instalación de carga elevada o por debajo de la tapa, use 30-0164 en tubería de 38 mm (1-1/2 pulg.), 30-0152 en tubería de 51 mm (2 pulg.) y 30-0160 en tubería de 76 mm (3 pulg.). Vea el número 4 más abajo.
- Todas las instalaciones requieren una tapa para prevenir que escombros caigan dentro del estanque y prevenir lesiones accidentales.
- Cuando instale un "Unicheck", perforo un agujero de 5 mm (3/16 pulg.) de diámetro en la tubería de descarga al mismo nivel de la parte superior de la bomba. **NOTA: EL AGUJERO TAMBIÉN DEBERÁ ESTAR POR DEBAJO DE LA TAPA DEL ESTANQUE Y SE DEBE LIMPIARLO PERIÓDICAMENTE.** (Para unidades de carga elevada, ver el número 3 de la lista de "Precauciones" en la página 1.) Se verá un chorro de agua saliendo del agujero durante los períodos de bombeo.
- Fije firmemente el cable de alimentación eléctrica al tubo de descarga con cinta o abrazadera.
- Use tubería de descarga de tamaño completo.
- El contenedor para agua debe estar de acuerdo con los códigos y las especificaciones aplicables.
- La bomba debe estar nivelada y el mecanismo del flotador libre de los lados del estanque antes de encender la bomba.
- El estanque debe estar limpio y libre de escombros después de la instalación.
- El instalador deberá suministrar una válvula de paso directo o una válvula de bola y instalarla de acuerdo con cualesquiera y todos los códigos.
- La ubicación de los interruptores de flotador es como se muestra en el esquema a la izquierda. El punto "off" (apagado) debe estar por encima del cárter del motor y a 180° de la entrada. **NOTA: PARA BOMBAS AUTOMÁTICAS, UTILICE EL ESQUEMA PARA LA INSTALACION PARA ACHIQUE MÁS ABAJO. (SOLO PARA EFLUENTE Y ACHIQUE)**
- Los sellos herméticos contra gases son necesarios a fin de contener los gases y olores.
- Ventile los gases y olores a la atmósfera a través del tubo de ventilación. Debe cumplir con los códigos locales, pero no es obligatorio para el achique.
- Instale el soporte para bomba Zoeller (Modelo 10-2421) debajo de la bomba para proporcionar un sumidero de decantación (sólo para efluente y achique). **Para efluente solamente:**
- La conexión del cableado de la bomba a la fuente de alimentación eléctrica debe hacerse a través de una caja de conexión hermética Zoeller o un empalme hermético. **NOTA: La caja hermética es obligatoria en áreas húmedas. Vea FM0732. Vea el número 8 en la página 1.**
- Consulte el Manual sobre tamaños de efluentes del SSPMA para determinar la posición de los interruptores "on-off" (encendido-apagado).
- Se debe usar tubos verticales en el tanque séptico para tener fácil acceso a la bomba y al filtro. **NOTA: Las bombas de sello doble ofrecen protección adicional contra los daños causados por falla del sello.**



INSTALACIÓN TÍPICA PARA ACHIQUE



INSTALACIÓN TÍPICA PARA AGUAS NEGRAS



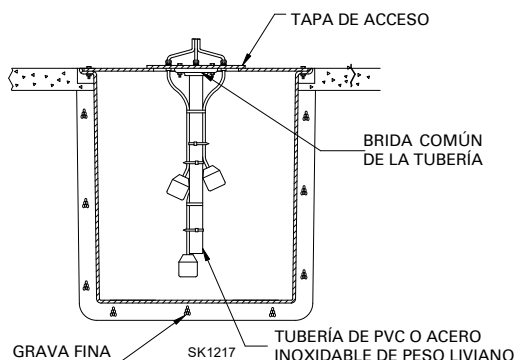
INSTALACIÓN TÍPICA PARA EFLUENTES

Todas las instalaciones deben cumplir con todos los códigos eléctricos y de instalación sanitaria aplicables, incluyendo, pero sin limitarse al Código Eléctrico Nacional, los códigos locales, regionales y/o los códigos estatales de instalación sanitaria, etc. No se debe usar las instalaciones en lugares peligrosos.

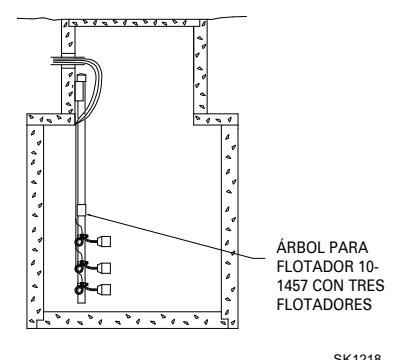
## MÉTODOS SUGERIDOS PARA LA INSTALACIÓN DEL FLOTADOR

En algunas instalaciones es deseable instalar un soporte colgante independiente para los interruptores de control de nivel para evitar posibles enganches en las bombas, tubería, válvulas, etc. Los soportes colgantes del flotador se pueden comprar de Zoeller Company según la Hoja de catálogo FM0526, o fabricarse de tubería y empalmes comunes.

SOPORTE COLGANTE PARA FLOTADOR TÍPICO EN FOSOS CON TAPA DE ACERO



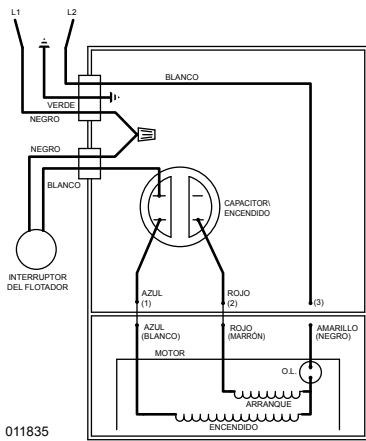
SOPORTE COLGANTE PARA FLOTADOR TÍPICO EN FOSOS DE CONCRETO O TUBOS VERTICALES PARA TANQUES SÉPTICOS



SK1218



# INSTRUCCIONES PARA LA INSTALACIÓN DE LOS MODELOS WD Y WH



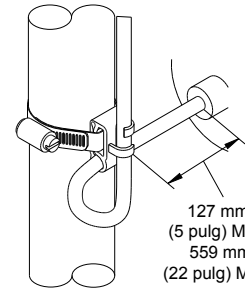
011835  
**DIAGRAMA DE CABLEADO PARA LOS MODELOS:**  
 WD-230 V, 1 FASE, 60 CICLOS  
 WH-200/208 V, 1 FASE, 60 CICLOS

## Determinación del rango de bombeo en pulgadas (1 pulg. = 2.5 cm)

Longitud de la atadura	5	10	15	20	22
	mín.				máx.
Rango de bombeo	9	13.5	18	22	24

Usar solamente como guía. Debido al peso del cable, el rango de bombeo sobre la horizontal no es igual al rango de bombeo debajo de la horizontal. Los rangos se basan en pruebas en condiciones no turbulentas. El rango puede variar debido a la temperatura del agua y a la forma del cable. A medida que aumenta la longitud de la atadura, también aumenta la variación en el rango de bombeo.

Los modelos WD y WH son completamente automáticos. Se incluye un interruptor de flotador con cableado de fábrica en el circuito de la bomba para proveer una operación automática una vez que el interruptor de flotador se haya atado correctamente a la tubería de salida. Use el diagrama de arriba para asegurar correctamente el interruptor de flotador y obtener la atadura apropiada para adecuar el ciclo de encendido-apagado a cada aplicación.



SK305

INTERRUPTOR DE 20 AMPERIOS  
(MODELOS WD Y WH)

Nota: No tener en cuenta los límites adecuados de la atadura podría alterar el funcionamiento seguro del interruptor. Nota: El cable debe ser instalado en posición horizontal.

# INSTRUCCIONES PARA EL CABLEADO MONOFÁSICO



**ADVERTENCIA**

**PARA SU PROTECCIÓN, SIEMPRE DESCONECTE LA BOMBA DE LA FUENTE DE ALIMENTACIÓN ELÉCTRICA ANTES DE MANIPULARLA.**

Las bombas monofásicas se suministran con enchufes de 3 patillas con puesta a tierra para ayudar a protegerle contra la posibilidad de choque eléctrico. **NO RETIRE BAJO NINGUNA CIRCUNSTANCIA LA CLAVIJA DE PUESTA A TIERRA.** Los enchufes de 3 patillas se deben introducir en un tomacorriente para 3 patillas apropiado. Si la instalación no posee un tomacorriente de este tipo, se debe cambiar por uno apropiado, cableado y con puesta a tierra de acuerdo al Código Eléctrico Nacional y a todas las ordenanzas y códigos locales aplicables.



**ADVERTENCIA**

**"Riesgo de choque eléctrico".** No quite el cable de alimentación eléctrica ni el dispositivo de alivio de tensión y no conecte un conductor directamente a la bomba.

**ADVERTENCIA**

La instalación y verificación de los circuitos eléctricos y del equipo deberán llevarse a cabo por un técnico electricista calificado.

**ADVERTENCIA**

A las unidades que se suministran sin enchufe (monofásico y trifásico) y a las unidades monofásicas no automáticas que poseen un enchufe de 20 amperios se les debe conectar un control de motor y un control de nivel de líquidos durante la instalación. Los niveles de voltaje, amperaje, frecuencia, puesta a tierra y potencia del dispositivo de control deben ser apropiados para la bomba a la cual se conecta.

# INSTRUCCIONES PARA EL CABLEADO TRIFÁSICO

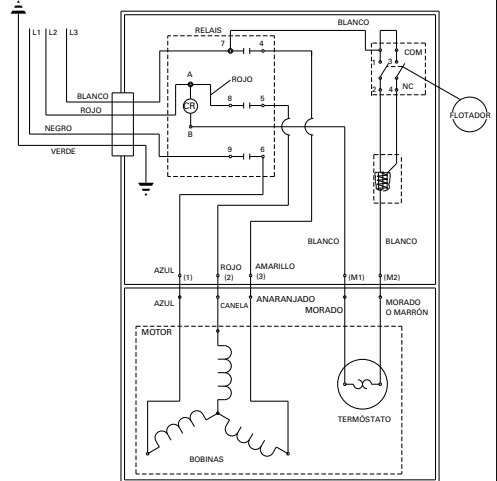
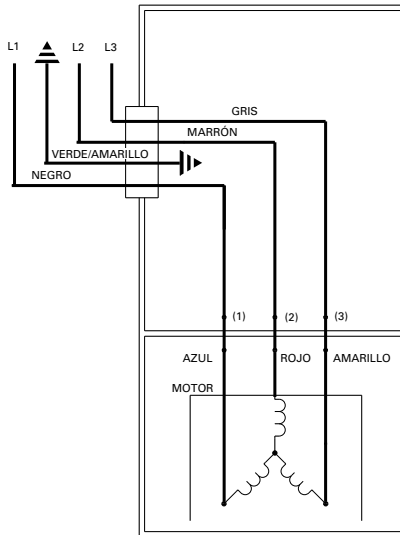


**ADVERTENCIA**

**PARA SU PROTECCIÓN, SIEMPRE DESCONECTE LA BOMBA DE LA FUENTE DE ALIMENTACIÓN ELÉCTRICA ANTES DE MANIPULARLA.**

Las bombas trifásicas no son automáticas. Para operarlas automáticamente se requiere un panel de control. Siga las instrucciones provistas con el panel para completar el cableado del sistema. Para bombas trifásicas automáticas, ver el diagrama de cableado para bombas trifásicas automáticas a la derecha.

Antes de instalar una bomba, verifique la rotación de la misma para asegurarse de que los cables se hayan conectado correctamente a la fuente de alimentación eléctrica y que el conductor verde del cable de alimentación eléctrica (vea el diagrama de cableado) está conectado con puesta a tierra adecuada. Active momentáneamente la bomba, observando la dirección del retroceso debido a la torsión de arranque. La rotación es correcta si el retroceso está en dirección opuesta a la flecha de rotación en la caja de la bomba. Si la rotación no es correcta, cambiar dos de cualquiera de los conductores eléctricos, excepto el con puesta a tierra, proveerá la rotación apropiada.



013071

Todas las bombas trifásicas requieren dispositivos de arranque del motor con protección contra sobrecarga. Vea FM0514 para instalaciones simplex o FM0486 para instalaciones duplex. Las bombas **se deben** instalar de acuerdo al Código Eléctrico Nacional y a todas las ordenanzas y códigos locales aplicables. Las bombas no se deben instalar en sitios clasificados como peligrosos según el Código Eléctrico Nacional ANSI/NFPA 70.

**AVISO IMPORTANTE:** Ciertas pólizas de seguro, tanto comerciales como residenciales, extienden la cobertura a los daños causados por la falla del producto. En la mayoría de los casos, usted deberá conservar el producto para respaldar su reclamo. Zoeller Pump Co. reemplazará la unidad o reembolsará el precio de compra original una vez que la compañía de seguros liquide el reclamo, en el caso de que usted necesite conservar el producto para respaldar un reclamo por daños que le haya presentado a su compañía de seguros.

Esta es una traducción de las instrucciones de instalación originales.

Les renseignements présentés dans ce document représentent les conditions au moment de la publication. Consulter l'usine en cas de désaccord et de manque de cohérence.



Enregistrez votre produit  
Zoeller Pump Company  
en ligne :

<http://reg.zoellerpumps.com/>



ADRESSE POSTALE : P.O. BOX 16437 • Louisville, KY 40256-0347 USA  
ADRESSE PHYSIQUE : 3649 Cane Run Road • Louisville, KY 40211-1961 USA  
TÉL : +1 (502) 778-2731 • FAX : +1 (502) 774-3624

Visitez notre site internet :  
[zoellerpumps.com](http://zoellerpumps.com)

## INSTRUCTIONS D'INSTALLATION

### MODÈLES RECOMMANDÉS

DATE D'INSTALLATION :

NUMÉRO DE MODÈLE :

EFFLUENTS* / PUISARD / ASSÈCHEMENT	ÉGOUT
Séries 53® / 57, Série 98	Série 264
Série 137, Séries 151 / 152 / 153	Séries 266 / 267

**AVIS : TROU D'ÉVENT POUR LE CLAPET DE SÉCURITÉ VOIR N° 3 CI-DESSOUS ET N° 4 PAGE 11.**

\* Les systèmes d'effluent doivent préciser que les pompes ne doivent pas traiter des solides dépassant 19,1 mm (3/4 po) afin d'éviter que des solides volumineux n'entrent dans les champs d'épuration, les champs d'épuration en monticule, etc. (Capacité pour les solides de 9,5 mm [3/8 po] pour le modèle 49. Les séries 50, 90 et 151 ont une capacité de 12,7 mm [1/2 po], la série 130 de 15,9 mm [5/8 po] et les modèles 152 et 153 de 19,1 mm [3/4 po].) Là où la législation le permet, les pompes à eaux usées peuvent remplacer les systèmes à effluent. Il est conseillé d'utiliser des pompes non automatiques possédant des contrôles de niveau externe pour les applications d'effluents de fosse septique.

### LISTE DE VÉRIFICATIONS AVANT L'INSTALLATION - TOUTES LES INSTALLATIONS

1. **Inspecter la pompe.** De temps en temps, la pompe est endommagée en cours d'expédition. Si la pompe est endommagée, contacter le distributeur avant de l'utiliser. NE PAS enlever les bouchons test du couvercle ni du compartiment moteur.
2. **Il faut lire attentivement tous les documents** fournis pour se familiariser avec les détails spécifiques de l'installation et de l'utilisation. Il faut conserver ces documents pour pouvoir les consulter ultérieurement.



**AVERTISSEMENT**

VOIR PLUS BAS POUR LA LISTE DES AVERTISSEMENTS



**MISE EN GARDE**

VOIR PLUS BAS POUR LA LISTE DES MISES EN GARDE

1. Il faut vérifier que la prise est à portée du cordon d'alimentation de la pompe. **NE PAS UTILISER DE RALLONGE.** Les rallonges trop longues ou de trop faible capacité ne fournissent pas la tension nécessaire au moteur de la pompe, elles peuvent être dangereuses si l'isolant est endommagé ou si l'extrémité avec le branchement tombe dans un endroit humide ou mouillé.
  2. **Vérifier que le circuit d'alimentation de la pompe est équipé de fusibles ou de disjoncteurs de capacité appropriée.** Il est recommandé d'installer un circuit indépendant de capacité suffisante, conforme aux codes électriques nationaux pour la capacité indiquée sur la plaque d'identification de la pompe.
  3. **Vérification de la mise à la terre.** Pour des raisons de sécurité, il faut vérifier la terre de chaque prise électrique en utilisant un analyseur de circuit sur la liste d'Underwriters Laboratory qui indique si les fils de phase, de neutre et de terre de la prise sont branchés correctement. S'ils ne sont pas branchés correctement, appeler un électricien agréé qualifié.
  4. **Pour des raisons de sécurité,** les pompes et autre équipement équipés d'un fil à trois broches, avec mise à la terre, doivent être branchés sur une prise à trois broches. Pour des raisons de sécurité, la prise doit être protégée par un disjoncteur différentiel. Quand la pompe est branchée dans un boîtier de branchement étanche, il est possible d'enlever la fiche et de faire le branchement directement sur l'alimentation avec mise à la terre appropriée. Pour des raisons de sécurité, ce circuit peut être protégé par un disjoncteur différentiel. L'installation doit être conforme au code national d'électricité et tous les règlements locaux.
  5. **POUR DES RAISONS DE SÉCURITÉ, IL FAUT TOUJOURS DÉBRANCHER L'ALIMENTATION DE LA POMPE AVANT DE LA MANIPULER.** Les pompes monophasées sont équipées d'un cordon avec fiche à trois broches de mise à terre pour protéger contre les électrocutions. **IL NE FAUT JAMAIS ENLEVER LA BROCHE DE MISE À TERRE.** Il faut brancher la fiche à trois broches dans une prise à trois broches de mise à terre. Si le circuit n'est pas équipé d'une telle prise, il faut en installer une en respectant le code national d'électricité et toute la législation et réglementation locales en vigueur. Les pompes triphasées doivent être équipées d'un dispositif de mise en marche avec protection thermique du moteur. Consulter la norme FM0486 pour les installations duplex.
  6. La ventilation du réservoir doit être conforme au code de plomberie local. Les pompes **doivent** être installées conformément au code national d'électricité et à toute la législation et réglementation locales en vigueur. Les pompes ne doivent pas être installées dans des endroits classifiés à risque, conformément à la norme ANSI/NFPA 70 du Code national américain de l'électricité.
  7. **Risque d'électrocution.** Ne pas enlever le cordon d'alimentation ni le distributeur de tension mécanique, ni brancher le conduit directement à la pompe.
  8. L'installation et la vérification de l'équipement électrique doivent être faites par un électricien qualifié.
  9. L'installation et la vérification de la pompe doivent être faites par une personne qualifiée.
  10. **Risque d'électrocution.** L'usage de ce type de pompe dans une piscine de natation et des zones marines n'a pas été étudié.
  11. Proposition 65- Avertissement aux résidents de Californie : Cancer et anomalies de la reproduction - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).
1. Vérifier que le circuit d'alimentation a une capacité suffisante pour alimenter le moteur, comme indiqué sur la pompe ou sur la plaque d'identification de l'appareil.
  2. L'installateur est responsable de l'installation des pompes automatiques avec des interrupteurs à niveau variable ou des pompes non-automatiques utilisant des interrupteurs auxiliaires à niveau variable et il doit s'assurer que l'interrupteur à flotteur est installé fermement pour qu'il n'accroche pas à la pompe ni au puits pour permettre l'arrêt de la pompe. Il est recommandé d'utiliser du tuyau et des raccords rigides et le puits doit avoir un diamètre supérieur à 45 cm (18 po).
  3. **Renseignements sur le trou d'évent.** Il est nécessaire que la pompe submersible, les pompes à effluents et d'égout capables de passer des solides de différentes tailles aient leur alimentation à la base pour réduire le colmatage et la défaillance des joints. Si l'installation comprend un clapet de sécurité, il faut percer un trou d'évent d'environ 5 mm (3/16") dans le tuyau de refoulement au-dessous du clapet de sécurité et le couvercle pour purger l'air de l'appareil. L'air emprisonné est causé par l'agitation et / ou un puits sec. Il faut vérifier périodiquement que le trou d'évent n'est pas colmaté. Les carters de pompe de la série 53® / 57 et 98 sont équipés d'un trou d'évent à l'opposé du flotteur, près du goujon du carter, du goujon du carter, mais un trou d'évent est recommandé. Le trou d'évent de l'application à une hauteur de refoulement dynamique élevée peut causer une turbulence trop élevée. Il peut être désirable de ne pas le percer. S'il est décidé de ne pas percer de trou d'évent, il faut s'assurer que le carter et le rotor de la pompe sont couverts de liquide avant de brancher le tuyau sur le clapet anti-retour et qu'aucune conduite d'aspiration n'amène de l'air à l'admission de la pompe. **REMARQUE - LE TROU DOIT AUSSI ÊTRE AU-DESSOUS DU COUVERCLE DU Puits ET IL FAUT LE NETTOYER RÉGULIÈREMENT.** Un jet d'eau sera visible de cette orifice durant les périodes de fonctionnement de la pompe.
  4. Il faut vérifier fréquemment qu'il n'y a pas de débris ni d'accumulation pouvant interférer avec le déplacement du flotteur de marche / arrêt. Les réparations ne doivent être faites que par un centre de réparation agréé par Zoeller Pump Company.
  5. Les pompes d'assèchement mécanique et d'effluents sont conçues pour pompage d'eau usée non traitée dans un puits.
  6. La température de fonctionnement maximale d'une pompe standard ne peut pas être plus de 54 °C (130 °F).
  7. Il faut utiliser les pompes modèles 266, 267, et 137 en position verticale. Il ne faut pas essayer de mettre la pompe en marche quand elle est inclinée ou couchée sur le côté.
  8. Il ne faut pas faire fonctionner la pompe dans une application où la hauteur de refoulement dynamique est inférieure à la hauteur de refoulement dynamique minimale donnée dans les courbes de refoulement et de capacité.
- REMARQUE** - Les pompes avec annotations "UL" et "US" sont vérifiées d'après la norme UL778. Les pompes certifiées CSA sont vérifiées d'après la norme C22.2 no 108.

SE RÉFÉRER À LA GARANTIE EN PAGE 10.

## GARANTIE LIMITÉE

Le fabricant garantit à l'acheteur et au propriétaire ultérieur pendant la période de garantie, tout produit neuf contre tout vice de matériel et de main-d'œuvre, en utilisation normale et quand utilisé et entretenu correctement, pendant une période de 3 ans de la date de achat. Preuve d'achat est requis. Les pièces devenant défectueuses pendant la période de garantie, et que des inspections prouvent contenir des vices de fabrication ou de main-d'œuvre, seront réparées, remplacées ou renouvelées au choix du Fabricant, à condition qu'en faisant cela nous ne soyons pas obligés de remplacer l'ensemble, le mécanisme complet ou l'appareil complet. Aucune provision n'est faite pour les frais d'expédition, les dégâts, la main-d'œuvre ni d'autres frais causés par la défaillance, la réparation ou le remplacement du produit.

Cette garantie ne s'applique pas et ne couvre aucun matériel ou produit qui a été démonté sans l'autorisation préalable du Fabricant, soumis à un usage abusif, des applications incorrectes, de la négligence, des modifications, des accidents ou un cas de force majeure ; qui n'a pas été installé, utilisé ou entretenu selon les instructions d'installation du Fabricant; qui a été exposé, y compris, mais non de façon limitative, à du sable, des gravillons, du ciment, de la boue, du goudron, des hydrocarbures ou des dérivés d'hydrocarbures (huile, essence, solvants, etc.) ou à d'autres produits abrasifs ou corrosifs, serviettes ou produits d'hygiène féminine etc., dans toutes les applications de pompage. La garantie mentionnée

ci-dessus remplace toutes les autres garanties expresses ou implicites et nous n'autorisons aucun représentant ou autre personne à accepter la responsabilité en notre nom pour nos produits.

Prendre contact avec le Fabricant, 3649 Cane Run Road, Louisville, KY 40211, à l'attention du Service à la Clientèle, pour obtenir des réparations, des pièces de remplacement ou des renseignements supplémentaires concernant la garantie.

**LE FABRICANT REFUSE EXPRESSÉMENT TOUTE RESPONSABILITÉ POUR LES DÉGÂTS SPÉCIAUX, INDIRECTS OU SECONDAIRES OU POUR LES RUPTURES DE GARANTIE EXPRESSES OU IMPLICITES; ET TOUTE GARANTIE IMPLICITE D'APPLICABILITÉ À UNE UTILISATION SPÉCIFIQUE OU DE COMMERCIALITÉ EST LIMITÉE À LA DURÉE DE LA GARANTIE EXPRESSE.**

Certaines provinces ne permettent pas les limitations de la durée de la garantie implicite et il est possible que cette limitation ne s'applique pas. Certaines provinces ne permettent pas l'exclusion ou la limitation des dégâts secondaires ou indirects, et il est possible que cette limitation ou exclusion ne s'applique pas.

Cette garantie vous donne des droits spécifiques reconnus par la loi et vous pouvez également avoir d'autres droits qui varient d'une province à l'autre.

Lorsque des dégâts sont causés par une défaillance présumée de la pompe, le propriétaire doit garder la pompe en sa possession en vue d'enquête.

## CONSEILS POUR L'INSTALLATION D'UNE POMPE DE PUISARD

1. **IL FAUT** lire toutes les instructions d'installation fournies avec la pompe.
2. **IL FAUT** vérifier que les appareils n'ont pas été endommagés en cours d'expédition. Contacter le distributeur si la pompe a été endommagée.
3. **IL FAUT** nettoyer tous les débris dans le puisard. Vérifier qu'il y a une surface dure et plate à l'emplacement désiré pour la pompe. NE PAS installer la pompe sur du sable, du gravier ou de la terre.
4. **IL FAUT** vérifier que le puisard est assez large pour avoir de l'espace suffisant pour le bon fonctionnement des interrupteurs de commande de niveau.
5. **IL FAUT toujours débrancher l'alimentation de la pompe avant de la manipuler.**  
**IL FAUT** toujours brancher la pompe sur un circuit séparé mis à la terre.  
**IL NE FAUT JAMAIS** couper, faire une épissure ou endommager un cordon d'alimentation. (Pour faire une raccordement, il faut utiliser un boîtier de raccordement étanche.  
**IL NE FAUT PAS** utiliser le cordon d'alimentation pour transporter ou soulever la pompe.  
**IL NE FAUT PAS** utiliser de rallonge pour une pompe de puisard.
6. **IL FAUT** installer un clapet de sécurité et un raccord sur la conduite de refoulement.  
**IL NE FAUT PAS** utiliser une conduite de refoulement de diamètre inférieur à celui du refoulement de la pompe.
7. **IL NE FAUT PAS** utiliser une pompe de puisard comme pompe de tranchée ou d'excavation, ou pour pomper des égouts, de l'essence ou tout autre liquide dangereux.
8. **IL FAUT** essayer la pompe immédiatement après l'installation pour être certain que le système fonctionne correctement.
9. **IL FAUT** recouvrir la pompe de puisard d'un couvercle de puisard approprié.
10. **IL FAUT** étudier tous les codes locaux et nationaux applicables et vérifier que l'installation est conforme.
11. **IL FAUT** consulter le fabricant pour obtenir des clarifications ou des réponses aux questions.
12. **IL FAUT** considérer un système à deux pompes avec une alarme quand l'installation peut être surchargée ou si une défaillance de la pompe primaire causait des dégâts importants.
13. **IL FAUT** considérer un système de secours en courant alternatif quand une pompe de puisard ou d'échappement mécanique est nécessaire pour éviter des dégâts matériels en cas d'inondation à la suite d'une panne d'alimentation secteur, de problème mécanique ou électrique ou de surcharge du système.
14. **IL FAUT** inspecter le système et vérifier son fonctionnement au moins tous les trois mois.

## LISTE DE VÉRIFICATIONS POUR L'ENTRETIEN



**⚠ Avertissement**

**PRÉCAUTIONS AVEC LE SYSTÈME ÉLECTRIQUE** – Avant de réparer la pompe, il faut toujours ouvrir le circuit et débrancher la pompe, en prenant soin de porter des chaussures à semelle isolante et de ne pas se tenir dans l'eau. En cas d'inondation, contacter la compagnie d'électricité ou un électricien agréé pour couper l'alimentation avant de déposer la pompe.

**⚠ Avertissement**

Les pompes submersibles contiennent de l'huile qui peut être sous pression ou devenir chaude en cours de fonctionnement. **Attendre 2 heures et demi après l'avoir débranchée avant de travailler sur la pompe.**

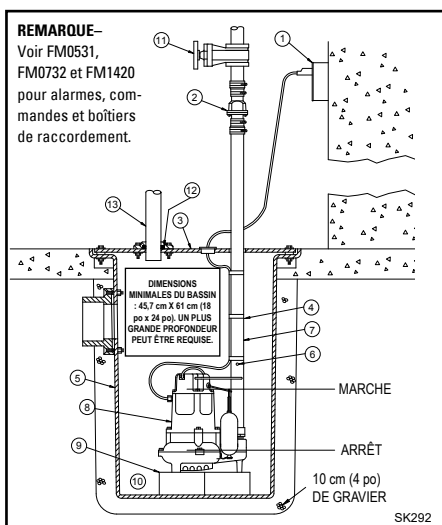
CONDITION	CAUSES FRÉQUENTES
<b>A. La pompe ne démarre pas ou ne fonctionne pas.</b>	Vérifier que le fusible est en bon état, que la tension est normale, que le circuit n'est pas surchargé et que le câblage est correct, que l'interrupteur n'est pas ouvert, que le rotor ou le joint n'est pas bloqué, que le condensateur ou le relais n'est pas défectueux, si installé, qu'il n'y a pas de court-circuit dans le moteur ou le bobinage. Flotteur bloqué en position basse. Interrupteur défectueux, endommagé ou mal réglé.
<b>B. Le moteur surchauffe et déclenche le disjoncteur ou la sécurité thermique.</b>	Mauvaise tension, hauteur de refoulement négative (refoulement ouvert au-dessous de la normale), blocage mécanique du rotor ou du joint, moteur court-circuité.
<b>C. La pompe se met en marche et s'arrête trop fréquemment.</b>	Flotteur grippé sur la tige, clapet de sécurité coincé ou pas de clapet installé sur une conduite longue, clapet de sécurité ouvert, interrupteurs de niveau défectueux, puits trop petit.
<b>D. La pompe ne s'arrête pas.</b>	Débris sous le flotteur, flotteur ou tige du flotteur coincé contre la paroi du puits, interrupteur défectueux, endommagé ou mal réglé.
<b>E. La pompe fonctionne mais son débit est faible ou non existant.</b>	Vérifier le carter de crépine, le tuyau de refoulement ou, si un clapet de sécurité est installé, le trou d'évent. La hauteur de refoulement est supérieure à la capacité de la pompe. Mauvaise tension. Mauvaise direction de rotation de la pompe. Condensateur défectueux. L'eau d'alimentation contient de l'air ou provoque l'entrée d'air dans la chambre de la pompe.
<b>F. Baisse de capacité ou de hauteur de refoulement après une période d'utilisation.</b>	Augmentation de la friction dans le tuyau de refoulement, tuyau ou clapet de sécurité colmaté. Des produits abrasifs ou des produits chimiques peuvent détériorer le rotor et le carter de pompe. Inspecter la conduite. Déposer la base et inspecter.

**Si les vérifications ci-dessus ne résolvent le problème, consulter l'usine. Ne pas essayer de réparer ou de démonter la pompe. Toutes les réparations doivent être faites par un centre de réparation agréé par Zoeller. Visitez le site web [www.zoellerpumps.com](http://www.zoellerpumps.com) pour trouver le centre de service agréé le plus proche.**

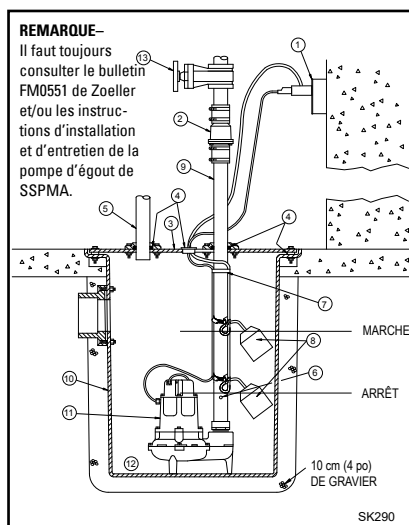


# INSTALLATION RECOMMANDÉE POUR TOUTES APPLICATIONS

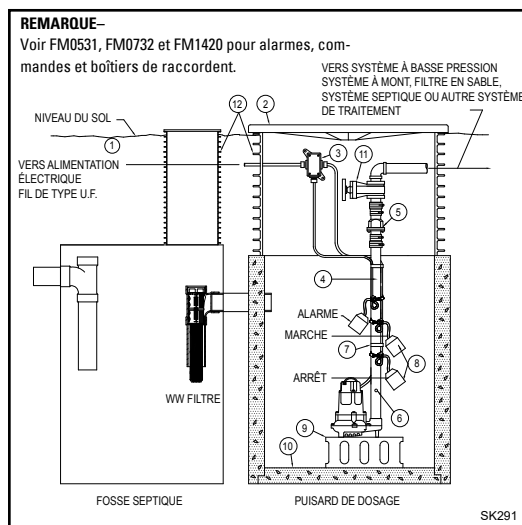
- (1) Les circuits et les protections électriques doivent être conformes aux normes des codes électriques nationaux, provinciaux et locaux.
  - (2) Installer un Unicheck (raccord / clapet de sécurité combiné) de Zoeller approprié, de préférence juste au-dessus du puits pour permettre la dépose de la pompe pour le nettoyage ou les réparations. Pour les égouts, les effluents ou les eaux d'assèchement mécanique, utiliser le modèle 30-0164 avec des tuyaux de 38 mm (1-1/2 po), modèle 30-0152 avec des tuyaux de 51 mm (2 po) et le modèle 30-0160 avec des tuyaux de 76 mm (3 po) s'il faut une grande hauteur de refoulement ou en cas d'installation sous un couvercle. Voir (4) ci-dessous.
  - (3) Tous les puits doivent avoir un couvercle pour empêcher les débris d'y tomber et éviter les chutes accidentelles.
  - (4) Quand un Unicheck est installé, percer un trou de 5 mm (3/16 po) dans le tuyau de refoulement, de niveau avec le dessus de la pompe. Les pompes de la série 50 et 90 ont un trou d'évent intégré. **REMARQUE – LE TROU DOIT AUSSI ÊTRE AU-DESSOUS DU COUVERCLE DU PUITS ET IL FAUT LE NETTOYER RÉGULIÈREMENT** (pompes à hauteur de refoulement élevée, voir n° 3 de la première page « MISE EN GARDE »). Un jet d'eau sera visible de cette orifice durant les périodes de fonctionnement de la pompe.
  - (5) Attacher fermement le cordon d'alimentation électrique sur le tuyau de refoulement en utilisant du chatterton ou des colliers.
  - (6) Utiliser un tuyau de refoulement de pleines dimensions.
  - (7) Le puits doit être conforme à tous les règlements applicables.
  - (8) Avant la mise en service, la pompe doit être de niveau et le mécanisme du flotteur ne doit pas toucher les bords du puits.
  - (9) Après l'installation, le puits doit être propre et ne doit pas contenir de débris.
  - (10) L'installateur doit fournir la vanne d'arrêt et l'installer en respectant tous les codes.
  - (11) Identifier les interrupteurs à flotteur indiqués dans les illustrations. Le point d'arrêt doit être au-dessus du carter du moteur et à 180° de l'admission. Le point d'arrêt ne se doit trouver jamais au-dessous du refoulement de la pompe (uniquement pour les systèmes d'eaux usées et d'effluent). **REMARQUE – pour les pompes automatiques, utiliser le schéma d'installation pour l'assèchement ci-dessous (uniquement pour les systèmes d'eaux, usées et d'effluent).**
  - (12) Pour éviter la propagation des gaz et des odeurs, toutes les installations doivent avoir des joints étanches.
  - (13) Les gaz et les odeurs sont évacués à l'atmosphère au moyen d'un tuyau d'évent. Doit être conforme aux codes locaux, mais ce n'est pas exigé pour l'assèchement.
  - (14) Installer la base de pompe Zoeller (modèle 10-2421) sous la pompe pour former un bassin de décantation (uniquement pour les systèmes d'effluent et d'assèchement).  
**Uniquement pour les systèmes d'effluent :**
  - (15) Brancher l'alimentation de la pompe par l'intermédiaire d'un boîtier étanche Zoeller ou d'une épissure étanche. **REMARQUE – Le boîtier étanche est une nécessité absolue dans un milieu humide. Voir le n° 8 à la première page de FM0732.**
  - (16) Consulter le manuel de dimensions pour les égouts de SSPMA afin de déterminer le modèle d'interrupteur de marche / arrêt à utiliser.
  - (17) Un accès à la fosse septique doit être prévu pour l'entretien du filtre et de la pompe.
- REMARQUE** – Les pompes à joint double offrent une protection supplémentaire contre les dommages causés par la défaillance du joint.



**INSTALLATION TYPIQUE POUR L'ASSÈCHEMENT MÉCANIQUE**



**INSTALLATION TYPIQUE POUR ÉGOUT**

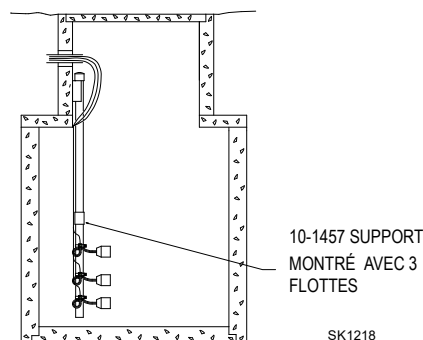
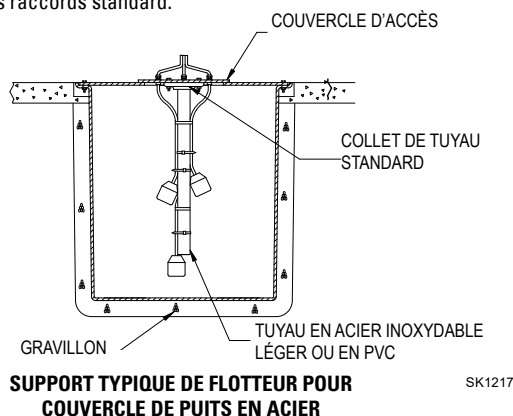


**INSTALLATION TYPIQUE POUR LES EFFLUENTS**

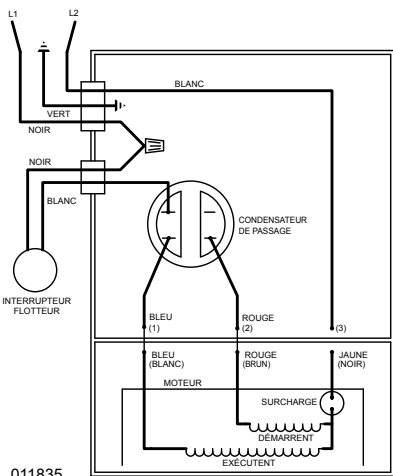
Toutes les installations doivent être conformes aux codes électriques et de plomberie applicables, y compris, mais pas limité aux codes électriques nationaux, locaux, régionaux et aux codes de plomberie provinciaux. Pas conçu pour utilisation dans les endroits dangereux.

## MÉTHODES SUGGÉRÉES POUR L'INSTALLATION DU FLOTTEUR

Pour certaines installations, il peut être nécessaire d'installer un support indépendant pour les interrupteurs de commande de niveau pour éviter des accrochages possibles sur la pompe, la tuyauterie, les vannes, etc. Il est possible de fabriquer les supports de flotteur en utilisant des tuyaux et des raccords standard pour faciliter la dépose en cas de réparation. Les supports de flottes sont disponible chez Zoeller tel que décrit au feuillet FM0526 ou peuvent être fabriqué avec de la tuyauterie et des raccords standard.



## Installation des modèles WD et WH



011835

### SCHÉMA ÉLECTRIQUE POUR LES MODÈLES

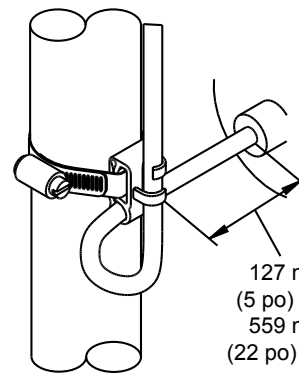
WD - 230 V, monophasé, 60 Hz  
WH - 200/208 V, monophasé, 60 Hz

### Définition de la plage de pompage en pouces (1 pouce = 2,5 cm)

Longueur du bras d'attache	5 min.	10	15	20	22 max.
Plage de pompage	9	13,5	18	22	24

Ce tableau ne doit être utilisé que comme guide. À cause du poids du câble, la plage de pompage au-dessus de l'horizontale n'est pas égale à la plage de pompage au-dessous de l'horizontale. Les plages sont basées sur des essais sans turbulence. La plage peut varier en fonction de la température de l'eau et de la forme du cordon. Plus le bras est long, plus les variations de plage de pompage sont importantes.

Les modèles WD et WH sont entièrement automatiques. Un interrupteur à flotteur est inclus et branché dans le circuit de la pompe pour permettre le fonctionnement automatique après avoir installé l'interrupteur à flotteur correctement sur le tuyau de refoulement. Il faut utiliser le schéma ci-dessus pour attacher correctement l'interrupteur à flotteur et obtenir un bras approprié pour modifier le cycle de marche-arrêt pour chaque application.



SK305

Interrupteur 20 amps (modèles WD et WH)

**Remarque** – L'interrupteur risque de mal fonctionner si le câble d'attache n'est pas maintenu dans les limites appropriées.

**Remarque** – Le câble doit être installé horizontalement.

## Instructions de branchement monophasé



**AVERTISSEMENT**

**POUR DES RAISONS DE SÉCURITÉ, IL FAUT TOUJOURS DÉBRANCHER L'ALIMENTATION ÉLECTRIQUE DE LA POMPE AVANT L'INTERVENTION.** Les pompes monophasées sont fournies avec une fiche à trois broches pour aider à protéger contre les risques d'électrocution. **IL NE FAUT JAMAIS ENLEVER LA BROCHE DE TERRE.** La fiche à trois broches doit être branchée dans une prise à trois alvéoles correspondantes. Si le circuit d'alimentation n'a pas une telle prise, il faut installer une prise du type approprié, branchée et mise à la terre selon le code national de l'électricité et tous les codes et règlements locaux appropriés.



**AVERTISSEMENT**

**AVERTISSEMENT**

**AVERTISSEMENT**

« **Risque d'électrocution** ». Il ne faut pas enlever le cordon d'alimentation et le serre-câble ni brancher directement la pompe. L'installation et la vérification des circuits électriques et de la quincaillerie doivent être faites par un électricien qualifié.

Les unités non équipées d'une fiche (monophasée et triphasée) et les unités non automatiques monophasées à fiche de 20 ampères doivent être dotées d'une commande de moteur et d'un régulateur de niveau de liquide lors de l'installation. La tension, l'intensité, la fréquence, la mise à la terre et la puissance du dispositif de commande doivent s'accorder à la pompe sur lequel il est branché.

## Instructions de branchement triphasé



**AVERTISSEMENT**

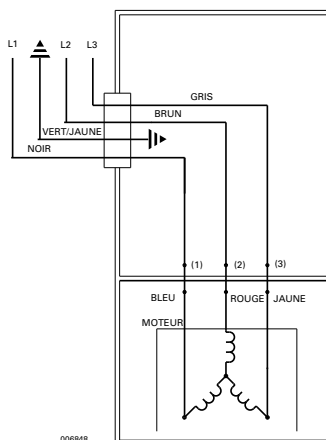
**POUR DES RAISONS DE SÉCURITÉ, IL FAUT TOUJOURS DÉBRANCHER L'ALIMENTATION ÉLECTRIQUE DE LA POMPE AVANT L'INTERVENTION.**

### Pompe non-automatique triphasée

Les pompes triphasées ne sont pas automatiques. Pour qu'elles fonctionnent automatiquement, il faut installer un panneau de commande. Pour brancher le système, suivre les instructions fournies avec le panneau de commande. Pour trois phases automatique les pompes voient le diagramme de câblage automatique de 3 phases situé vers le droit.

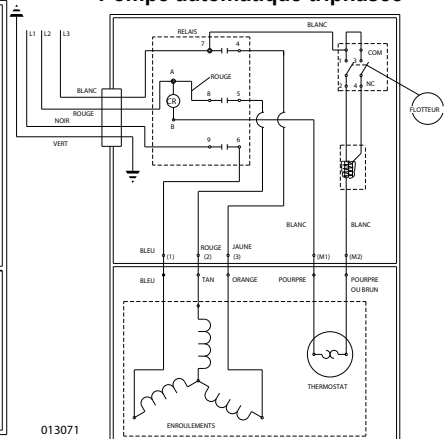
Avant d'installer la pompe, vérifier la rotation de la pompe pour être certain que les fils ont été branchés correctement sur l'alimentation et que le fil vert du cordon d'alimentation (voir schéma électrique) est branché sur une bonne terre. Mettre la pompe momentanément sous tension et observer la direction du retour causé par le couple de démarrage. La rotation est correcte si le retour est en sens contraire à la flèche de rotation dans le carter de la pompe. Si la rotation n'est pas correcte, inverser deux des fils de phase pour obtenir la bonne direction de rotation.

Toutes les pompes triphasées doivent être équipées d'un dispositif de démarrage, avec dispositif de protection contre la surcharge. Voir FM0486 pour les installations duplex. La pompe **doit** être branchée conformément au code national de l'électricité et tous les codes et règlements locaux appropriés. Il ne faut pas installer les pompes dans un endroit classé dangereux conformément au code national de l'électricité, ANSI/NFPA 70.



006848

### Pompe automatique triphasée



013071

**REMARQUE IMPORTANTE.** – Certains polices d'assurance commerciales et résidentielles couvrent les dommages résultant d'une défaillance du produit. Dans la plupart des cas, vous devez être en possession du produit pour déposer une réclamation. Zoeller Pump Co. s'engage à remplacer l'appareil ou à rembourser le prix d'achat original après que l'assureur aura réglé la réclamation dans un cas où vous êtes tenu d'être en possession du produit pour documenter une réclamation soumise à votre assureur.

Il s'agit ici d'une traduction des instructions d'origine.



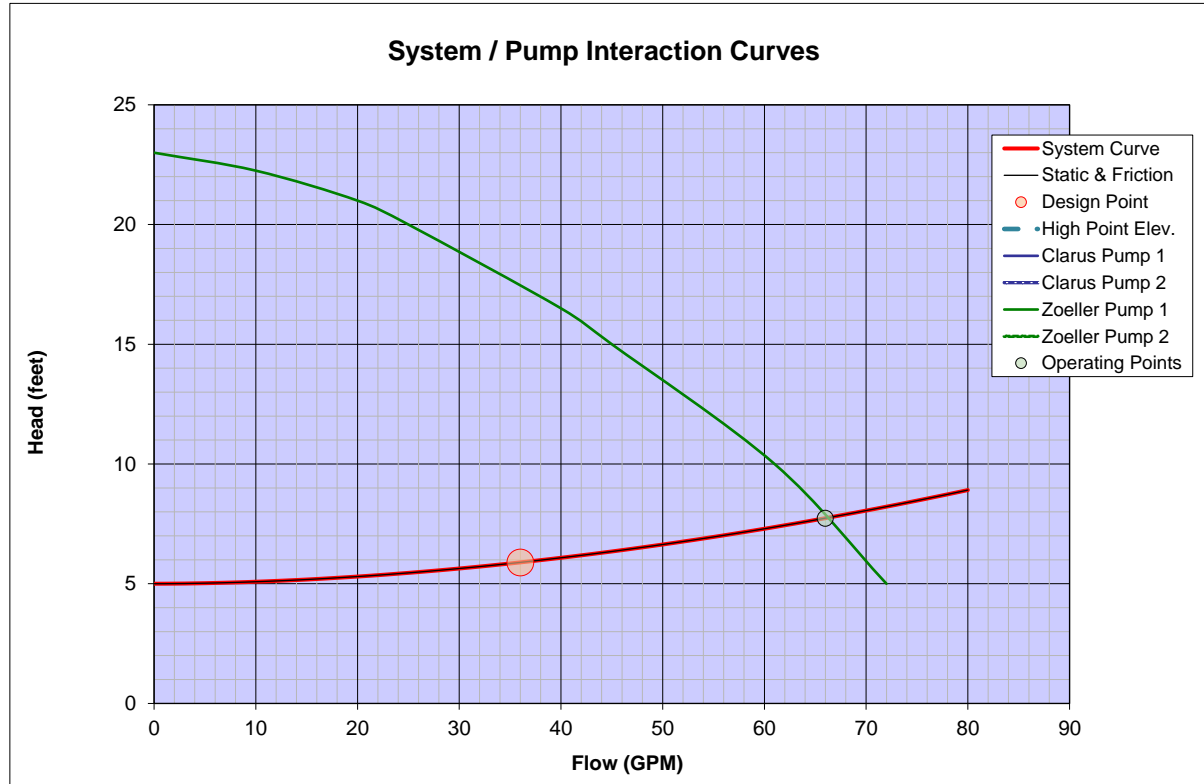
# Zoeller Company



## System Head Curve and Pump Selection Tool

Static Head Information	
Static Head - elevation difference from low water to outfall	5.0 feet
System high point above outfall?	No

Friction Head Information			
<b>Pipe</b>			
How many different pipes in the system (not counting laterals)?	1		
Pipe 1 Length	5 feet		
Pipe 1 Size	2 inches		
Pipe 1 Class	SCH 40		
Pipe 2 Length			
Pipe 2 Size			
Pipe 2 Class			
Pipe 3 Length			
Pipe 3 Size			
Pipe 3 Class			
<b>Pressurized Laterals?</b>			
How many are dosed at once?	No		
Length of one lateral			
Size of lateral			
Class of lateral			
<b>Fittings &amp; Discharge Assemblies</b>			
Type	Size	Quantity	Flow
90 Elbow	2 inches	1	100 %
Check Valve	2 inches	1	100 %
<b>Special Friction Considerations</b>			
Weep Hole	No		
Add-In Friction	15 % of Pipe Loss		
Automatic Multizone Valve?	No		
Pressure Filter?	No		



Operating Head Information		Specify Flow Requirement?
System Type	Non-Pressurized	Yes
Required Pressure		Flow Requirement
Number of Orifices		36.0 GPM
Size of Orifices		
Spider Valve Orifice Sizes (Data originates from Spider Valve Sizing Tab)		

Factors and Coefficients	
Hazen-Williams C Factor	130
Discharge Coefficient (Cd)	0.61
Lateral Design Mode	Off

Pump Selection		60 Hz	Frequency
<b>Clarus Environmental Pumps</b>			
Clarus Pump 1			
Flow Control Orifice?			
Clarus Pump 2			
Flow Control Orifice?			
<b>Zoeller Pump Company Pumps</b>			
Zoeller Pump 1	98, 0.5hp, 60Hz	66.0 GPM @ 7.7'	
Zoeller Pump 2			

Design Point	36.0 GPM @ 5.9' TDH
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Curve Zoom Range	80 GPM
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Project Data		Notes:
Project Name:	Qian Yang Residence	
Project Address:	8456 SE 40th St Mercer Island, WA 98040	
Contact Info:		