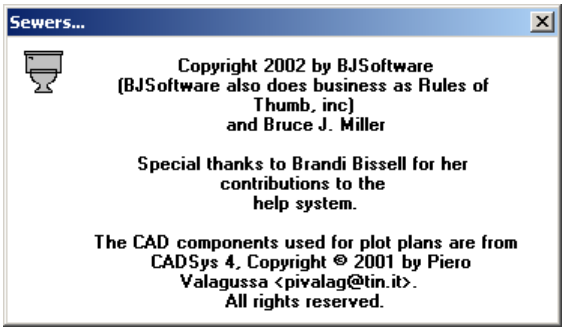
BJSoftware Sewers
Tutorial & Reference



Rules of Thumb, inc.
PO Box 406
North East, PA 16428
1-800-858-3682

BJSoftware also does business as Rules of Thumb, inc.
2 September 2004

Getting Started

If you are installing Sewers for the first time you will need to:

- Run the setup program – see "**Software Installation or Updating**" on page 4
- Review the licensing agreement – see "**Running the Software for the first time**" on page 4
- Register the software – see "**Software Registration**" on page 6
- Personalize the software – see "**Personas**" on page 7
- Start designing systems – see "**Using the Design Wizard**" on page 8
- Learn how to purchase a license – see "**Purchasing**" on page 23
- Note what files to keep backed up – see "**Directory Structure**" on page 55

Reporting Problems and Suggestions

Sewers has existed in one form or another for about 20 years across 5 different computer platforms. This latest version is the first to be released beyond our office. We use the software every day, but we don't necessarily use it the same way you do, so you may find issues that we have not. We want to hear from you if you do.

If you have a problem with the software or would like to tell us how we can make it work better for you, please let us know. You have the following options:

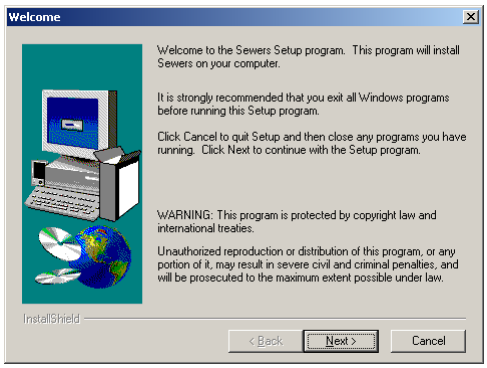
- Sewers Users Forum: "Users Forum…" in the "Help" menu or, web browse to: http://www.rules-of-thumb.com/cgi-bin/forumdisplay.cgi?action=topics&number=12&SUBMIT=Go
- Email – **bjmiller@rules-of-thumb.com**
- Phone – 1-800-858-3682
- Fax – 1-814-725-2429
- Mail – Bruce J. Miller
  PO Box 406
  North East, PA 16428

Software Installation or Updating

Insert the CD. It should automatically run the setup program. If it does not, navigate to the Install folder on the CD and run the setup.exe program from there.

You will see a series of screens as the setup program runs. Follow the instructions for each screen.

If you are running the setup to upgrade an existing installation make sure you install the upgrade to the same location as the original. The setup program will update any changed files automatically. It will not overwrite the databases containing the systems you have created and saved. Do not be alarmed if the process takes a long time; the install program needs to uninstall the old version before it continues on to install the new version.



Running the software for the first time.

The first time you run Sewers, the license agreement will pop up. You need to agree to it to continue. The full text of the license agreement is on the next page.

CONDITONS REGARDING YOUR USE OF BJSOFTWARE PRODUCTS

Your use of the BJSoftwares's Sewers ("the software") is subject to the following terms, conditions and limitations. Please review them prior to any use of the software. Your use of the software constitutes an acceptance of the terms, conditions and limitations set forth below.

1. Ownership and License. The software is and shall continue to be owned exclusively by BJSoftware, a/k/a Rules of Thumb, Inc. Your use will be that of a licensee, subject to the following terms and conditions.

2. Payment. You are required to pay BJSoftware the sum of thirty ($30.00) dollars for each system you design. Payment shall be made exclusively by the secure web site PayPal.com. It is BJSoftware's understanding that BJSoftware will not receive your credit card information as a result of your payment, but both you and BJSoftware will receive email confirmation from PayPal of your payment. In addition, you will receive a screen confirmation regarding payment on the BJSoftware website that you can print for your records. BJSoftware may raise the price of your use of the software, but you will receive prior notice of the same.

3. Limits Regarding Storage of Planned Systems Prior to Purchase. The software will limit your ability to save planned but un-purchased systems to a total of five (5).

4. Payment Required Prior to Printing and Limitations on Subsequent Editing. You are required to pay for each system before you will be able to print it. After making payment, you will be able to print it as many times as you like. After you pay for a system, you will not be able to edit site-intrinsic data (e.g., percolation rate, depth to limiting zone, or slope, etc.) or the system type (e.g., elevated sand mound, peat-based, etc.). However, examples of data you will be able to edit include the following: client information, comments, pump and tank selection and plot plans. The software provides that critical data is protected from accidental editing, as you must actively enable the editing function by un-checking a flag. If you edit critical data, you will be required to purchase the system as edited before you will be able to print it.

5. Periodic Re-enabling of the Software. You will be required to sign into the BJSoftware website with the software at least every thirty (30) days to re-enable the software. The sign-in is available both at your prompting and is automatic at the time of purchase of a system.

6. The Conditions and Limitations are Features of the Software. The features, limitations and conditions described herein are incorporated into the software and downloaded from the BJSoftware website.

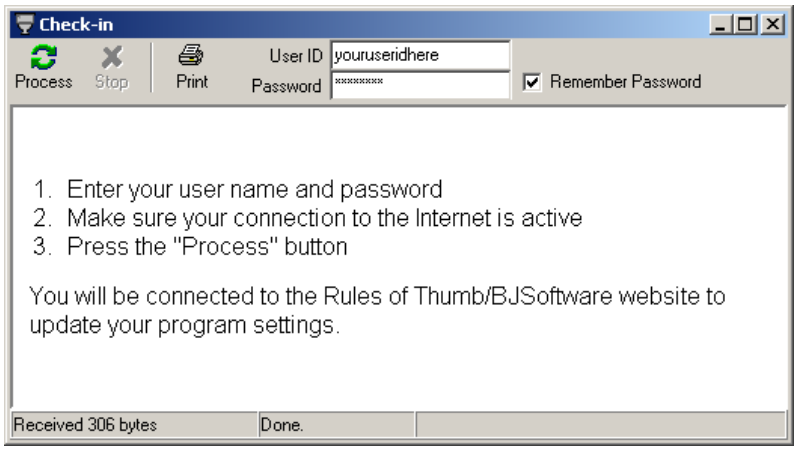
7. Termination of License. BJSoftware reserves the right to terminate your use of the software at any time and without cause stated.

The license agreement

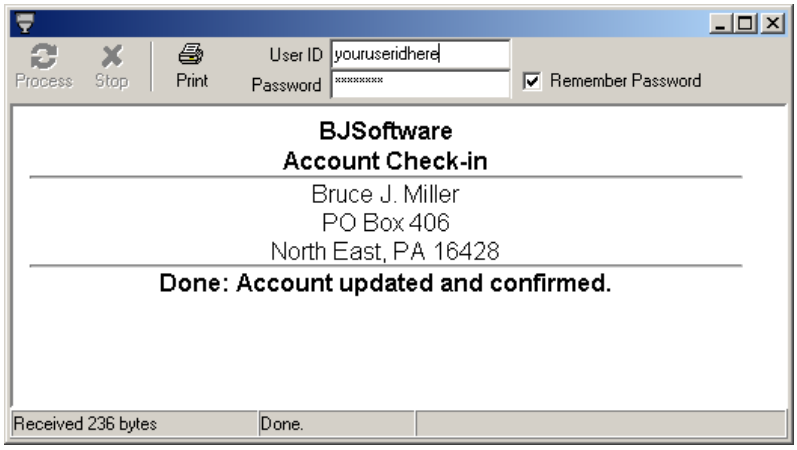
Software Registration

The software needs to be registered to run. The registration process verifies that you are using the most current version of the software. As regulations change and the software is improved it is important that we make sure you are using the correct version.

Select “Check-in” from the “Accounting” menu. You should see the following screen. Fill in your user ID and password. At your discretion, check the “Remember Password” checkbox to save your user ID and password in the default settings for the program.



Make sure you have an active connection to the Internet and press the “Process” button. You will be connected to the BJSoftware web site. The web site will confirm that you are registered and return a confirmation screen similar to the one below. Your registration is updated every time you use the check-in utility or purchase a system. If you do not connect to the web site for over 30 days you will not be able to create new designs. To re-enable the software you just need to check in. This check in requirement is built in as a safeguard to ensure that all of our associates are using only up to date software.



Personas

Concept of Personas

The persona is a device for personalizing the output of the software so that Sewers puts your letterhead and name in all the right places.

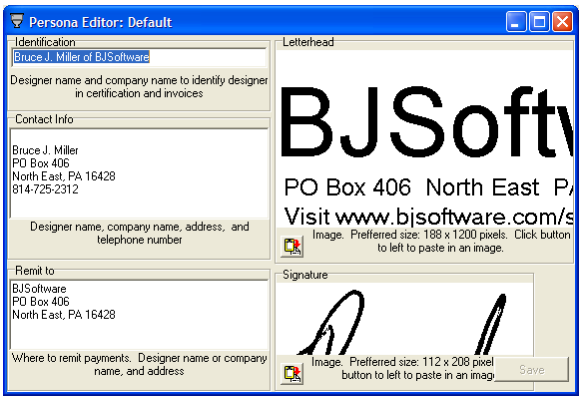
Sewers can be setup to use multiple personas. Think of using a different persona like using a different letterhead. You can use Sewers to design systems for others under their letterhead.

You only need to define one persona, the "Default Persona". Without a persona the design will print blanks where your identification should go.

Creating/Editing Personas

Now that your software is registered you could start designing systems. But before you do we want to personalize the software so that it prints with your letterhead and name in all the right places. Open the Persona Editor by selecting "Edit Current Persona…" or "Add Persona…" from the "Persona" menu. Show below is the persona editor with the defaults for BJSoftware.

- Identification – The designer name and company. Used in the "Certification" section and invoices.
- Contact Info – Designer name, company, address, and telephone number. Used in the "Designer" identification section.
- Remit to – Designer name or company name and address. Used on invoices to tell the client where to send the remittance.
- Letterhead – Image of your letterhead. Prints on first page of design and on invoices. Preferred size: 188 x 1200 pixels.
- Signature – Image of your signature. Used to endorse the "Certification" section and the invoices. Preferred size: 112 x 208 pixels.



Fill in the text boxes on the left with your information. The two boxes on the right contain images. Both images are optional. If an image is not provided a blank space will be printed instead.

To add an image:

1. Scan or create the image in a paint program.
2. Select and copy it to the clipboard.
3. Press the paste button by the image box.

Click the "Save" button when you are finished.

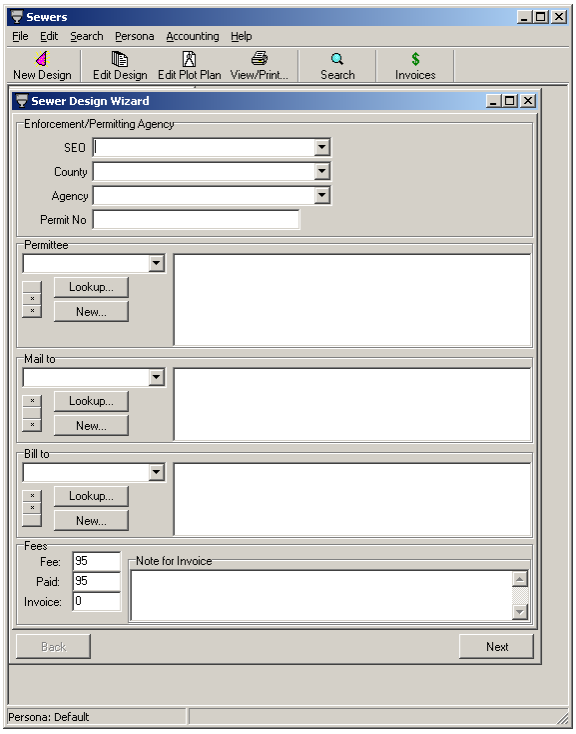
Using the Design Wizard

Now you are ready to create your first design using the design wizard. Click the "New Design" button. You should see a screen something like the one below. The design wizard is built as a series of screens that you complete in sequence. Use the "Next" and "Back" buttons to navigate between pages. Current regulations and engineering concepts are built into the design wizard and are applied, step by step, as you prepare the design, assuring complete, accurate designs with minimal effort.

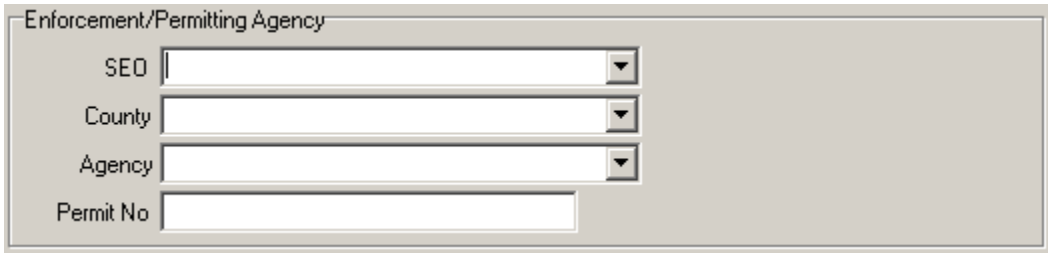
The tab key is the easiest way to navigate between data entry fields on most pages. Most fields have default values to minimize effort in filling in data. The defaults can be modified by selecting "Design Wizard Defaults…" from the "Edit" menu.

Design Wizard - Client Information Page

The first page of the design wizard is for client and permitting information.



Enforcement/Permitting Agency

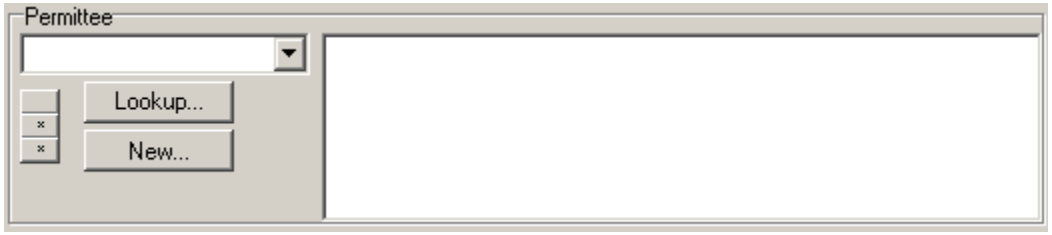


Most of these fields will auto-complete as you type once you have designed some systems and the databases populate. It is important to fill in at least the county and agency fields. These fields are used to override PA regulations where we are aware of local rules that supercede state rules (such as Allegheny County's 1000 sq. ft. minimum absorption area rule). The county is also used to determine which tanks are "local" when listing tanks on the tank selection page.

- SEO – Sewage Enforcement Officer – The person issuing the permit.
- County – The county where the site is located.
- Agency – The township or other permitting agency.
- Permit No – The serial number assigned to the septic permit.

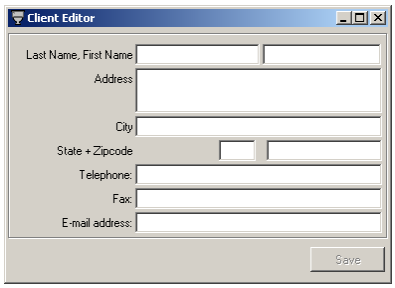
Client Identification

- Permittee – Who the design is ultimately for.
- Mail to – Where to send the design.
- Bill to - Who gets the invoice



The three boxes for client information, "Permittee", "Mail to", and "Bill to" all work in the same way and share the same database. You can add a client by:

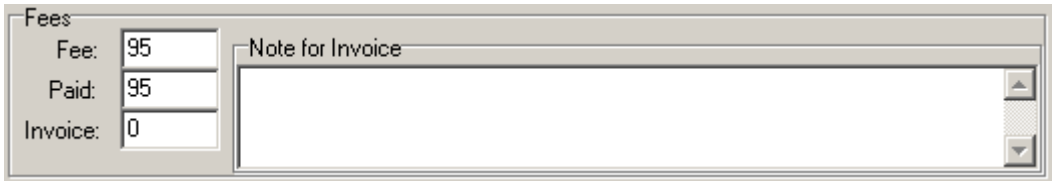
- Clicking the "New…" button
- Double clicking in the drop down box
- Hitting the space bar with the cursor in the drop down box



Fill in the information and save it. A client code will be created using the first four characters of the last name and a four digit tie breaker.

A client can be copied between the three fields (Permittee, Mail to, and Bill to) by using the "*" buttons in each box.

Fees

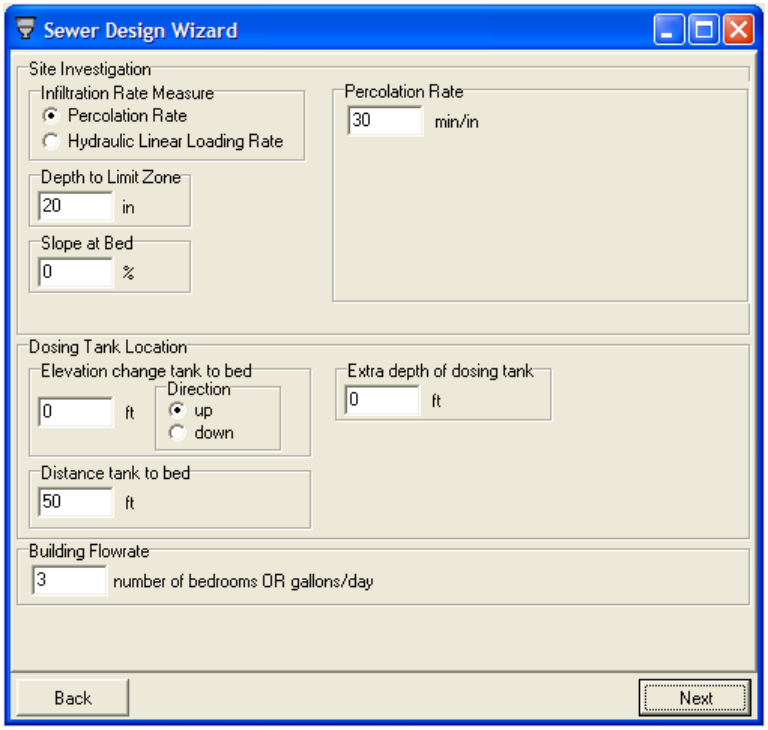


The default fee amount is set in the "Design Wizard Defaults…". The paid and invoice amounts are automatically updated as the other values are changed. If no "bill to" client is set then the wizard assumes the design has been paid for and will fill in the Paid amount. However, if there is a "bill to" client, the wizard will assume you will be invoicing for the design and will fill in the Invoice amount. As you edit either the Fee or Paid amounts the Invoice amount should update accordingly.

The "Note for Invoice" is optional. The note will be inserted into the invoice when it is printed.

Design Wizard - Site Information Page

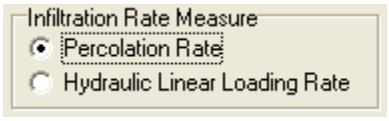
This page is for inputting the site investigation results and other basic design data.



Site Investigation Data

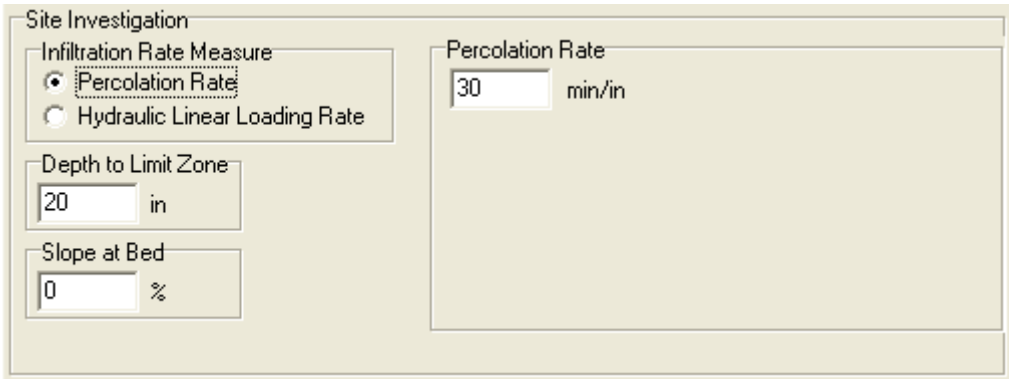
Two methods are now available for sizing the system: the percolation rate method and the hydraulic linear loading rate method. Each method has its own data requirements.

Infiltration Rate Measure



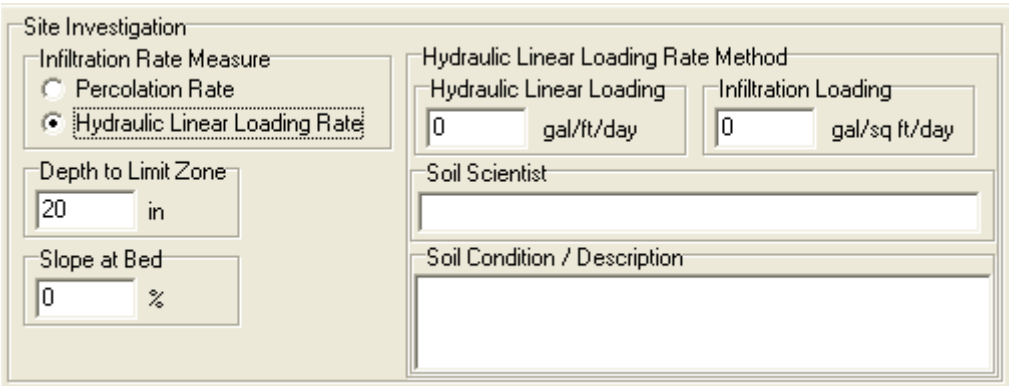
- Percolation Rate – Uses standard percolation test data to size the system.
- Hydraulic Linear Loading Rate – Uses data from a soil scientist to size the system. This method is only used on shallow limiting zones (< 20 inches) and requires the involvement of a professional soil scientist.

Percolation Rate Method



- Percolation Rate – Percolation rate in minutes per inch (min/in).
- Depth to Limit Zone – Depth to limiting zone in inches (in).
- Slope at Bed – Slope at the absorption area in percent (%).

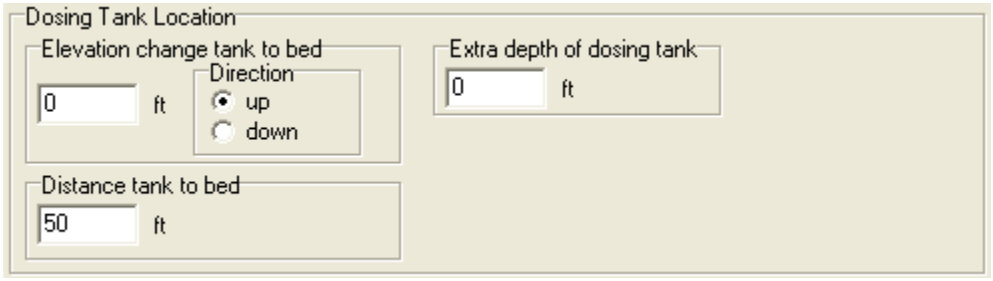
Hydraulic Linear Loading Rate Method



- Hydraulic Linear Loading – The hydraulic linear loading rate from the Hydraulic Linear Loading Rate (HLLR) table (also known as the "Tyler" table). Provided by the soil scientist.
- Infiltration Loading – The linear loading rate from the HLLR table. Provided by the soil scientist.
- Soil Scientist – The name of the soil scientist who did the soil analysis.

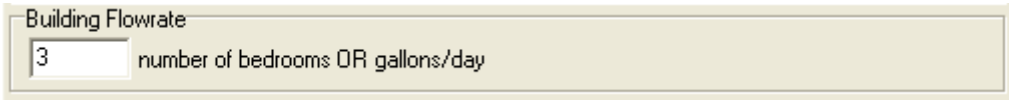
- Soil Condition/Description – The soil scientist's verbal description of the soil including the soil series.
- Depth to Limit Zone – Depth to limiting zone in inches (in).
- Slope at Bed – Slope at the absorption area in percent (%).

Dosing Tank Location



- Elevation change tank to bed – the vertical difference in feet (ft) of the ground measured from the dosing tank position to the high point of the absorption area before any construction.
- Direction – Elevational direction (uphill versus downhill) of the bed from the tank. Select up or down as appropriate.
- Distance tank to bed – The horizontal distance in feet (ft) from the dosing tank to the center of the absorption area.
- Extra depth of dosing tank – Optional. Use this to indicate that the dosing tank will be set deeper than standard. The software assumes the dosing tank bottom is about 5 ½ feet below grade.

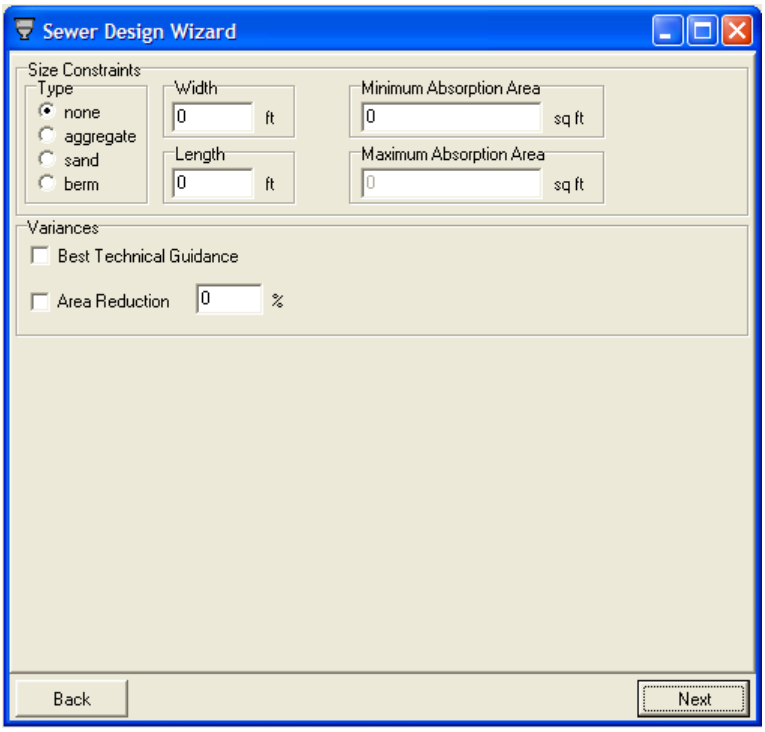
Building Flowrate



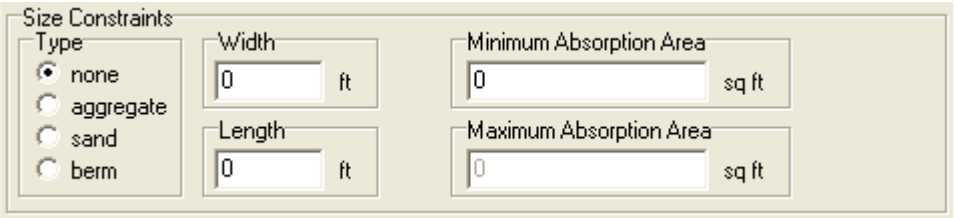
- Building Flowrate – If this number is less than 10 then the software assumes it to be the number of bedrooms. A number 10 or larger is assumed to be the daily building flow rate in gallons per day (gpd).

Design Wizard – Size Constraints and Variances Page

This page identifies any size constraints or variances you want to apply to this system. Size constraints are limitations you wish to impose on the dimensions of the bed. Variances are acceptable deviations from standard design rules when there is a supportable reason.



Size Constraints



The “Size Constraints” information tells the software how to optimize the shape of the bed. Its use is optional. The optimizing algorithm chooses the bed configuration that has the best fit to the constraints and that meets DEP rules (such as mandatory aspect ratios). Best fit is defined as the configuration that has the smallest area overlap outside of the size constraint rectangle defined by “Width” and “Length”. In other words the configuration with the best fit is the one which exceeds the constraints the least while still meeting regulations.

- Type – Which footprint of the bed to constrain. You can use the aggregate area, toe of sand, or toe of berm to constrain the system.
- Width – Width (with slope dimension) constraint in feet (ft).
- Length – Length (across slope dimension) constraint in feet (ft).
- Minimum Absorption Area – Minimum absorption area in square feet (sq ft) - If a number is given here the software will generate a system that has an aggregate area at least as big as the value given.
- Maximum Absorption Area – Maximum absorption area in square feet (sq ft) - If a number is given here the software will generate a system that has an aggregate area that is no bigger than the value given. To enable this feature you must be designing under Best Technical Guidance.

Variances

- Best Technical Guidance – Checking this invokes "Best Technical Guidance" (BTG) which "opens up" the rules, allowing the software to design a system that otherwise would not meet DEP regulations. How BTG is implemented is dependent on the system type and the constraints. Some system types have more flexibility than others under BTG.

Note: You must have a valid reason for choosing Best Technical Guidance such as designing a repair system for an existing dwelling. You are not permitted to invoke Best Technical Guidance for a new structure. You will be required to document the reason why you are invoking Best Technical Guidance on a later page.

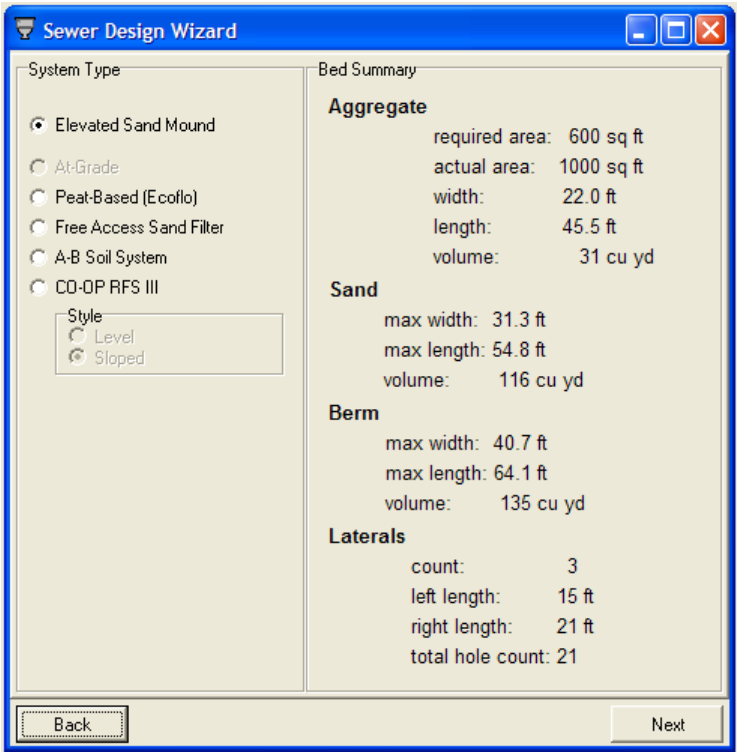
- Area Reduction – Checking this reduces the calculated required absorption area by the percentage in the edit box.

Note: You must have a valid reason for taking an area reduction such as employing a system type that is approved by the DEP for an area reduction under the given condition. You will be required to document the reason why you are taking an area reduction on a later page.

Design Wizard - System Type Page

System types are listed on the left side of the window. Any system types that are not allowed for the given site conditions are grayed out. The software will default to the simplest system type that is allowed.

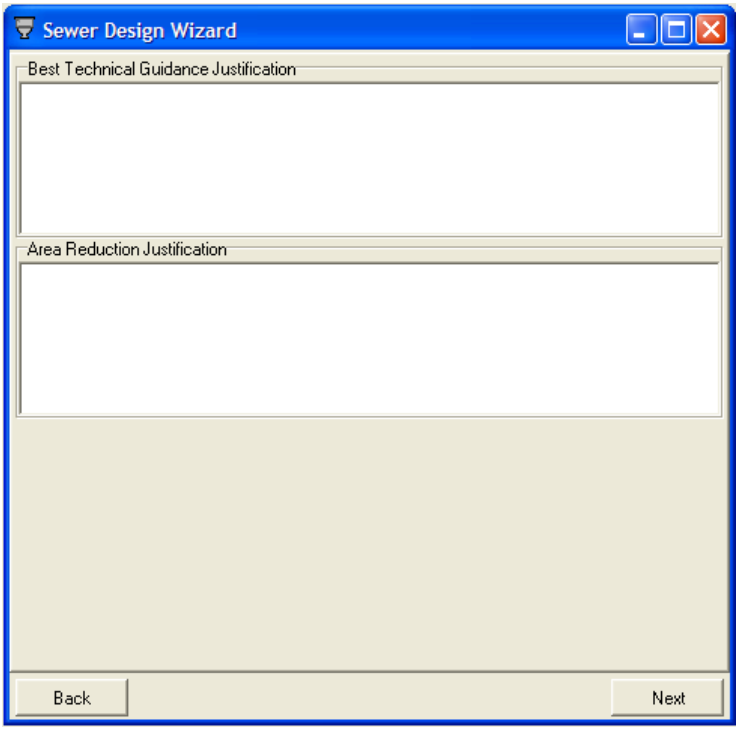
As you select different system types the “Bed Summary” on the right will update automatically.



Design Wizard - Justifications Page

If the system type you have chosen is an Alternate or an Experimental, or you have invoiked Best Technical Guidance, or if you are taking an area reduction you will need to document the justification on this page.

This page will show only when you are required to supply a justification and it will only show those justifications you need to supply.



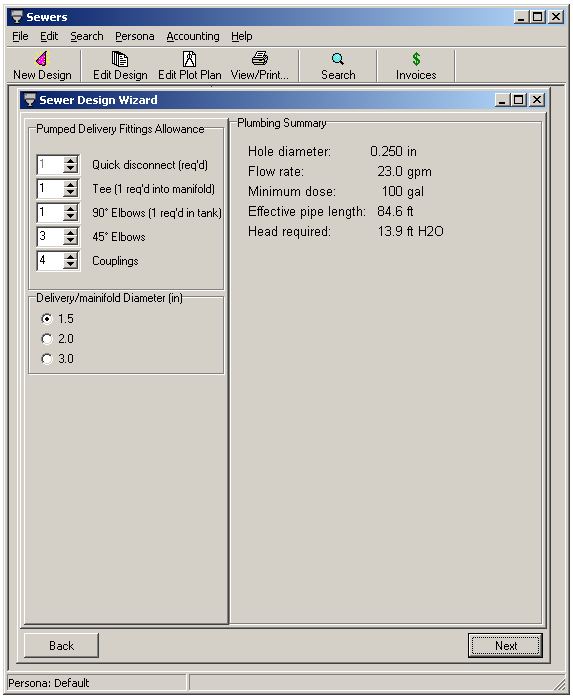
Design Wizard - Plumbing Options Pages

The plumbing options are slightly different for pumped and siphon-based systems.

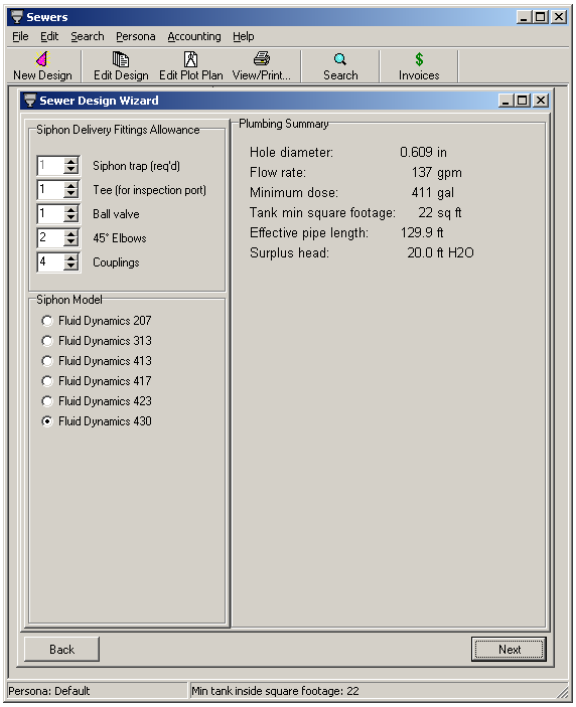
The software estimates a fittings allowance for the system. You can adjust the quantities for fittings that are not grayed out.

On pumped systems the optimal delivery line diameter is selected by the software. You can override it. The delivery line diameter influences both the pump size and, possibly, the dosing tank size: the pump size due to increased friction losses in smaller pipes and the dosing tank size due to the increased volume of larger pipes.

On siphon-based systems the software selects the siphon that will require the smallest cross-sectional area dosing tank. You can override the selection. Only those siphons whose flow characteristics are within range for the system are enabled. Pause the cursor over a siphon choice and a hint will pop up indicating the minimum tank square footage required for that siphon.

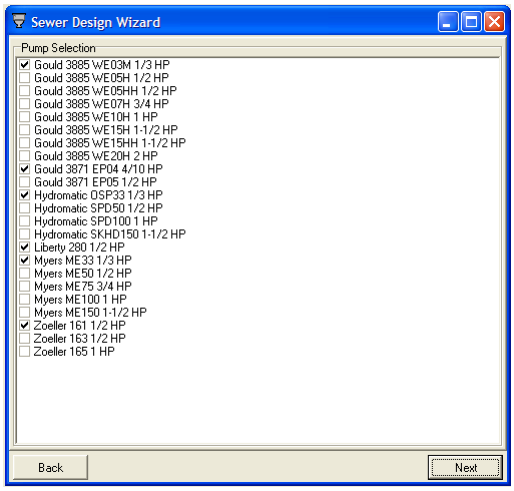


Plumbing options for a pumped system



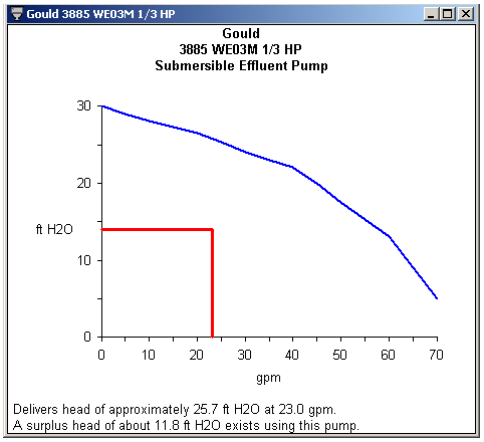
Plumbing options for a siphon system

Design Wizard – Pump Selection Page



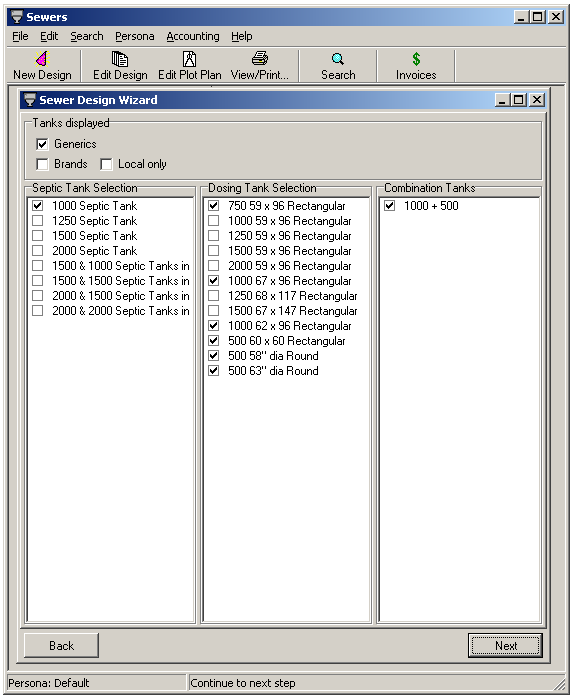
If the system will be pumped you will see a pump selection list. Pumps that will not meet the flow characteristics for the design will be grayed out (disabled). The software pre-selects the optimum pump from each manufacturer. You can modify the selection as you see fit.

The performance curve for each pump can be viewed by double clicking on the pump. The flow requirements for the design are also drawn on the pump curve.

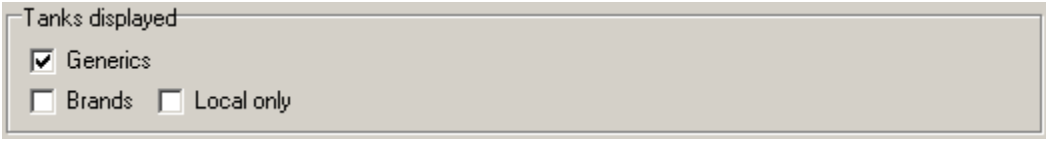


If there are additional pumps you would like to use, send us the pump spec sheets and we will add them to the database.

Design Wizard - Tank Selection Page



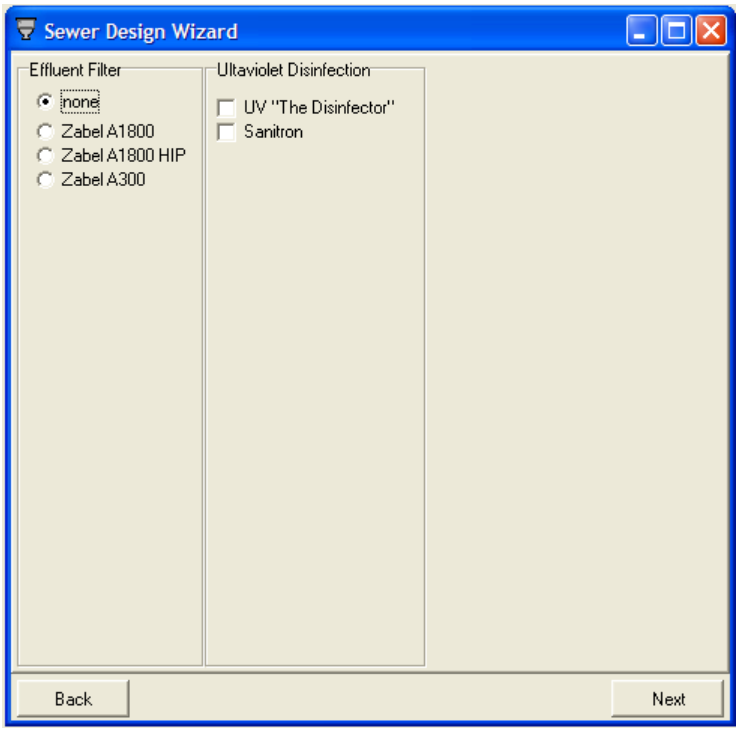
Unsuitable tanks will be grayed out. The software selects the best tank from each manufacturer or group.



- Generics - If checked then all the basic tank configurations in the database will be included in the lists.
- Brands - If checked then tanks associated with a manufacturer will be included in the lists.
- Local only - If checked then only the brand named tanks that are deliverable to the county of the site will be included in the lists. The county is determined by the county selected on the client info page.

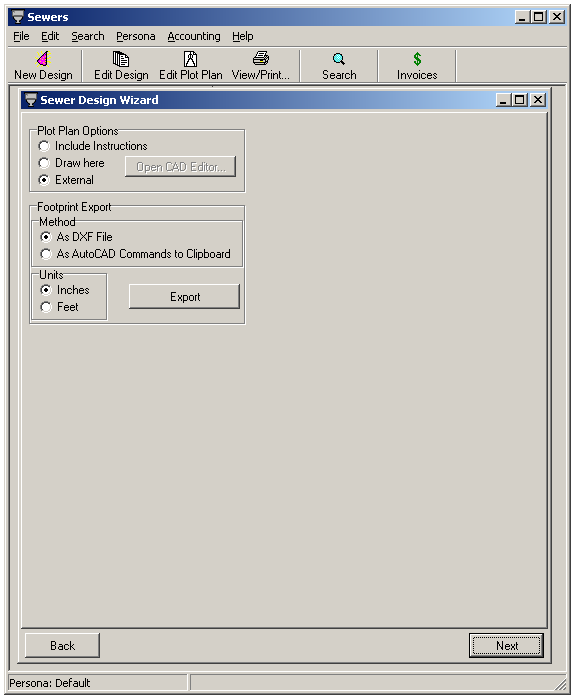
We will add any tanks you want to the database if you send us the manufacturer's spec sheets.

Design Wizard - Accessories Page

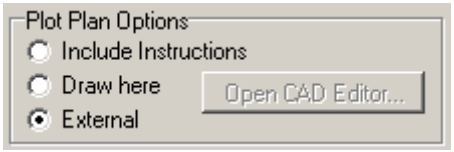


Extra options to the design can be included. Check any item you want to include in the design. When some accessories are required for some system types and configurations the option is pre-selected and the buttons are disabled.

Design Wizard - Plot Plan Page



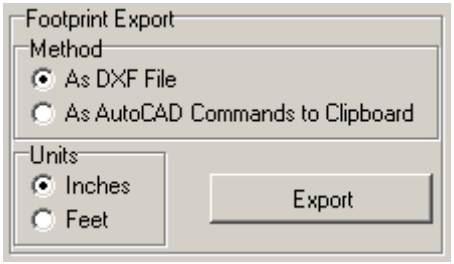
Plot Plan Options



There are three options for how plot plans are handled:

- Include Instructions – a page is added to the design that explains the requirements of a plot plan.
- Draw here – allows use of the build-in CAD system.
- External – indicates you will draw the plot plan by hand or with another application.

Footprint Export



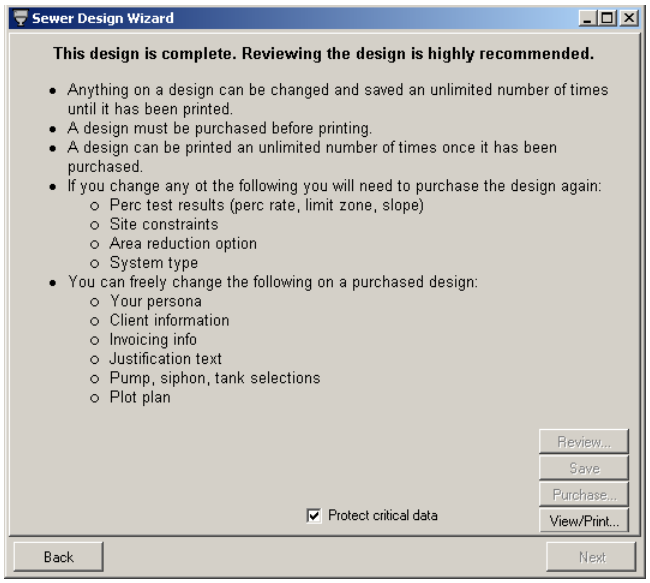
When exporting the footprint be sure to select the units you use in your CAD system (inches versus feet) so that the software will scale the footprint drawing correctly.

If you choose to draw the plot plan externally you can export the footprint of the system to your CAD application as either a DXF file or as an AutoCAD script pasted to the clipboard. If you use the latter option:

- Click on the "Export" button.
- Open AutoCAD
- Start or open a drawing
- Click in the AutoCAD command line
- Paste in the script by pressing the "Control" key and the "V" key simultaneously (**[Ctrl][V]**)

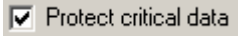
Design Wizard – Final Page

At this point the design is complete and ready for review. The rules for purchasing and printing are re-stated here. Once the design is saved you can safely close the design wizard. Saved designs are always available for review and editing.



There are four buttons:

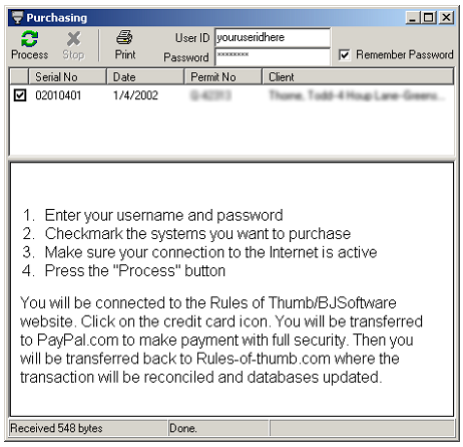
- "Review…" - opens the View/Print window so you can review the design.
- "Save" – to save the system into the database. The design is assigned a unique serial number the first time it is saved.
- Purchase – opens the purchasing utility (see below)
- View/Print – opens the View/Print window so you can print the design (see below).



Near the bottom of the page is the "Protect critical data" checkbox. It is checked by default. Its purpose is as a safe-guard to lock out the "critical data" controls. The "critical data" are those data that you are not allowed to change after you have printed a design without re-purchasing. You cannot accidentally edit data that would require you to re-purchase a system without deliberately unchecking this checkbox.

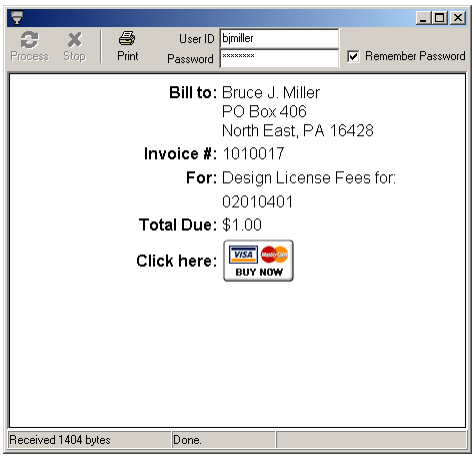
Purchasing Licenses

To purchase a design, just follow the directions on the screens. PayPal.com is a secure web site. BJSoftware never sees any of your financial information. Note: The PayPal screens shown below may look different in actual use as PayPal occasionally revises their website and how it functions.



Connect to the Internet. Enter your username and password. Select the system(s) to purchase and press the "Process" button.

The reply from BJSoftware.com. Click on the credit card icon to continue.

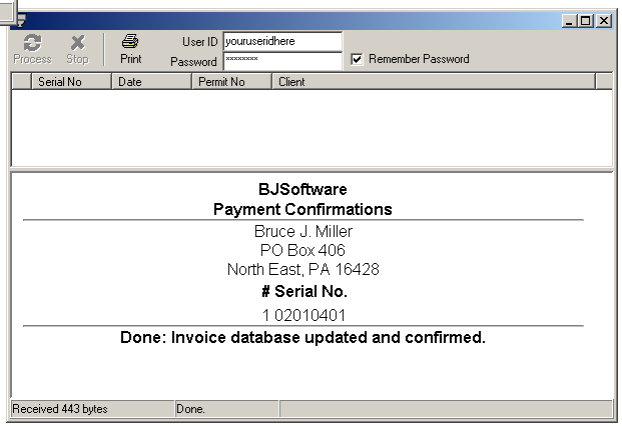


The PayPal.com entry point. If you are already a PayPal User just input your password And continue. Otherwise click the "Sign Up" button.

The PayPal payment details screen. Click the "Pay" button.

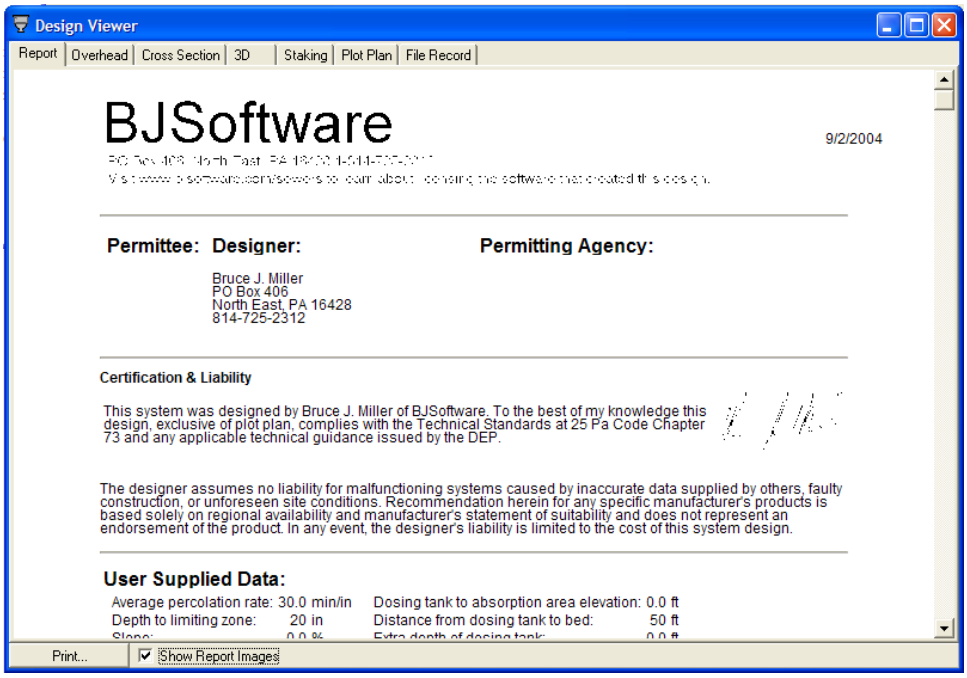
The PayPal payment confirmation screen. Click at "Click here to continue".

The confirmation screen returned from BJSoftware.com after the invoice has been logged and your design(s) unlocked. You will also receive a confirmation by e-mail.



View/Print

The View/Print window lets you review the design and print it. It also lets you see the main drawings directly.



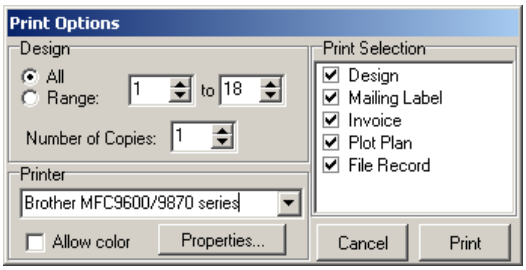
Opens the print dialog to print the design.

If checked the on-screen report will include the images. If unchecked "place savers" will show instead. This does not affect printing. However unchecking this feature will make the software run more quickly (the image generation is computationally intensive).

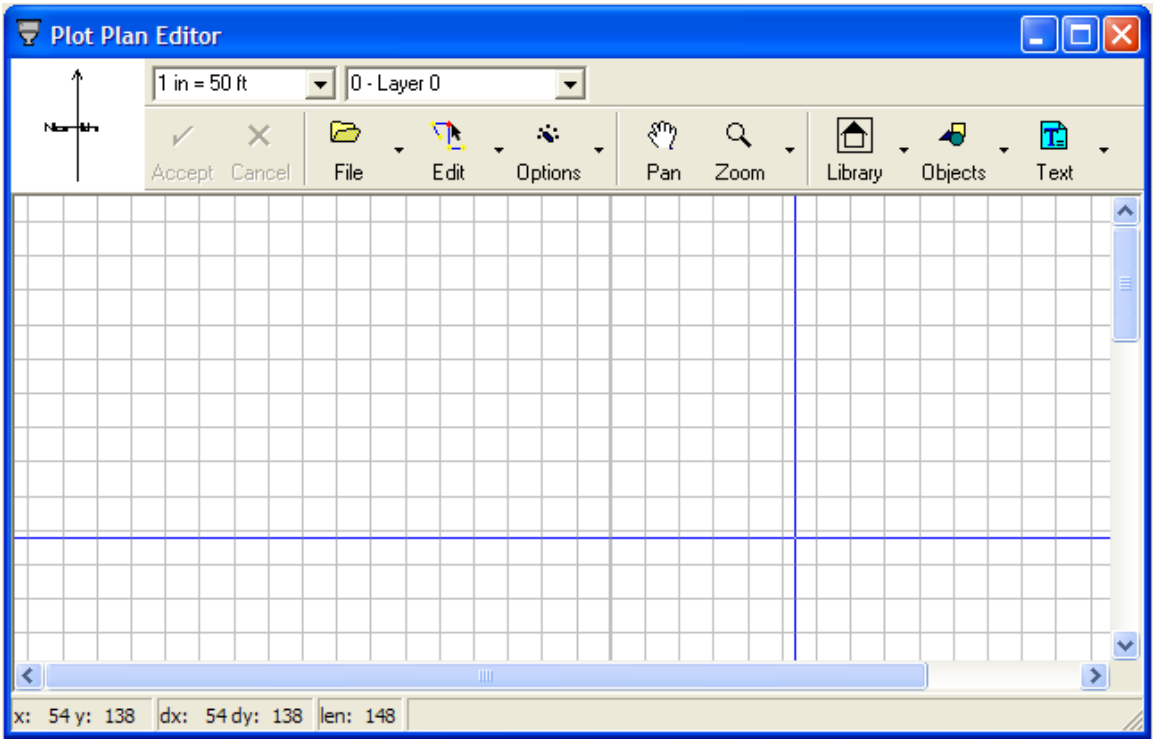
Print Options

Only those items that are available are enabled for printing.

- Mailing label – a page of address labels for the "Mail to" client. We use double-side tape (carpet tape) on the back side to turn them into mailing labels.
- File Record – a summary of the design for your records. We make our file package by stapling together this file record, the client's data forms, and the mailing labels.



Plot Plan Editor



The plot plan editor is a simple two-dimensional CAD system with specific adaptations for drawing plot plans. In the interest of simplicity several features available on commercial CAD packages have been left out or limited.

The plot plan prints as a single 8 ½ x 11 sheet with a north arrow and a client information header at the top. The client information is taken directly from the system design data and is not editable through the Plot Plan Editor.

Think of the printing part of the plot plan as an 8 ½ x 11 window that floats over the drawing. This "view port" can be moved around with the Pan tool.

The scale of the drawing is selectable from 1" = 25' to 1" = 400'. When changing scale any existing text will also be stretched or shrunk to the new scale.

Starting a new plot plan

First, decide the direction North will point and then turn the North arrow to suit:

- Double click on the North arrow.
- Move the mouse to rotate the arrow.
- Click the mouse when the arrow points the right direction.

Select the appropriate scale using the drop down menu. The default is 1" = 50'. Approximate coverages for the various scales are:

Scale	Width	Height
1" = 25'	190'	235'
1" = 50'	375'	475'
1" = 100'	750'	950'
1" = 200'	1500'	1900'
1" = 400'	3000'	3800'

Place the bed onto the drawing:

- From the "Library" dropdown menu select "System Bed"
- Move the cursor and you will see the system footprint following the cursor.
- Click to place the bed.

The default orientation of the bed is with the slope arrow pointing (down slope) to the left.

Rotate the bed into the correct orientation:

- From the "Edit" dropdown menu select "Rotate Objects". Note that the "Accept" and "Cancel" buttons are now enabled.
- Select the bed by clicking on it.
- Accept the selection by either clicking the "Accept" button or pressing the [Enter] key.
- Click on the drawing to establish the pivot point around which you will rotate the bed.
- Rotate the bed by moving the cursor.
- When the bed is in the right orientation click the mouse.

If you need to move the bed into a different position:

- From the "Edit" dropdown menu select "Move Objects".
- Select the bed by clicking on it.
- Accept the selection by either clicking the "Accept" button or pressing the [Enter] key.
- Click on the drawing to establish a starting point.
- Move the bed by moving the cursor.
- When the bed is in the right position click the mouse.

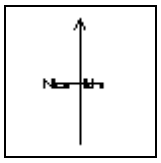
Place the test pits, perc holes, and dosing and septic tanks using the same methods.

Other features can be drawn using the tools under the "Objects" dropdown menu.

Remember that you can move the drawing's print window around using the Pan tool.

Plot Plan Editor Controls

North Arrow



The north arrow prints in the top left corner of the plot plan to indicate the direction of north relative to the drawing.

To change direction of the north arrow:

- Double click on the north arrow
- Move the cursor to rotate the arrow
- Click when the arrow is pointing the correct direction

Scale

The drawing scale is selectable from 1” = 25’ to 1” = 400’. The default scale is 1” = 50’.
Select the appropriate scale using the scale drop down menu. Approximate coverages for the various scales are:

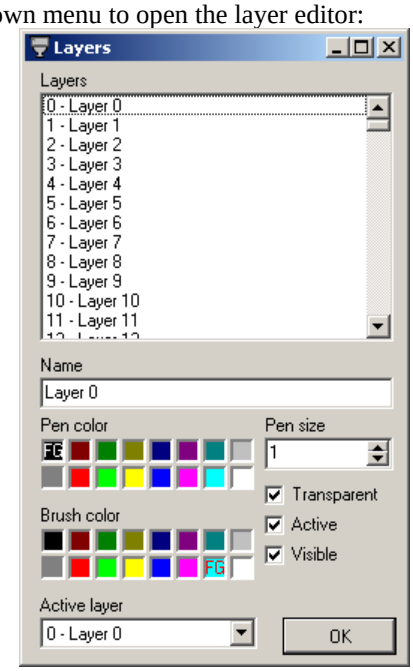
Scale	Width	Height
1” = 25’	190’	235’
1” = 50’	375’	475’
1” = 100’	750’	950’
1” = 200’	1500’	1900’
1” = 400’	3000’	3800’

Layers

The way a CAD object is drawn is determined by the settings of its layer. Each layer has its own attribute set of colors, pen size, visibility, etc. Up to 256 different layers can be defined. It is not necessary to use the layering feature to create a plot plan.

The current layer is selected with the layer drop down menu. As an object is created it is assigned to the current. Changing the attributes of a layer (such as color, pen width, etc) automatically changes the way all the objects in that layer are drawn.

Double click in the layers drop down menu to open the layer editor:



To edit the attributes of a layer:

- Click on the layer in the Layers list box.
- Change the name in the Name edit box.
- Select the pen and brush colors by clicking on the desired color. (The pen is the device that draws lines and borders while the brush is the device that fills areas.)
- Select the pen size (the width of the pen in pixels).
- Toggle the transparent, active, and visible attributes.
- Click the OK button to accept the changes and return to the drawing.

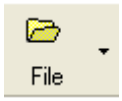
Plot Plan Editor Toolbar

Accept Button

Click on the "Accept" button to complete a selection started by one of the editing, library or objects routines. Alternately press the [Enter] key. Note that the "Accept" button is enabled (not grayed out) only when there is a CAD operation pending.

Cancel Button

Click on the "Cancel" button to quit a pending CAD operation. Alternately press the [ESC] key or start another operation. Note that the "Cancel" button is enabled (not grayed out) only when there is a CAD operation pending.



File Button/Menu

The "File" button has a drop down menu of file operations:

- New Clears the editor.
- Load… Loads a previously saved plot plan.
- Merge… Loads in a previously saved plot plan while retaining existing objects.
- Save… Saves the plot plan to disk.
- Export as DXF… Saves the plot plan to disk in DXF format (usable in most CAD programs).

Note: On exit the editor saves a copy of each plot plan on in the C:\Sewers\PlotPlanBackups folder under the name: plotplanbackup0.cs2. The software will automatically archive up to 10 plot plans: plotplanbackup0.cs2 through plotplanbackup9.cs2, renaming them as they are saved so that …0 is the newest and …9 is the oldest.

Edit Button/Menu

The "Edit" button has a drop down menu of editing operations. The most recent edit operation becomes the default operation of the edit button as reflected by the icon.

Delete Objects

Removes selected objects from the drawing.

- Click the "Delete Objects" menu item.
- Select each CAD object to delete by clicking on it.
- Complete the selection and commit the delete by clicking the "Accept" button or pressing the [Enter] key.

Edit Object

Only one object at a time can be edited and not all objects are editable. Grouped objects such as most objects in the Library cannot be edited. Text can be edited by double clicking on the text.

- Click the "Edit Object" menu item.
- Select the object. If the object can be edited control "handles" will appear at the object's control points.
- Drag the handles to re-size the object.
- Either accept the edit or cancel it by clicking either the "Accept" or "Cancel" buttons, respectively.

Move Objects

Changes the position of the selected objects

- Click the "Move Objects" menu item.
- Select the objects to be moved by clicking on them.
- Complete the selection by clicking the "Accept" button or pressing the [Enter] key.
- Click the mouse to establish a starting point.
- Drag the objects to the new location .
- Click again to set them into position.

Rotate Objects

Turns the selected objects about an axis.

- Click the "Rotate Objects" menu item.
- Select the objects to be rotated by clicking on them.
- Complete the selection by clicking the "Accept" button or pressing the [Enter] key.
- Click the mouse to establish the axis around which to rotate the objects.
- Move the cursor to rotate the objects.
- Click the mouse to set the new orientation.

Options Menu

The option menu items control how the editor operates.

Show Grid

Toggles the grid on or off. The grid does not show when printing.

Use Snap

When the snap is toggled on mouse clicks are "pulled" to the nearest grid intersection.

Use Ortho

When use ortho is toggled on objects are drawn perpendicular to the grid.

Use area to select objects

An alternative to selecting each object with a mouse click.. The selection is made by clicking on the drawing and drag a rectangle around the objects to be selected. Only those objects that are fully within the drag rectangle will be selected. The "Accept" button does NOT need to be clicked when using this option.

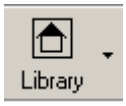
Pan Button

Moves the viewing/printing rectangle of the drawing.

- Click the “Pan” button.
- Click and drag the drawing to the desired view.

Zoom Menu

The zoom level changes the viewing size of the drawing. It does NOT affect the size or scale of the printed drawing.



Library Button/Menu

The library is a collection of pre-defined object groups (blocks in CAD parlance). The most recent library operation becomes the default operation of the library button as reflected by the icon.

Define Block

Defines and saves a group of objects for future use.

- Click the “Define Block” menu item.
- Select the objects to include in the block and press the “Accept” button.
- Enter a name for the block in the input dialog that appears.
- The selection is removed from the drawing.

Add Block

Adds a block defined using “Define Block” to the drawing.

- Click the “Add Block” menu item.
- Enter the name of the block in the input dialog.
- Move the cursor over the drawing.
- Click when the objects are in position.

System Bed

Adds a to-scale drawing of the system’s footprint to the drawing. This feature is only available when the Plot Plan Editor is launched from the Design Wizard.

- Click the “System Bed” menu item.
- Move the cursor over the drawing.
- Click when the bed is in position.

 **Dosing Tank**

 **Dosing Tank**

Adds a dosing tank symbol to the drawing. Two varieties are available: round or rectangular.
Click one of the "Dosing Tank" menu items.
Move the cursor over the drawing.
Click when the tank symbol is in position.

 **Septic Tank**

 **Septic Tank**

Adds a septic tank symbol to the drawing. Two varieties are available: round or rectangular.
Click one of the "Septic Tank" menu items.
Move the cursor over the drawing.
Click when the tank symbol is in position.

 **2x3 Perc Holes**

 **2x4 Perc Holes**

Adds a grid of perc hole symbols to the drawing. Two varieties are available: 2 x 3 and 2 x 4.
Click on either the "2 x 3 perc holes" or "2 x 4 perc holes" menu item.
Move the cursor over the drawing.
Click when the grid is in position.

 **Test Pit**

Adds a test pit symbol to the drawing.

- Click on the "Test Pit" menu item.
- Move the cursor over the drawing.
- Click when the symbol is in position.

 **House**

Adds a generic house symbol to the drawing.

- Click on the "House" menu item.
- Move the cursor over the drawing.
- Click when the symbol is in position.

 **Well**

Adds a well symbol to the drawing.

- Click on the "Well" menu item.
- Move the cursor over the drawing.
- Click when the symbol is in position.

Objects Button/Menu

Objects are fairly simple drawing building blocks. The most recent objects operation becomes the default operation of the objects button as reflected by the icon.

Line

Adds a line to the drawing.

- Click on the “Line” menu item.
- Click on the drawing to establish the starting point for the line.
- Click again on the ending point.

Arrow

Adds a line with an arrowhead at one end to the drawing.

- Click on the “Arrow” menu item.
- Click on the drawing to establish the arrowhead point for the line.
- Click again on the tail point.

Dimension

Adds a dimensioned line with arrowheads at each end to the drawing.

- Click on the “Dimension” menu item.
- Click on the drawing to establish the starting point for the line.
- Click again on the ending point.
- An input dialog will appear with the length of the line for editing.
- Edit the text, if desired, and click the “OK” button.

Rectangle

Adds a rectangular box to the drawing.

- Click on the “Rectangle” menu item.
- Click on the drawing to establish a corner.
- Click again at the opposite corner.

Rectangle – Filled

Adds an opaque rectangular box to the drawing.

- Click on the “Rectangle - Filled” menu item.
- Click on the drawing to establish a corner.
- Click again at the opposite corner.

Ellipse

Adds an ellipse to the drawing.

- Click on the “Ellipse” menu item.
- Establish a bounding box to define the ellipse:
- Click on the drawing to establish a corner of the bounding box for the ellipse.
- Click again at the opposite corner of the bounding box.

 **Ellipse – Filled**

Adds an opaque ellipse to the drawing.

- Click on the “Ellipse - Filled” menu item.
- Establish a bounding box to define the ellipse:
- Click on the drawing to establish a corner of the bounding box for the ellipse.
- Click again at the opposite corner of the bounding box.

 **Arc**

Adds an arc to the drawing.

- Click on the “Arc” menu item.
- First establish a bounding box to define an ellipse that includes the arc:
- Click on the drawing to establish a corner of the bounding box for the ellipse.
- Click again at the opposite corner of the bounding box.
- Move the cursor and click to establish the starting end point of the arc along the ellipse.
- Click again to define the ending point of the arc.

 **Polyline**

Adds a series of connected line segments to the drawing.

- Click on the “Polyline” menu item.
- Click on the drawing to establish the first point of the first line segment.
- Click again to end the line segment and start the next.
- Repeat until all segments except the final one are drawn.
- With the cursor in position, press the [Enter] key to add the final line segment and complete the operation. KNOWN BUG: Do NOT press the “Accept” button. Pressing the “Accept” button will add an extra, unwanted line segment to the polyline.

 **Polygon**

Adds an opaque polygon to the drawing.

- Click on the “Polygon” menu item.
- Click on the drawing to establish the first point of the first line segment.
- Click again to end the line segment and start the next.
- Repeat until all segments except the final one are drawn.
- With the cursor in position, press the [Enter] key to add the final line segment and complete the operation. KNOWN BUG: Do NOT press the “Accept” button. Pressing the “Accept” button will add an extra, unwanted line segment to the polygon.

 **Spline**

Adds a continuous curving line to the drawing. The spline is defined by a series of control points that “pull” the curve into shape. The more points you use to define the spline, the more control you have over the shape.

- Click on the “Spline” menu item.
- Click on the drawing to establish the first control point.
- Repeat until all control points except the final one are drawn.
- With the cursor in position, press the [Enter] key to add the final control point and complete the operation. KNOWN BUG: Do NOT press the “Accept” button. Pressing the “Accept” button will add an extra, unwanted control point to the polygon.

Text Button/Menu

Adds and defines drawing annotation.

Add

Adds a caption to the drawing using the current height, face, and alignment settings.

- Click on the “Add” menu item or click on the “Text” button.
- Enter the text in the input dialog.
- Click on the drawing to place the text.

Height

The height in points to draw text. The point height is based on the current scale settings. Changing the drawing scale will cause the text to draw in a different size than originally selected.

Face

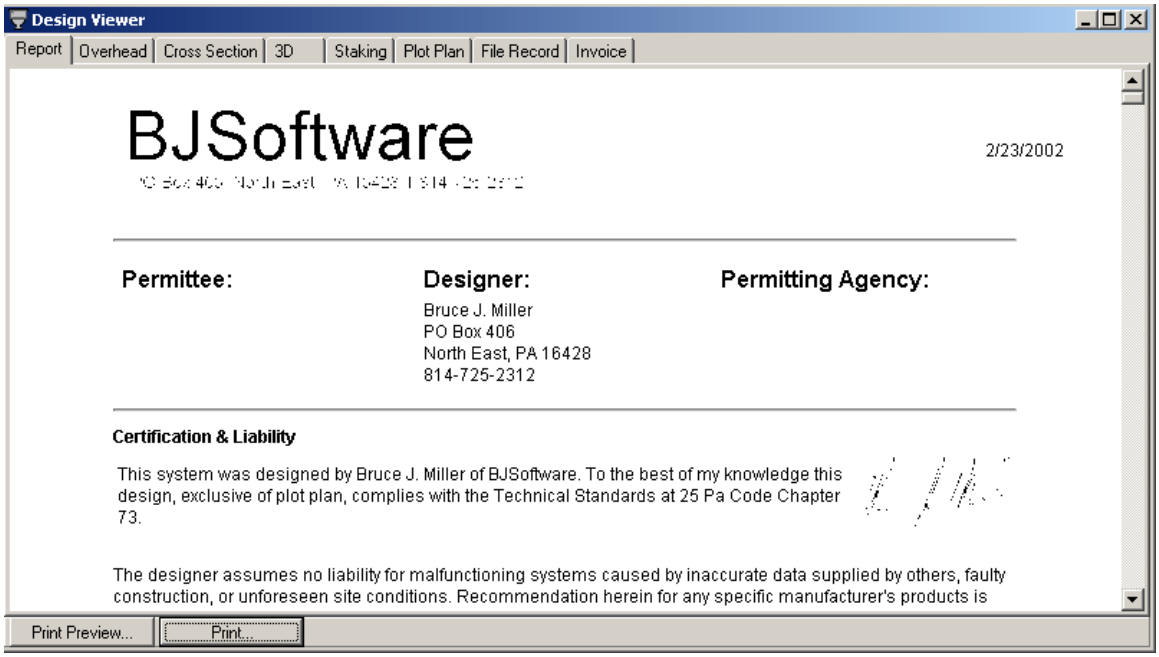
The typeface of the text to be drawn.

Alignment

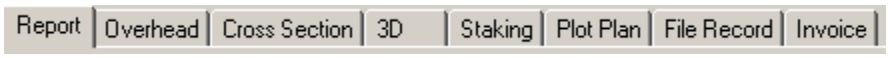
The justification setting for text to be drawn.

Viewing and Printing Designs

Only those tabs with content will be visible. For example, if you are not billing for the system, then no invoice will be generated and the Invoice tab will not show.



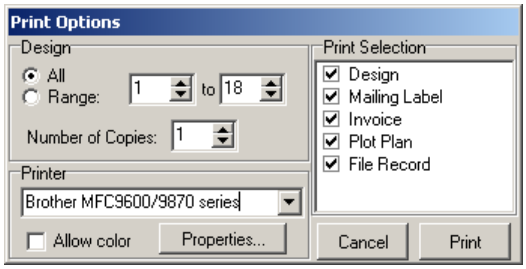
Tabs



- Report – The completed design. This view is complete with regard to content but has not been paginated (formatted for printing). The report also includes the contents of the Overhead, Cross Section, 3D, and Staking tabs.
- Overhead – The plan view of the bed drawing.
- Cross Section – The cross section view of the bed drawing.
- 3D – A three-dimensional drawing of the bed with perspective from down slope left and an exaggerated vertical scale.
- Staking – The staking plan for the bed. Used for quickly laying out the bed using triangulation from two reference points.
- Plot Plan – The plot plan as it will be printed.
- File Record – A summary of the design suitable as a file copy for your records.
- Invoice – A copy of the invoice.

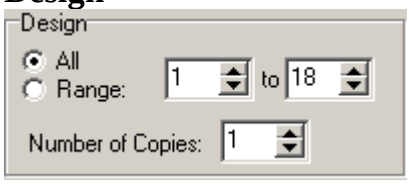
Print Button

Opens the print options dialog:



To print the design and the items press the “Print” button.

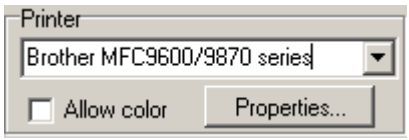
Design



The design can be printed either in total or in part. To print only a part of the design change the range numbers.

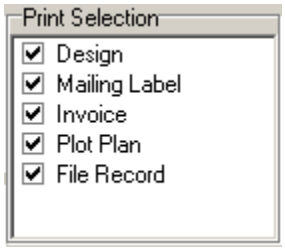
The number of copies affects only the printing of the design. The other items always print only one copy each.

Printer



Select your printer here. The default printer here is the same as the default printer you have selected for Windows. Use can change the printer’s properties (how the printer is set up) by pressing the “Properties…” button.

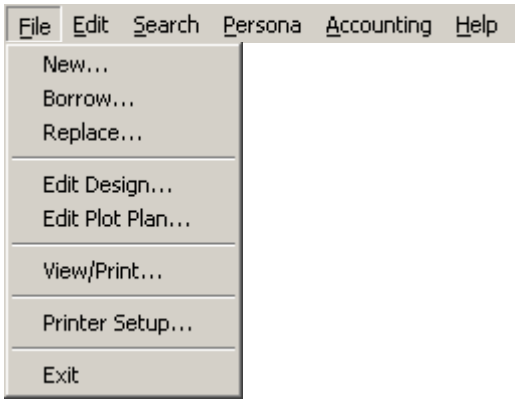
Print Selection



Select the items to print here. Only those items with content will be enabled. By default, all enabled items are selected for printing when the dialog opens.

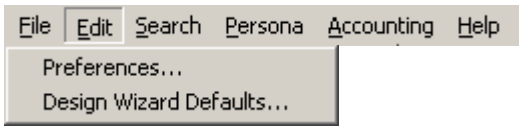
Main Menu

File



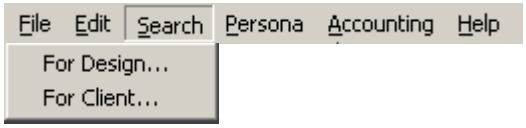
- New – Opens the Design Wizard to create a new system design.
- Borrow – Uses an existing design as a starting point for a new system design. Opens the Design Wizard with a new design filled in with the data from the existing design.
- Replace – Creates a new design that will replace an existing design. This is similar to Borrow except the database records that the original design has been superceded by the new one.
- Edit Design – Opens an existing design for editing.
- Edit Plot Plan – Opens the plot plan editor to edit an existing plot plan.
- View/Print – Opens the View/Print utility for viewing or printing of an existing design.
- Printer Setup – Utility for changing printer settings.
- Exit – Quits the program.

Edit



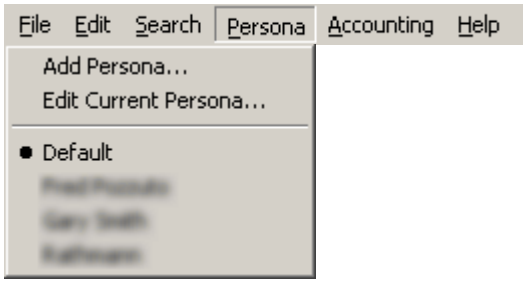
- Preferences – Opens the preferences editor where you can change how some of the calculations are made.
- Design Wizard Defaults – Opens the defaults editor for the design wizard where you can set the values and settings for some of the inputs and controls.

Search



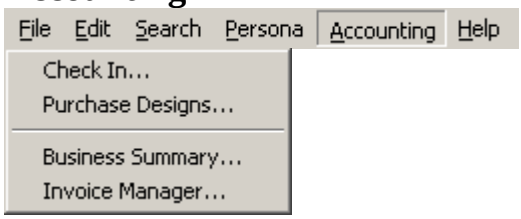
- For Client – Opens the client search dialog.
- For Design – Opens the design search dialog.

Persona



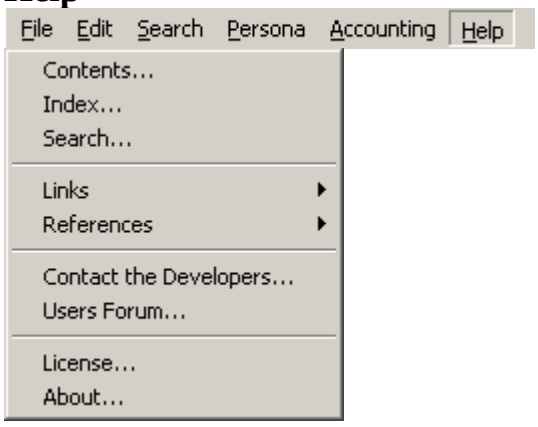
- Add Persona – creates a new persona.
- Edit Current Persona – opens the Persona Editor to change the attributes of the currently selected persona.
- Default – the main persona.
- Others – the menu will include a list of personas you have created. The current persona is the one that is indicated by the radio button beside it.

Accounting



- Check In – Opens the Check In Utility to connect to the BJSoftware web site to enable the software.
- Purchase Designs – Opens the Purchasing Utility.
- Business Summary – Opens the Business Summary.
- Invoice Manager – Opens the Invoice Manager

Help



- Contents – Opens the help utility to the contents page.
- Index – Opens the help utility to the index page.
- Search – Opens the help utility to the find page.
- Links – A list of resources on the web. Selecting the link launches a browser and opens the link.
- References – A list of reference materials stored installed with the software.
- Contact the Developers – Opens a utility that you can use to email a message to BJSoftware.
- Users Forum – Launches your browser and connects you to the BJSoftware Sewers forum on the BJSoftware web site.
- About – Opens the copyright screen.

Main Tool Bar

The most often used features from the main menu are also provided on the main tool bar for quick access.

Opens the Design Wizard to create a new design.

Opens the Design Wizard to edit an existing, saved design.

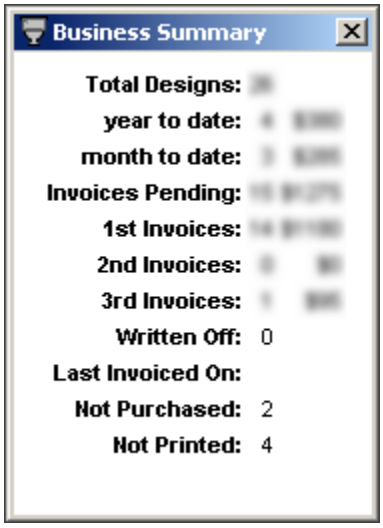
Opens the Plot Plan Editor to edit an existing, saved plot plan.

Opens View/Print Utility for viewing or printing of an existing design.

Opens the Search dialog for search the databases for designs.

Opens the Invoice Mangaer.

Business Summary



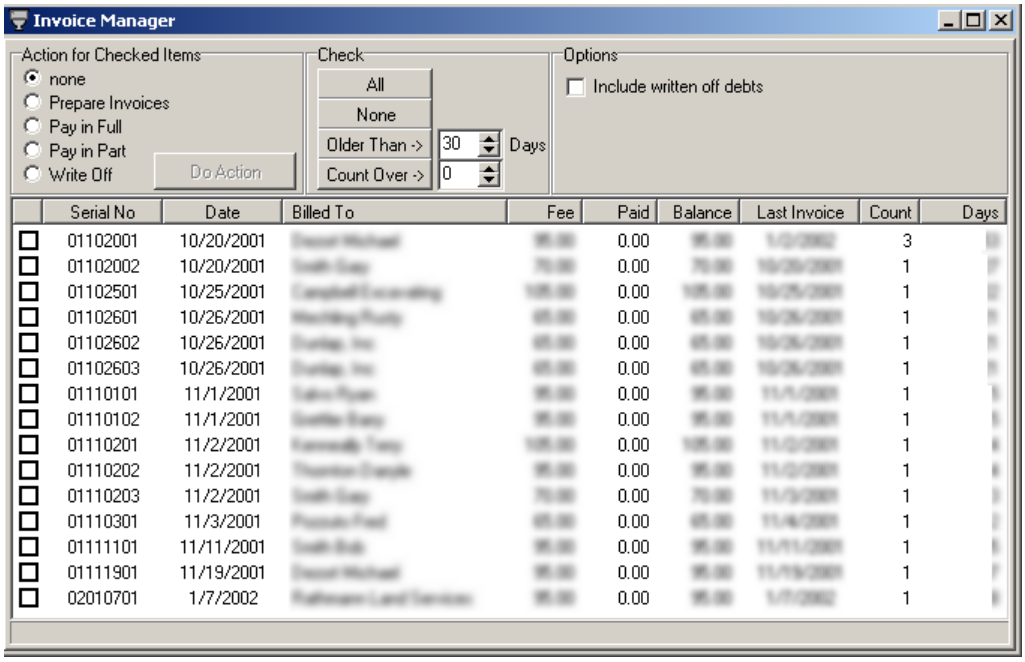
The business summary gives a quick overview of how many systems you have designed and the state of your accounts receivables. The summary updates when you start the software and as you close other windows.

The Business Summary opens when the software starts up. You can close it whenever. It can be reopened from the Accounting menu at any time.

Invoice Manager

The Invoice Manager is a utility for preparing invoices and updating the invoice databases. Only unpaid invoices are shown in the list. Once an invoice has been marked as paid it will no longer show.

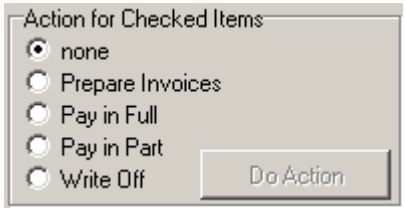
Actions are performed on the invoices you have checked.



Invoice List Sorting

By default the invoices are sorted by their Serial Numbers.

Actions



When you select an action to perform the “Do Action” button will enable and its name will change to that action. Actions are performed only on those invoices that are checked.

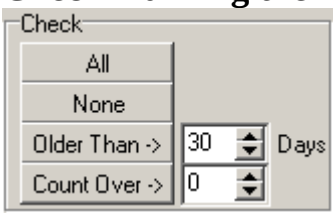
After the “Do Action” button is pressed the action will be performed on the checked invoices and then the invoice list will be updated to reflect the changes.
The Actions

- None
- Prepare Invoices – A new invoice is created for each checked invoice and the databases are updated. A window will appear where you can review the new invoices and print them or cancel the operation. If you print the invoices you will be asked if you want to update the database.

Unless you really do not want to record that you invoiced for these systems again answer affirmatively.

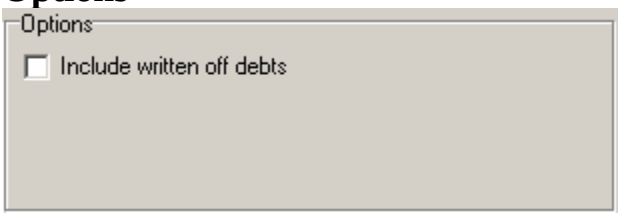
- Pay in Full – Updates the databases to indicate that the checked invoices have been paid off.
- Pay in Part – Opens a dialog that asks you for the amount that was paid on the invoice and records the transaction in the database. The process is repeated for each checked invoice.
- Write Off – Flags the invoices as written off so that they can be excluded from the list.

Check marking the Invoices en masse



- All – Checks all displayed invoices.
- None – Unchecks all displayed invoices.
- Older Than -> XX days – Checks all invoices that have not been billed in the last XX days.
- Count Over -> X – Checks all invoices that have been invoices X times.

Options

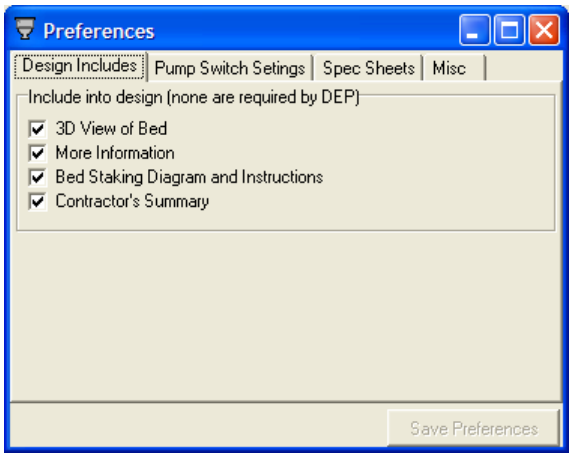


- Include written off debts – If checked the list will also include invoices that you have written off.

Preferences Editor

Use the Preferences Editor to change the settings for some of the calculations and choices made internally in the Design Wizard.

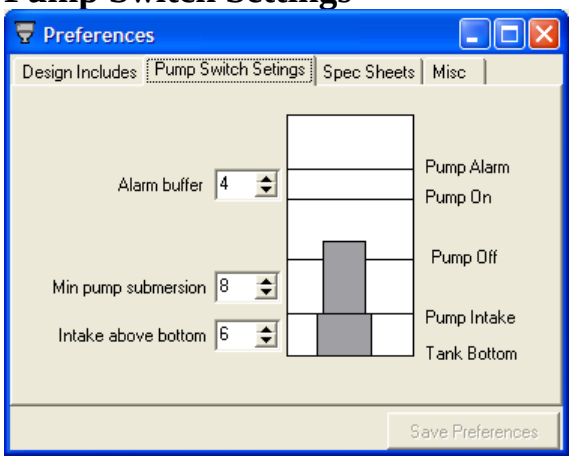
Design Includes



The Design Includes are all optional items normally included in the design. Here they can be eliminated from the design by unchecking.

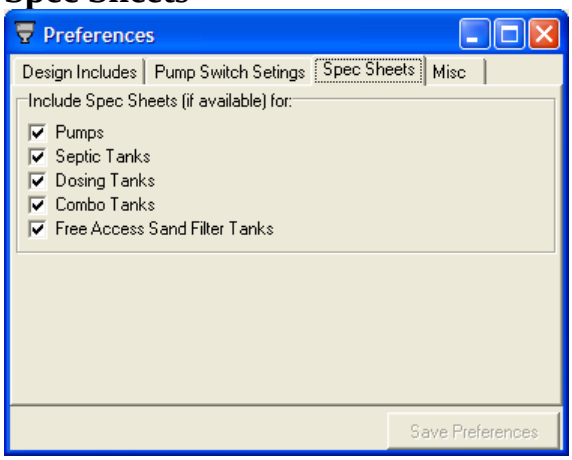
- 3D View of Bed – a three dimensional drawing of the bed to help visualize it.
- More Information – a list of resources for the homeowner.
- Bed Staking Diagram and Instructions – a system for quick staking of the bed using triangulation from two points.
- Contractor's Summary – a terse list of system requirements so contractors don't have to hunt through the whole design when quoting.

Pump Switch Settings



- Alarm buffer – the height of the alarm switch above the pump on switch.
- Min pump submersion – the height of the pump off switch above the pump intake. This is the minimum amount of water that will always cover the pump. It is important to always keep the pump submerged to keep the pump from overheating and increasing its lifespan.
- Intake above bottom – height of the pump above the bottom of the dosing tank

Spec Sheets

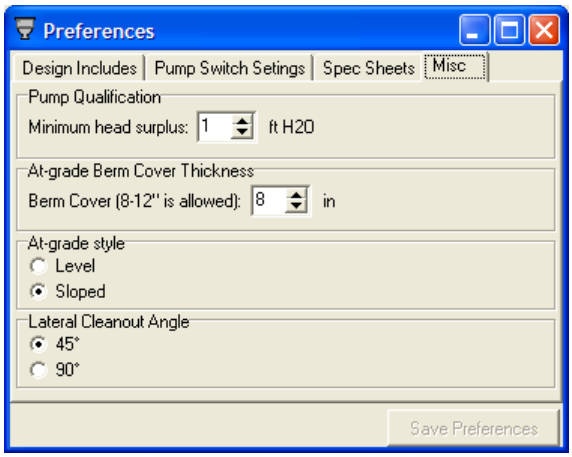


Spec sheets are included in the design when they are checked here and they are available in the database for:

- Pumps
- Septic Tanks
- Dosing Tanks
- Combo Tanks

Spec sheets for other items such as siphons, bio-filters, and effluent filters are always included in the design.

Miscellaneous

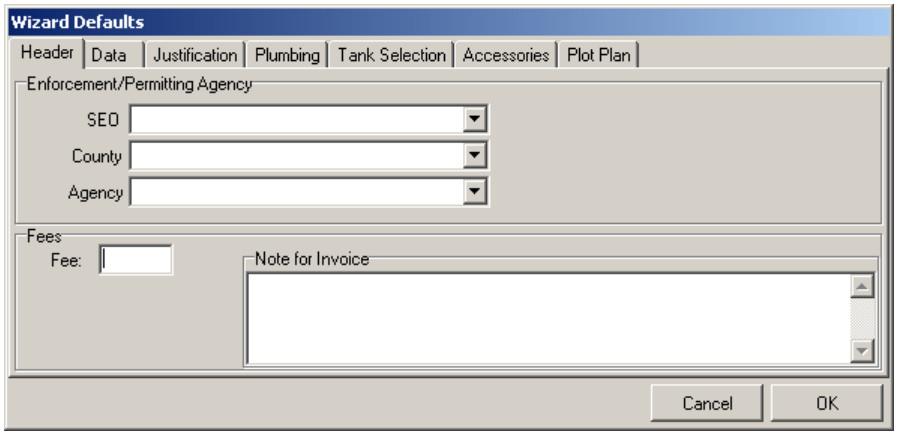


- Pump Qualification - Minimum head surplus is how much you require the pump's head ability to exceed the system's need. By example, if you require a minimum head surplus of 1 ft H2O and the system requires 30.2 ft H2O at a flow rate of 23.0 gpm then only pumps that can produce 31.2 ft H2O of head at a flow rate of 23.0 gpm will be allowed.
- At-grade Berm Cover Thickness – The berm cover over an at-grade bed is allowed to be 8 to 12 inches at the designer's discretion.
- At-grade Style – The default style of at-grade beds.
- Lateral Cleanout Angle – Designer's choice between angled or straight up lateral cleanouts.

Wizard Defaults Editor

Many of the selectable settings in the Design Wizard can be set as defaults using this editor. If a value is set with this editor then when you create a new design the Design Wizard will start with these settings already filled in. If you do not want a default value for the item leave it blank.

Header Tab

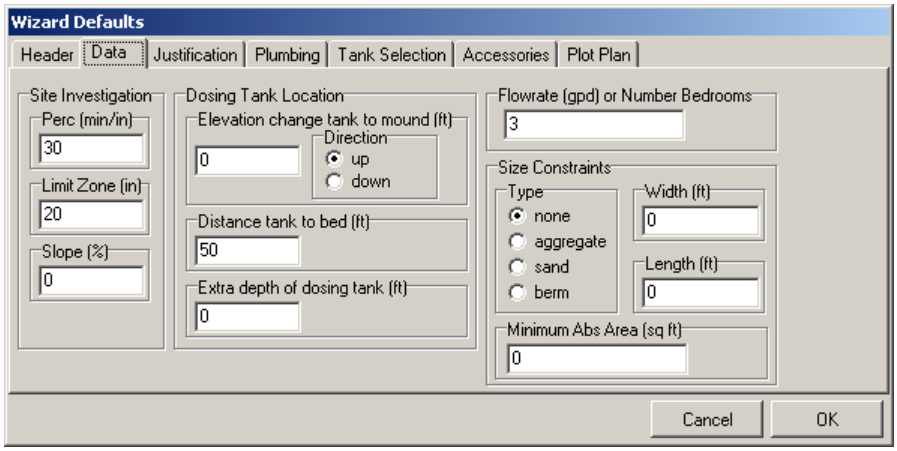


- SEO – Sewage Enforcement Officer – The person issuing the permit.
- County – The county where the site is located.
- Agency – The township or other permitting agency.

Fee is the amount you charge for a design.

The "Note for Invoice" is inserted into the invoice when the invoice is printed.

Data Tab



Site Investigation

- Perc – Percolation rate in minutes per inch (min/in).
- Limit Zone – Depth to limiting zone in inches (in).
- Slope – Slope at the absorption area in percent (%).

Dosing Tank Location

- Elevation change tank to mound – the vertical difference in feet (ft) of the ground measured from the dosing tank position to the high point of the absorption area before any construction.
- Direction – Direction of the mound from the tank. Select up or down as appropriate.
- Distance tank to bed – The horizontal distance in feet (ft) from the dosing tank to the center of the absorption area.
- Extra depth of dosing tank – Use this to indicate that the dosing tank will be set deeper than standard. The software assumes the dosing tank bottom is about 5 ½ feet below grade.

Flowrate

- Flowrate or number of bedrooms – If this number is less than 10 then the software assumes it to be the number of bedrooms. A number 10 or larger is assumed to be the daily building flow rate in gallons per day (gpd).

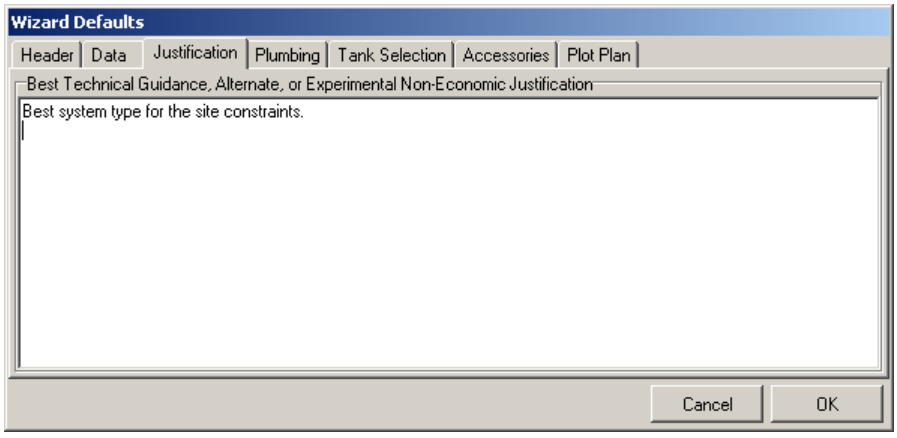
Constraints

The "Size Constraints" information tells the software how to optimize the shape of the system. Its use is optional. The optimizing algorithm chooses the system that has the best fit to the constraints (minimum area overlap outside of the size constraint rectangle defined by "Width" and "Length") and that meets DEP rules.

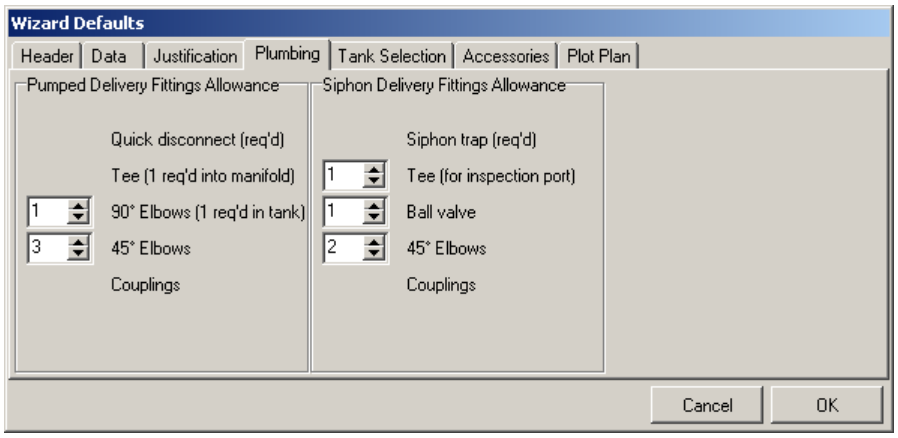
- Type – Which footprint of the system to constrain. You can use the aggregate area, toe of sand, or toe of berm to constrain the system.
- Width – Width (with slope dimension) constraint in feet (ft).
- Length – Length (across slope dimension) constraint in feet (ft).
- Minimum Abs Area – Minimum absorption area in square feet (sq ft) - If a number is given here the software will generate a system that has an aggregate area at least as big as the value given.\

Justification Tab

The justification text prints as the reasons allowing the use of Best Technical Guidance, Alternate, or Experimental systems.



Plumbing Tab



The plumbing options are slightly different for pumped and siphon-based systems. Coupling quantities for both are calculated on the fly based on pipe lengths of 10 ft. This causes a very slight conservative overestimate of plumbing friction if 20 ft lengths are used.

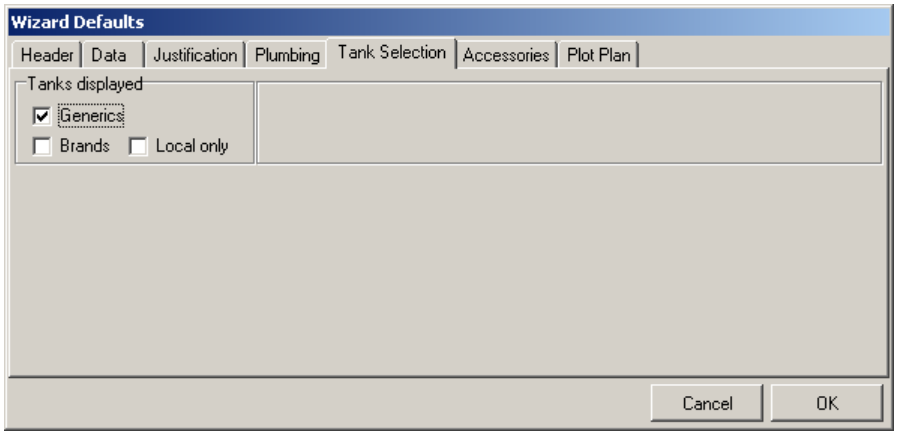
Pumped Delivery Fittings Allowance

90 Elbows – at least one is required to exit the tank.
45 Elbows – multiple 45 elbows are always preferable to 90 elbows.
The software estimates a fittings allowance for the system. You can adjust the quantities for fittings that are not grayed out.

Siphon Delivery Fittings Allowance

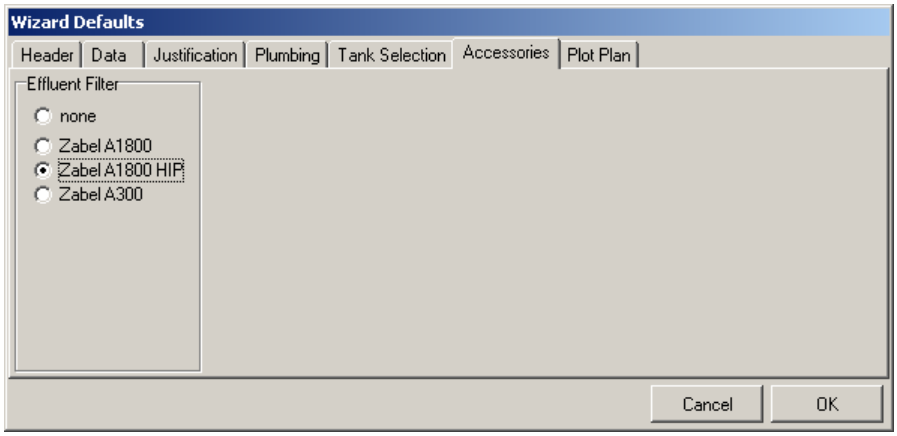
90 Elbows are not allowed in siphon systems and 45 elbows should be used sparingly.
Ball valves are recommended in the DEP SEO manual, but are not strictly required.

Tank Selection Tab

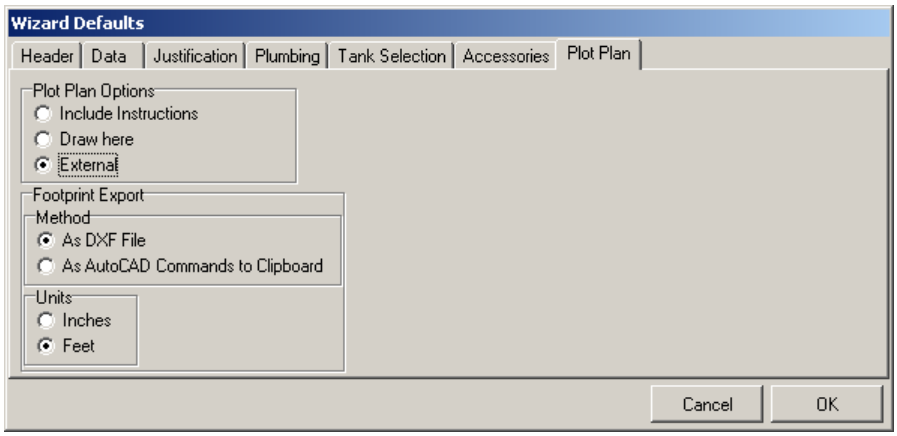


- Generics - If checked then all the basic tank configurations in the database will be included in the lists.
- Brands - If checked then tanks associated with a manufacturer will be included in the lists.
- Local only - If checked then only the brand named tanks that are deliverable to the county of the site will be included in the lists. The county is determined by the county selected on the client info page.

Accessories Tab



Plot Plan Tab



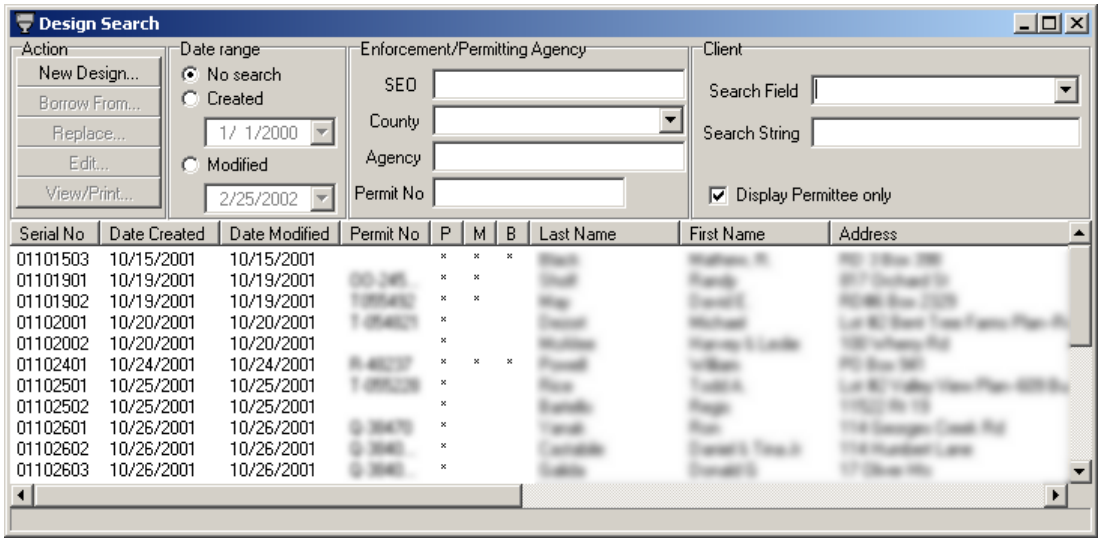
There are three options for how plot plans are handled:

- Include Instructions – a page is added to the design that explains the requirements of a plot plan.
- Draw here – allows use of the build-in CAD system.
- External – indicates you will draw the plot plan by hand or with another application.

Select the units based on what units you use in your CAD system so that the software will scale the footprint drawing correctly.

Design Search

The Design Search Utility is a powerful tool for finding systems when you do not have the serial number for the design you are looking for. The design list is updated as you change the searching criteria. By default the list starts with all designs included.



Design List Sorting

By default the designs are sorted by their Serial Numbers. To change the sort criteria click on the column you want to sort by.

Most of the column titles are obvious. However the three that indicate the client information relationships are not:

- P – Permittee, an asterisk (*) indicates the name and address info is for the permittee.
- M – Mail to, an asterisk (*) indicates the name and address info is for the mail to client.
- B – Bill to, an asterisk (*) indicates the name and address info is for the bill to client.

Search Matches

Using more than one search feature at a time combines the searches so that each search feature must be satisfied. In other words the search results are “anded” together.

Searches performed on text are “full text” searches in that a match occurs when all the characters in the search string match any part of the target. For example, a search string of “d” matches all of the following names:

Randy
Donald
David
Daniel
Ed
Howard

While “da” would match:

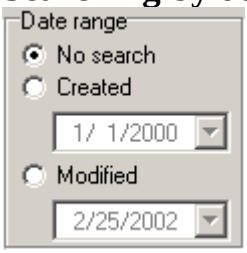
David
Daniel

Actions

Action buttons become active/inactive as you select systems from the design list.

- New – Opens the Design Wizard to create a new system design.
- Borrow From– Uses the selected design as a starting point for a new system design. Opens the Design Wizard with a new design filled in with the data from the selected design.
- Replace – Creates a new design that will replace the selected design. This is similar to Borrow except the database records that the original design has been superceded by the new one.
- Edit Design – Opens the selected design for editing.
- View/Print – Opens the View/Print utility for viewing or printing of the selected design.

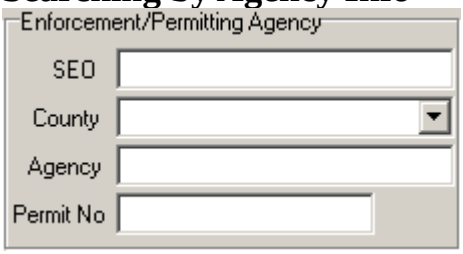
Searching by date range



You can limit the list of designs to those designed within a range of dates either by when the design was first created or when it was last edited.

Clicking the drop down for either date box will pop up a calender:

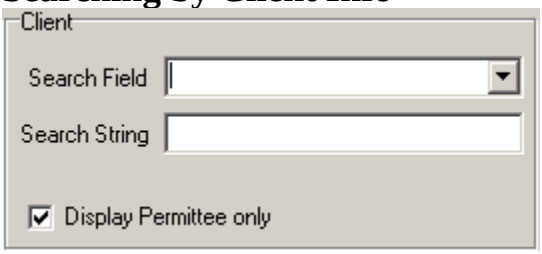
Searching by Agency Info



You can limit the design list to matches on agency info.

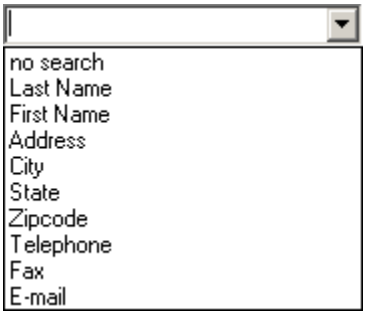
- SEO – Sewage Enforcement Officer – The person issuing the permit.
- County – The county where the site is located.
- Agency – The township or other permitting agency.
- Permit No – The serial number assigned to the septic permit.

Searching by Client Info



By default only records for the Permittee are shown. To show any additional records for the mail to or bill to clients uncheck the "Display Permittee only" checkbox.

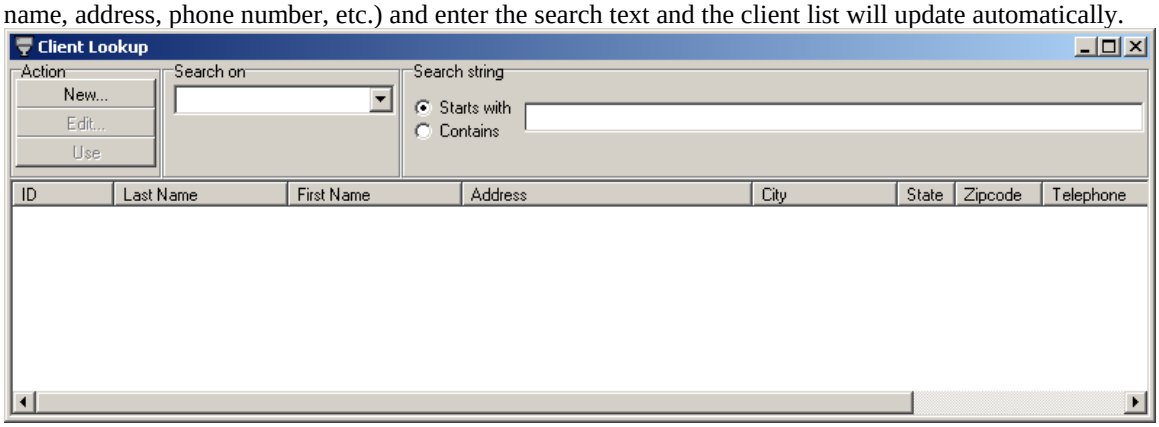
Select a client related field to search on by using the drop down menu:



Enter the text to search on in the "Search String" box.

The Client Lookup Utility

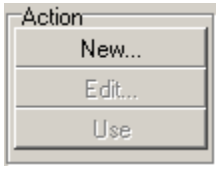
The Client Lookup Utility allows you to find clients by searching through the client database using many different criteria. By default the client list starts with no clients showing. You select a search criteria (last name, address, phone number, etc.) and enter the search text and the client list will update automatically.



Client List Sorting

By default the clients are sorted by their client codes. To change the sort criteria click on the column you want to sort by.

Actions



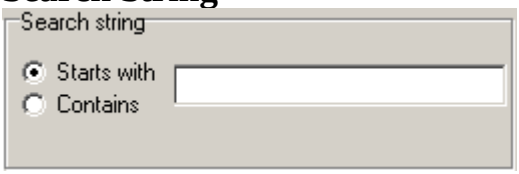
Action buttons become active/inactive as you select clients from the client list.

- New – Opens the New Client dialog so you can add a new client to the system.
- Edit– Opens the Client Editor so you can change information about the client.
- Use – If you got to the Client Lookup from the Design Wizard, then pressing the "Use" button will insert the selected client code into the client ID on the Design Wizard..

Search Criteria

Use the "Search on" drop down menu to select the field to search on.

Search String



Enter a search string to start the search. The client list will update as you type. You can limit the search to only data that begins with the search string or to any data that contains the search string.

Conventions

Serial Numbers

Serial Numbers are 8 digit numbers built up from the creation date of the design and a tie breaker. The first two digits are the year, the following two the month, then the day, and then a two digit tie breaker where the first design of the day is 01:

YYMMDDXX

Example: 02022603 =
02 – 2002
02 – Feb
26 – 26
03 – 3rd design for 2002 Feb 26

You might also notice an additional serial number on the side of the file record. This alternate serial number is a year plus sequential number. We add this extra serial number to make filing your records easier.

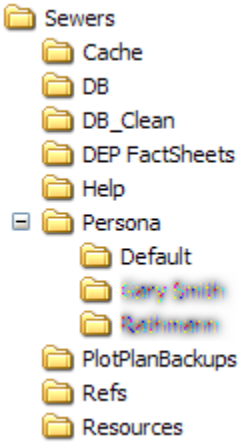
YY - XXXX

Example: 02-0034 =
02 – 2002
0034 – 34th design for 2002

Client Codes

Client codes are used to make client information independent from the design. That way the same client can be used on many systems. The client code is an 8 character string. The first four characters are the first four letters of the client's last name. The last four characters are a four digit tie breaker. Client codes are generated automatically when you add a new client.

Directory Structure



- Cache – Saved internet files to make your internet connection faster.
- DB – Databases to store your designs, clients, and invoices.
- DB_Clean – Empty database files for DB.
- DEP Factsheets – DEP factsheets in Adobe PDF format.
- Help – Help system files.
- Persona – Each directory here represents a different persona. Each of these directories contains the persona information and images.
- PlotPlanBackups – Auto-saved copies of the last 10 plot plan edits.
- Refs – Reference files.
- Resources – Databases to hold the parts (tank, pump specs, etc.) that make up the design.

Of the directories above only two, DB & Persona, contain files that cannot be restored from the install CD. You should back up these two directories on a regular basis. They contain YOUR data:

PERIODICALLY BACK UP THESE FOLDERS:

- **DB**
- **Persona**