

Well Planning Guide®



Residential

 **WELL WATER
CONNECTION, INC.**
Water Well Design & Project Management

Table of Contents

Section I – Well Information

Page No.

Company Introduction	2
How Fast Your Well Pays for Itself	3
What Does Your Water Cost?	4
How Much Water Does My Sprinkler System Use?	5
Actual \$1,400 Annual Savings!	6
Types of Wells – Shallow (Point, Gravel) <u>or</u> Bedrock (Artesian)	7
Water Well Design and Project Management	8
Site Preparation	8
Point Wells	8
Gravel Wells	8
Bedrock/Artesian Wells	8
Well Casing & Screens	9
Hydrofracture	9
Well Development	9
Trenching	9
Cut Below Grade	10
Pump Systems	10
Constant Pressure System	10
Sediment Filter	10
Electrical Services	10
Water Testing	11
Re-landscaping	11
Well and Pump System Check ups	11
Winterization	11

Section II – Well Pricing

Page No.

“Ball Park” Residential Pricing	12
Site Preparation Services	13
Point Wells	14
Gravel Wells	15
Bedrock/Artesian Wells	16
Hydrofracture, Pump Test, etc.	17
Submersible Pump Systems	18
Submersible Pump Curve	19
Customized Pressure Systems	20
Water Filtration, Treatment & Stain Removal Services	22
Additional Services	23

Company Introduction

Thank you for your interest in *Well Water Connection, Inc.* and for allowing us to introduce our company to you. My name is John Larsen, I am the founder of *Well Water Connection, Inc.* After receiving my engineering degree from the University of Massachusetts in 1990, I worked for Stone & Webster Engineering in Boston supervising geotechnical site investigations and drilling operations, monitoring well installations and performing bedrock and soil testing.

In 1995, I entered the groundwater industry by working for a small well drilling company. As the general manager of that company, I designed, sold, coordinated and supervised the installation of over 600 residential and commercial artesian well and pump systems. During that time, however, I listened to many complaints from homeowners, property managers and landscape and irrigation professionals about the limited services provided by most well companies.

In 2001, I left that company to work for a larger so-called “full service” well company. I expected a company that could provide all types of water wells (not just artesian), but also the pumps, filtration systems and the planning, permitting, design and maintenance services that I knew were key to quality well installations and long-term satisfied customers. I later realized that that company did not yet exist.

In 2002, I started *Well Water Connection, Inc.*, a truly full-service water well company whose well-managed, custom-designed water wells, pump systems, filtration and related services dovetail seamlessly with customers’ irrigation systems and landscape plans. A water well company whose capabilities and menu of services is not limited by its drillers experience or by the type of equipment they own. A company with the ability to manage large commercial water well projects and provide personal attention to homeowners on smaller residential projects. A company connected to competent, highly knowledgeable, fully licensed and insured, water well drillers and related professionals. A company that realizes the importance of good communication with its clients and the technical concerns of landscape and irrigation professionals.

As we continue to grow and develop, we strive to provide our clients with the best service, but know the decision to drill a well can be challenging. At *Well Water Connection, Inc.*, one of our goals is to provide our clients with enough information to make well-informed decisions. We have developed this **Well Planning Guide** to answer some of your questions and address some common concerns. Please do not hesitate to contact us if you have any questions, need references, or would like a free, no-obligation written proposal.

We are proud to offer you our expertise and eager for you to experience our level of service. Thank you again for allowing us to introduce our company to you. We look forward to working with you.

How Fast Your Well Pays For Itself...

Let's say you now pay a **combined water and sewer charge of 1 penny for each gallon of water you use on your lawn**. You also have a typical **automatic sprinkler system** that runs twice a day - one hour each time. If the sprinkler system sprays 10 gallons of water every minute its on, (or 10 gallons per minute = \$.10 per minute) in one hour it will spray 600 gallons (or 10 gallons per minute x 60 minutes = 600 gallons = \$6.00 per hour). If you run your sprinkler system 2 hours a day that's 1200 gallons or \$12 per day. During an average summer, if you use your sprinkler for 90 days you will spray 108,000 gallons of water onto your lawn. **At 1 penny per gallon you have just spent \$1,080.00 to water your lawn.**

Now, let's say you installed a water well and had it hooked up to your sprinkler system. **Instead of paying \$1,080.00 per year to water your lawn, you don't pay anything.** That's right. **The ground water is free**, and because it will be used on your lawn there will be no sewer charge either!

The well is paying for itself! Instead of paying the water and sewer department for watering your lawn, you're making payments on a well that increases the value of your home and supplies "free" water for years to come.

CALCULATE YOUR ANNUAL SAVINGS - EXAMPLE

Step 1: Calculate your **COST PER GALLON**. See "Combined Annual Water and Sewer Charge in MWRA Communities 2006" on page 4 or see your latest water bill.

Step 2: Calculate your **TOTAL WATER USE**. See last years water bill(s) or add up all outside water uses including irrigation system, pool, washing cars, etc.

Step 3: Calculate your **ANNUAL SAVINGS** by multiplying your Total Water Use by your Cost Per Gallon. The following simple formula can be used if you have an automatic sprinkler system. The constant 54 is based on 90 days of summer watering (60 mins per hour x 90 days divided by 100 pennies = 54).

54	X	Cost Per Gallon (in pennies)	X	Flow in gallons per minute	X	Usage in hours per day
54	X	1	X	10	X	2

ANNUAL SAVINGS = \$1,080.00

What Does Your Water Cost?

COMBINED ANNUAL WATER AND SEWER CHARGES IN MWRA COMMUNITIES 2006

(Charges include MWRA, community and alternatively supplied services;
Rates based on average annual household use of 120 hundred cubic feet (HCF), or approximately 90,000 gallons)

	Water	Sewer	Combined	Change
Arlington (W/S)*	\$349.40	\$331.20	\$680.60	4.8%
Ashland (S)	435.60	888.80	1,324.40	19.3%
Bedford (S/partial W)	475.00	661.00	1,136.00	7.6%
Belmont (W/S)	560.72	971.64	1,532.36	3.2%
Boston (W/S)	396.01	484.78	880.79	6.2%
Braintree (S)	230.20	687.20	917.40	11.9%
Brookline (W/S)	528.00	666.00	1,194.00	7.0%
Burlington (S)	135.90	263.40	399.30	0.0%
Cambridge (S/partial W)	340.80	772.80	1,113.60	6.8%
Canton (S/partial W)	375.60	641.40	1,017.00	10.0%
Chelsea (W/S)	404.40	597.60	1,002.00	5.7%
Chicopee (W)	278.00	375.65	653.65	6.4%
Clinton (W/S)	324.20	243.15	567.35	50.1%
Dedham (S/partial W)	515.44	908.40	1,423.84	2.2%
Everett (W/S)	181.20	493.20	674.40	0.0%
Framingham (W/S)	429.60	439.20	868.80	3.1%
Hingham (S)	664.68	786.00	1,450.68	1.7%
Holbrook (S)	279.60	492.00	771.60	0.0%
Leominster (partial W)	200.00	192.00	392.00	2.1%
Lexington (W/S)	379.20	873.60	1,252.80	6.6%
Lynn (partial W)	328.43	605.37	933.80	14.6%
Malden (W/S)	393.60	488.40	882.00	0.0%
Marblehead (W)	450.00	670.00	1,120.00	2.0%
Marlborough (partial W)	588.00	336.00	924.00	17.9%
Medford (W/S)	481.20	759.60	1,240.80	10.5%
Melrose (W/S)	498.00	766.80	1,264.80	13.5%
Milton (W/S)	565.20	910.08	1,475.28	9.6%
Nahant (W)	850.80	847.20	1,698.00	0.0%
Natick (S)	221.00	692.40	913.40	-8.1%
Needham (S/partial W)	430.00	1,005.00	1,435.00	0.0%
Newton (W/S)	446.80	680.80	1,127.60	8.0%
Northborough (partial W)	402.72	396.56	799.28	7.4%
Norwood (W/S)	384.72	557.64	942.36	6.3%
Peabody (partial W)	265.80	356.40	622.20	0.0%
Quincy (W/S)	391.20	669.48	1,060.68	13.6%
Randolph (S)	246.00	488.00	734.00	8.5%
Reading (S/partial W)	740.10	727.20	1,467.30	15.8%
Revere (W/S)	252.00	853.20	1,105.20	0.0%
Saugus (W)	374.24	273.96	648.20	0.0%
Somerville (W/S)	412.77	699.36	1,112.13	8.2%
Stoneham (W/S)	408.00	792.00	1,200.00	5.3%
Stoughton (S/partial W)	420.76	819.60	1,240.36	4.4%
Swampscott (W)	642.00	426.00	1,068.00	-2.1%
Wakefield (S/partial W)	487.20	891.60	1,378.80	7.7%
Walpole (S)	465.84	600.58	1,066.42	3.7%
Waltham (W/S)	289.92	482.64	772.56	8.5%
Watertown (W/S)	399.40	684.00	1,083.40	5.3%
Wellesley (S/partial W)	292.92	676.80	969.72	8.7%
Westwood (S/partial W)	515.44	774.00	1,289.44	3.0%
Weymouth (S)	408.76	780.32	1,189.08	5.6%
Wilbraham (W)	288.00	315.60	603.60	0.0%
Wilmington (S)	429.60	487.20	916.80	9.3%
Winchester (S/partial W)*	257.40	273.00	530.40	5.1%
Winthrop (W/S)	442.80	734.40	1,177.20	16.5%
Woburn (S/partial W)	174.00	294.00	468.00	7.8%
Worcester (partial W)	313.20	337.92	651.12	11.5%
AVERAGE	\$400.74	\$605.75	\$1,006.49	6.3%

AVERAGE
COST PER
GALLON
\$1,006 = 1¢
90,000

How Much Water Does My Sprinkler System Use?

ZONE #	# HEADS Per ZONE (A)	GALLONS Per HEAD Per MINUTE (B)	MINUTES Per CYCLE (C)	CYCLE Per DAY (D)	GALLONS Per DAY (AxB)x(CxD)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
Total # Gallons Used Per Day (E)					

WATER & SEWER COST IN PENNIES PER GALLON? \$_____ (F)

ESTIMATED DAYS PER MONTH RUN SPRINKLER SYSTEM? _____ (G)

ESTIMATED MONTHS PER YEAR RUN SPRINKLER SYSTEM _____ (H)

COST SAVINGS PER YEAR = ExFxGxH _____ = \$ _____

Actual \$1,400 Annual Savings!

Town of Tewksbury
11 Town Hall Avenue, Town Hall Annex
Tewksbury, Massachusetts 01876
Water Billing 640-4350

WATER & SEWER BILL
Customer Copy
Keep this portion for your records

Customer	Bill Number
Location	119631
6 RHODA ST	Parcel ID
Account Number	007000230000
	Due Date
	12/26/2005

This bill is due and payable within 30 days of billing date and all unpaid bills are subject to interest and lien.

Code	Previous Read Date	Previous Reading	Current Read Date	Current Reading	Usage	Charge
R-WATER	04/15/2005	1768	10/18/2005	1921	153	740.23
R-SEWER					153	856.80
DEMAND FEE					0	5.00
WMRF	04/15/2005	0	10/18/2005	0	0	12.50

WOW!

Past Due	Interest Due as of Due Date	This Billing	Total Due
.00	.00	1,614.53	.00

FY06 1ST HALF WATER & SEWER BILL - SEWER RATE IS \$5.60/1000 GALS - NEW
WATER RATE \$4.69/1000 GALS FOR USAGE 1000-59999 \$4.88/1000 GALS USAGE
60000-149999 GALS \$6.08/1000 FOR USAGE > 150000 GALS ANNUALLY - WATER
METER REPLACEMENT FEE \$25.00/YR - \$12.50 PER BILLING

**Before
Well Installed
\$1,614.53**

Town of Tewksbury
11 Town Hall Avenue, Town Hall Annex
Tewksbury, Massachusetts 01876
Water Billing 640-4350

WATER & SEWER BILL
Customer Copy
Keep this portion for your records

Customer	Bill Number
Location	129223
6 RHODA ST	Parcel ID
Account Number	007000230000
	Due Date
	12/04/2006

This bill is due and payable within 30 days of billing date and all unpaid bills are subject to interest and lien.

Code	Previous Read Date	Previous Reading	Current Read Date	Current Reading	Usage	Charge
R-WATER	04/10/2006	1944	09/28/2006	1965	21	98.49
R-SEWER					21	117.60
WMRF	04/10/2006	0	09/28/2006	0	0	12.50

Past Due	Interest Due as of Due Date	This Billing	Total Due
.00	.00	228.59	.00

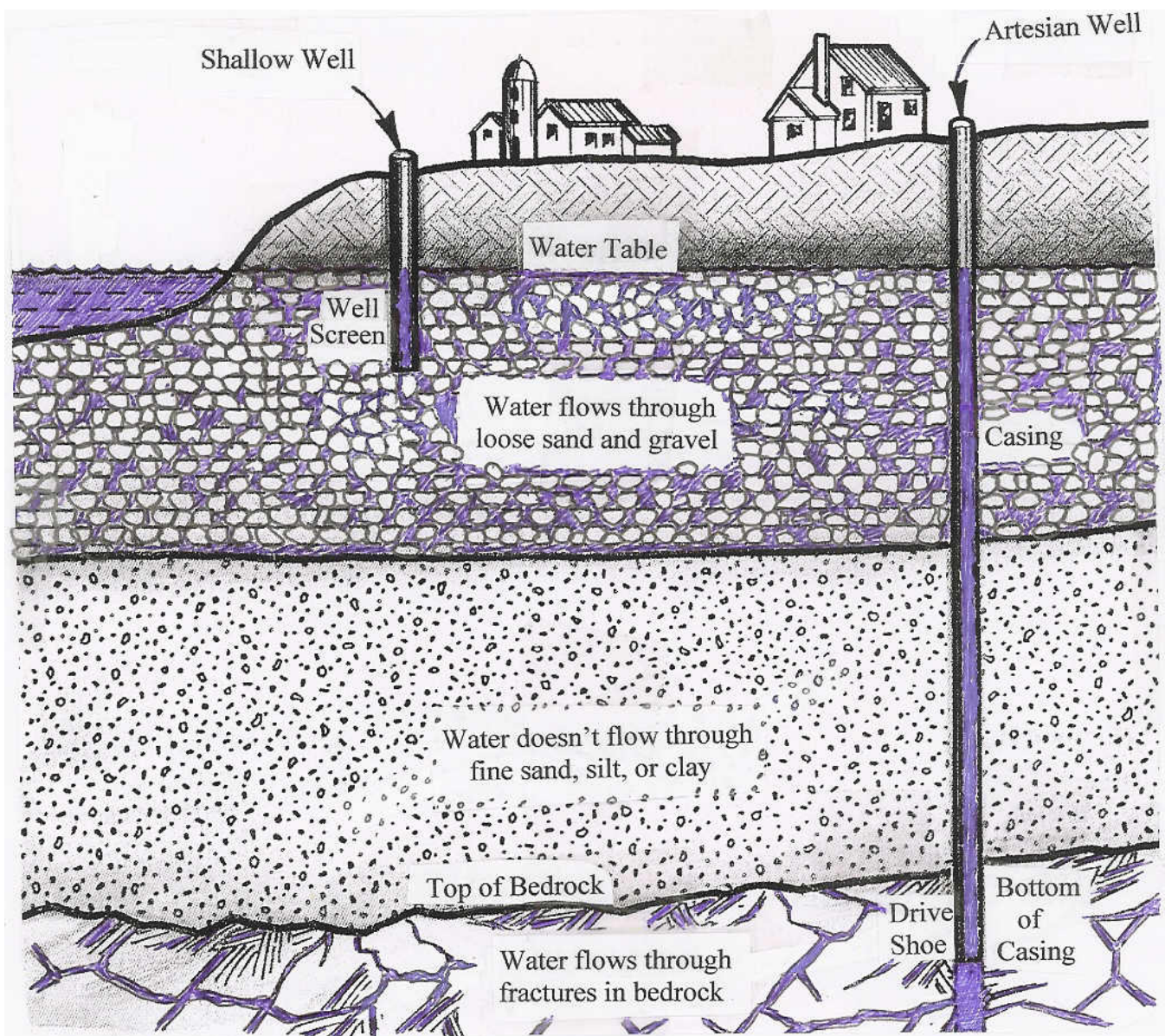
FY2007 1ST HALF WATER & SEWER BILL - SEWER RATE IS \$5.60 PER 1000 GALS
- WATER METER REPLACEMENT FEE \$25.00/YR - \$12.50 PER BILLING

**After
Well Installed
\$228.59**

Plus - No Watering Restrictions!

Types of Wells

Shallow (*Point, Gravel*) or Bedrock (*Artesian*)



THE WATER TABLE:

The surface of a pond, lake, stream or wetland near you may indicate the level of the *water table* in your area. The water table rises with heavy rains and spring snow melt and falls during the summer months. Since *shallow wells* may draw water from these sources, we recommend they be installed during the summer or fall seasons. *Bedrock wells*, on the other hand, are not usually affected by drops in the water table as their water comes from fractures in the bedrock usually hundreds of feet below and can be drilled year round (even in the winter when the ground is frozen).

Water Well Design & Project Management



Proper planning and site selection are crucial to any well installation. Our *Project Management* services include *site assessment* and *site feasibility review*, *digital documentation*, *permit procurement*, *flagging & marking* of proposed well and trench locations, *Dig-Safe notification*, *development of well and pump system specifications*, *coordination and design* based on preliminary flow and pressure requirements and other pertinent information we will obtain from you, your irrigation or landscape contractors or others.

Site Preparation



Some well installations (gravel or artesian) will require the use of heavy drilling equipment. When necessary, investing some of your own time or resources in *site preparation* (such as the use of *plywood/mud-tracks* or *tarp placement* on lawn areas, *backhoe use*, *fence removal*, *tree trimming*, etc.) can save you a time and money on your project. These items are important to consider when estimating the final cost of your complete well installation. Some services you may not want or need. Others you may wish to do yourself, have your landscaper do or hire us to perform.

Point Wells



Point wells are the easiest and the most inexpensive type of well to install. Instead of using large truck-mounted drilling equipment, point wells can be installed with *portable equipment*. This allows us to work in tight spaces or access areas that might otherwise not be accessible, eliminating the need for expensive *site preparations* and/or *re-landscaping*. Residential point wells are 1-1/4" to 2" in diameter, usually less than 30' deep, are fitted with surface-mounted *jet pumps*, and can be, your best type of well.

Gravel Wells



Gravel wells are installed with either a truck mounted auger or air-rotary drilling rig. There are two types of augers - *solid-stem* and *hollow-stem*. Hollow-stem augers allow open access to the water table and sampling of the soil. Sampling shows where the best soil is and where to set the *well screen*. Gravel wells are 4" or 6" in diameter and up to 60' deep - large enough to accommodate more efficient, higher pressure *submersible pump systems* (same pump systems used in deeper, bedrock wells).

Bedrock/Artesian Wells



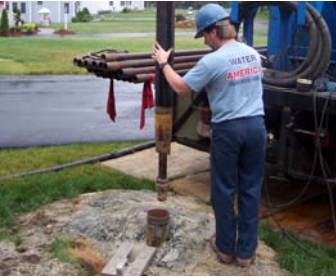
Bedrocks wells require a larger *air-rotary drilling rig* in order to bore a hole down into the solid bedrock that exists underneath your property. Steel *casing* and a *driveshoe* keep loose soil and rocks from caving in the well. Drilling continues, usually for hundreds of feet, until enough water flows from bedrock fractures into the well. Although many "estimates" for this type of well are based on 300 feet of *drilling*, actual costs and well depths can vary greatly from property to property.

Well Casing & Screens



All wells are made up of with some kind of *casing* that extends from the surface of the ground to the *well screen* below. The size and type of casing depends on the type of well, but its purpose remains the same – to prevent the well from caving in. The well screen also holds back the loose soil, but allows water to flow freely from the soil into the well. With bedrock wells, the fractured rock acts like a screen, so there is usually no need to install one.

Hydrofracture



Hydrofracturing is a specialized and highly effective procedure used to increase water production from low-yield artesian wells. A trained crew installs an inflatable “packer” down the well through the steel casing and into the bedrock below. The well is then pressurized and flushed with tremendous water pressure. This process cleans out plugged fractures in the bedrock and usually results in an increase in the amount of water that flows into the well.

Well Development



All wells need to be *developed* to maximize their production of water. Shallow wells (points and gravel) are developed by removing the *smallest soil particles* (fine sand and silt) from around the outside of the screen, leaving the *largest soil particles* (coarse sand and gravel) behind. Since water flows much more freely through coarse sands and gravels than it does through fine sand, development of shallow wells will increase flow from the well. Bedrock (Artesian) wells are developed using pumps, air or by hydrofracturing. Once developed and tested a well is ready for a pumping system.

Trenching



A trench may be needed from the well to your house, shed or other source of electrical power for electrical conduit and wires, or the water lines that will connect your pump to your sprinkler system. Depending on the depth and length of the trench, it may be completed by hand, shovel, trenching machine, mini excavator or larger backhoe.

Cut Below Grade



Where permitted, irrigation wells can be cut below-grade and installed inside a box with a removable lid that sits flush with your lawn. The box provides the well ventilation and several inches of ¼” stone at the base provides drainage. A removable lid allows easy access to the wellhead for service and *winterization* of the *offset line* and *pump system components*. This option allows us to make the well virtually invisible even when, due to regulations, the well must be installed in an unfavorable location.

Pump Systems



Your pump system, necessary in order to pump the water from the well, will be designed based on the type of well, the final depth and flow capacity of the well, your irrigation requirements and any personal preferences you may have. Pumps may be operated “tank-less” via a disconnect switch or pump start relay wired to an irrigation controller, or even by wireless remote. They may also be operated automatically by a tank and pressure switch system providing convenient water “on-demand” simply by opening a spigot.

Constant Pressure Systems



These systems work with your *pump system* to supply constant pressure water on-demand for washing cars, filling pools and other water needs. These systems offer the benefits of a traditional large storage tank system but without the unnecessary bulk and harmful pump “cycling”. They can be mounted under decks, inside sheds, garages or mounted discretely outside behind foundation plantings. These systems, like the pumps, will be customized to meet your individual needs.

Sediment Filter



Well development removes most of the fine sand and silt in a well; however, since changes in water quality can occur from time to time, we may recommend the installation of a clear-view sediment filter with a manual flush valve for easy cleaning and maintenance. This sediment filter will help prevent the accumulation of sediment in your irrigation system and the clogging of valves and spray heads.

Electrical Services



Electrical services, including installation of electrical controls, disconnect, breaker and electrical wiring, may be required as part of your complete well installation. Any electrical work should be completed by a licensed electrician. Electrical services are designed and quoted based on the final well and pump design installation.

Water Testing



Although some towns have extensive requirements for new wells, many do not. However, since no two wells are the same, we recommended testing your water for the stuff that can cause staining of light colored fences, siding, walls and walkways. We can also provide more comprehensive tests by a certified lab to determine other health-related characteristics of your well water if you wish.

Re-landscaping



Depending on the type of well, its location and your personal preferences, you may want *re-landscaping* after your well installation is completed. In towns where the tops of wells must remain above grade, creative landscaping, including plants, a fake rock or a decorative wishing well, can hide your well from view and still meet local and state codes.

Well and Pump System Check Ups



The relationship between your new well and pump system and your water use can be quite complex. After your well is installed and you've had a chance to use it, we want you to call us to schedule a free well system check-up. Changes that often occur within the well (produces more or less water) or in how the water is being used (adding sprinkler zones, heads, etc.) can affect the operation of the pump system. Monitoring, proper maintenance and winterization of your new well and pump system is crucial.

Winterization



Although wells that are used year round require regular maintenance, they do not require winterization. Wells used only during the summer months must be winterized. Winterization of your irrigation well is important as any water left in the *tank system* or *offset line* (the line from the well to the pump and/or tank system) can freeze during the winter causing damage to the components. We can show you how to do this and other annual maintenance procedures yourself or we can provide them for you.

“Ball Park” Residential Prices

Point Wells

\$2,500 - \$3,500

Gravel Wells

\$3,500 - \$7,500

Bedrock/Artesian Wells

\$5,000 - \$10,000 +

The following cut-sheets in this section contain a list of products and services including design and project management, site preparations and additional services that may be required to complete your well installation.

Please call 978-640-6900 to schedule a free no-obligation written proposal.

Site Preparation Services

These items are important to consider when estimating the final cost of your complete well installation. Some services you may not want or need. Others you may wish to do yourself, have your landscaper do or hire us to perform. Either way, with **proper design** and **project management**, your total investment, whether measured in time, energy or dollars, can be kept to a minimum.



Plywood / Mud Tracks

Delivery, use and removal of plywood/mud tracks for use on sensitive area(s).

Your Estimated Cost:
\$ _____



Tree Branch Trimming

Trim branches from tree(s) for access and/or drilling equipment set-up.

Your Estimated Cost:
\$ _____



Hay Bales

Delivery and use of hay bales to help divert and/or contain drilling mud

Your Estimated Cost:
\$ _____



Fence Removal

Removal of fence to gain access with equipment and/or allow for removal of debris

Your Estimated Cost:
\$ _____



Tarps

Delivery and use of tarp(s) as needed to contain excavated material (not re-used)

Your Estimated Cost:
\$ _____



Adjust Grade

Use of equipment to level off ground to allow access and/or safe set-up of drilling rig

Your Estimated Cost:
\$ _____



Tree/Shrub Removal

Removal of trees/shrubs for access

Your Estimated Cost:
\$ _____

Total Site Preparation Services \$ _____

Point Wells



Setup of Equipment:

Mob/Demob, set up of equipment

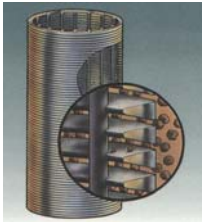
Your Estimated Cost:
\$ _____



Well Casing:

1-1/4" to 2" Galvanized Pipe and Couplings

Your Estimated Cost:
\$ _____



Well Point:

1 1/4" to 2" Screen

Your Estimated Cost:
\$ _____



Well Driving:

1 1/4" to 2" diameter drive up to 30' deep

Your Estimated Cost:
\$ _____



Test Work & Well Development:

Set *casing* and *well point/screen* at optimum depth and *develop well* with temporary pumping system.

Your Estimated Cost:
\$ _____



Jet Pump System:

Installation of professional grade *shallow well jet pump* system and assembly of pump, tank pressure switch, gauge, spigot, disconnect & misc. fittings

Your Estimated Cost:
\$ _____

Estimated Total Point Well \$ _____

Gravel Wells



Setup Drilling Rig and Related Equipment:

Mobilization and demobilization, set up of drilling rig and related equipment.

- Auger Rig for 4" Gravel Wells
- Air-Rotary Rig for 6" Gravel and Artesian Wells

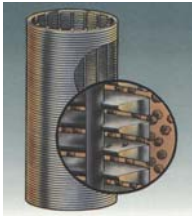
Your Estimated Cost:
\$ _____



Well Casing:

- 4" PVC Casing
- 4" Steel Casing
- 6" Steel Casing

Your Estimated Cost:
\$ _____



Well Screens:

- 4" PVC Screen
- 4" Stainless Steel Screen
- 6" Stainless Steel Screen

Your Estimated Cost:
\$ _____



Well Augering:

- 8" Augering
- 10" Augering
- 12" Augering

Your Estimated Cost:
\$ _____



Test Work & Well Development:

Perform *sampling of soil materials, set casing and screen* at optimum depth and *develop well* with air and/or a temporary pumping system.

Your Estimated Cost:
\$ _____



Submersible Pump System:

See *Submersible Pump System* Sheet for details.

Your Estimated Cost:
\$ _____

Estimated Total Gravel Well \$ _____

Bedrock/Artesian Wells



Mob/Demob, Setup Drilling Rig and Related Equipment:

Mobilization and demobilization, set up of drilling rig and related equipment, dig debris containment pit(s) as needed to contain drill cuttings and water from drilling process. Use of backhoe as needed to keep pits open.

Your Estimated Cost:
\$ _____



Well Casing:

6" Steel Casing
8" Steel Casing

Your Estimated Cost:
\$ _____



Drive Shoe:

6" Drive Shoe
8" Drive Shoe

Your Estimated Cost:
\$ _____



Well Drilling:

6" Bedrock Drilling
8" Bedrock Drilling

Your Estimated Cost:
\$ _____



Test Work & Well Development:

Perform "air test" measurements throughout drilling process at pre-selected depths.

Your Estimated Cost:
\$ _____



Submersible Pump System: (installed)

See *Submersible Pump Systems* Sheet for details

Your Estimated Cost:
\$ _____

Estimated Total Artesian Wells \$ _____

Hydrofracture, Pump Test, etc.

These items are important to consider when estimating the final cost of your complete **bedrock/artesian** well installation. Some services you may not want or need. Either way, with **proper design** and **project management**, your total investment, whether measured in time, energy or dollars, can be kept to a minimum.



Hydrofracturing:

Single-Packer Hydrofracture
Zone-Fracture

Your Estimated Cost:
\$ _____



Pump Test:

Upon completion of *Hydrofracturing*, a *pump test* is necessary to flush out well and determine new flow rate.

1 hr, 4 hr, 8 hr, 24 hr

Your Estimated Cost:
\$ _____



Divert or Pump Excess Water:

Divert and/ or pump excess water from pit containing drill cuttings off grass/landscaped area in order to minimize mess and save on *drilling debris removal* and *re-landscaping costs*.

Your Estimated Cost:
\$ _____



“Mud Job” or “Bentonite Seal”:

Alternative *soil drilling* and *casing installation procedure*, necessary in some towns or under certain drilling conditions.

Your Estimated Cost:
\$ _____

Estimated Total Artesian Wells \$ _____

Submersible Pump Systems

Submersible Pump Systems may be operated “*tankless*” or via an “*automatic*” tank and pressure-switch system (see *Customized Pressure Systems*). Each submersible pump system should include:

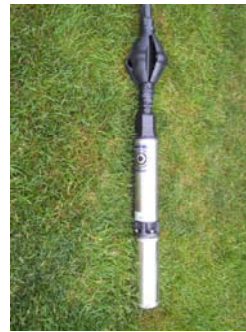
- **4” professional grade submersible pump and motor**
- **Pressure regulating valve, electric drop cable, drop pipe**
- **Torque arrestor, cable guides, pitless adapter**
- **Steel clamps, splice kit, tape**
- **Watertight 6” well cap (artesian well) or a 4” well seal (gravel well)**
- **Bleed-back/winterizing valve, hose bib**
- **Flow inducer, pump intake screen**
- **Complete installation and optional five (5) year warranty**



Pitless adapter



Drop cable, drop pipe and pump



Torque arrestor, pump and motor assembly



Drop pipe, wire guides, flow inducer, pump screen

Submersible pump & motor size needed to run average sprinkler system at 10-12 gallons per minute (gpm) & 40-60 psi at various well recovery depths

Well Depth	10 gpm Recovery Depth	HP Pump System
50'	5' – 45'	1/3 hp – 1/2 hp
100'	50' – 80'	1/2 hp – 3/4 hp
200'	100' – 180'	3/4 hp – 1 hp
300'	200' – 280'	1 hp – 1 1/2 hp
400'	300' – 380'	1 1/2 hp
500'	400' – 480'	1 1/2 hp – 2 hp

Note: Final pump design (make, model, motor size & rating) recommendation will be based on depth and yield of well, distance to power source, existing/proposed irrigation design (will coordinate with your irrigation contractor) or other personal preferences you may have.

Submersible Pump Curve

Model 10GS



SELECTION CHART

Horsepower Range ½ – 3, Recommended Range 3 – 16 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																																													
			20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	340	380	420	460	500	540	580	620	660	700	740	780	820																		
10GS05R	½	0			15.6	14.0	12.4	10.4	6.5																																							
		20	15.4	13.5	11.5	9.2	6.0																																									
		30	13.0	11.1	8.0	4.0																																										
		40	11.0	7.9	3.0																																											
		50	7.0																																													
		60	11.3	9.0	6.4																																											
Shut-off PSI			61	53	44	34	26	18	10	16.0	15.3	14.3	12.8	11.3	9.0	6.4																																
10GS05	½	0																																														
		20	15.9	14.9	13.8	12.5	10.8	8.3	4.8																																							
		30	15.7	14.6	13.5	12.3	10.5	7.8	4.0																																							
		40	14.5	13.4	12.0	10.3	7.5	3.0																																								
		50	13.0	11.5	9.8	7.2																																										
		60	11.3	9.0	6.4																																											
Shut-off PSI			89	81	72	63	55	46	37	29	20	11	16.0	15.2	14.3	13.4	12.5	11.5	10.3	9.0	7.0	4.0																										
10GS07	¾	0																																														
		20																																														
		30																																														
		40																																														
		50																																														
		60																																														
Shut-off PSI			130	121	113	104	95	87	78	69	61	52	43	35	26	17	9	15.8	15.2	14.5	13.7	12.8	12.0	11.0	10.0	6.7																						
10GS10	1	0																																														
		20																																														
		30																																														
		40																																														
		50																																														
		60																																														
Shut-off PSI			158	150	141	132	124	115	106	98	89	81	72	63	55	46	37	20	15.7	15.3	14.8	14.4	13.9	13.3	12.8	12.2	11.6	10.9	10.1	8.1	5.6																	
10GS15	1½	0																																														
		20																																														
		30																																														
		40																																														
		50																																														
		60																																														
Shut-off PSI																																																
10GS20	2	0																																														
		20																																														
		30																																														
		40																																														
		50																																														
		60																																														
Shut-off PSI																																																
10GS30	3	0																																														
		20																																														
		30																																														
		40																																														
		50																																														
		60																																														
Shut-off PSI																																																

Horsepower Range 5, Recommended Range 3 – 16 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																													
			440	480	520	560	600	640	680	720	760	800	840	880	920	960	1000	1040	1080	1120	1160	1200	1240	1280	1320							
10GS50	5	0																														
		20																														
		30																														
		40																														
		50																														
		60																														
Shut-off PSI																																

Customized Pressure Systems

Our *Customized Pressure Systems*, like our *water wells* and *pump systems*, will be designed to meet your individual needs and provide you with years of trouble-free use. Pressure regulating valves are used to protect the pump from harmful up-thrust and provide “*constant pressure*” at various flow rates.



“Tankless” Custom Pressure Systems (CPS)

Tankless CPS operate via a standard electric *on/off switch* or *timer* or with the use of a *pump start relay* and can be operated by your *irrigation controller*.

Your Estimated Cost:
\$ _____



“Automatic” Custom Pressure Systems (CPS)

Automatic CPS (outdoor water uses) operate via a pressure switch. They are calibrated to provide convenient pressure on-demand for sprinkler systems, washing cars, filling pools and other outside variable flow water needs, but without the harmful pump cycling (clicking on and off) that can occur with traditional pressure switch/tank systems.

Your Estimated Cost:
\$ _____

Other installation options and upgrades are available:



Larger Tank System Upgrades:

For all domestic water needs (whole house use)

Your Estimated Cost:
\$ _____



Pressure Treated Mounting:

Mounting for *automatic constant pressure tank system*

Your Estimated Cost:
\$ _____

Customized Pressure Systems - continued



CPS mounted inside garage with sediment filter installed outside (Wayland, MA)



CPS mounted to well (Wilmington, MA)



CPS on side of house with electrical components, disconnect and sediment filter (Milton, MA)



CPS mounted in basement of house with additional port for possible future expansion for home use (North Reading, MA)



CPS including filter and electrical components mounted under deck (Sudbury, MA)



Large 119 Gallon Storage Tank installed in basement for home use (Mendon, MA)

Water Filtration, Treatment & Stain Removal Services



Iron stain prevention system installed outside near well/pump system (Tewksbury, MA)



Iron stains to be removed from signage and curbing - notice sidewalk cleaned (Wilmington, MA)



Iron removal system installed in basement of home (North Reading, MA)



Iron staining on side exposed to irrigation system. Note the other side is not affected (Braintree, MA)



30 gal. tank with chemical feed pump and chemicals to eliminate staining, installed in basement (Lexington, MA)



Sample of how iron stains can be removed from affected areas when treated (Weymouth, MA)



Sediment filter installed outside on side of house (Sudbury, MA)



Automatic flush valve on sediment filter (Holliston, MA)



Screen being installed over submersible pump (Franklin, MA)

Additional Services

These items are important to consider when estimating the final cost of your complete well installation. Some services you may not want or need. Others you may wish to do yourself, have your landscaper, irrigation contractor or electrician do or hire us to perform. Either way, with **proper design** and **project management**, your total investment, whether measured in time, energy or dollars, can be kept to a minimum.



Planning, Permitting and Project Management

Your Estimated Cost:

\$ _____

Includes: *site assessment and feasibility review, digital documentation, permit procurement and permit fees, flagging/ marking of proposed well and trench locations and Dig-Safe notification. Development of well specifications based on preliminary flow and pressure requirements and coordinating installation with you, your irrigation, landscape, electrical contractor or others.*



Electrical Trench from Well to Power Source

Your Estimated Cost:

\$ _____

Trenching may be done by hand, trenching machine or backhoe.

Backfilling of Electrical Trench

Your Estimated Cost:

\$ _____

Backfilling may be done by hand or with equipment.



Well Casing Installed Below Grade

Your Estimated Cost:

\$ _____

Excavate around well casing, cut casing below grade, install ¼" white gravel base for drainage and large (shallow wells) or jumbo (artesian wells) enclosure with removable lid, flush with existing grade, for easy access and winterization. Backfill.



Electrical Wiring of Pumping System

Your Estimated Cost:

\$ _____

The installation of electrical controls, weatherproof disconnect, dedicated circuit breaker(s) and electrical wiring by licensed electrician.

Additional Services - continued



Inside Plumbing

Usually the well is tied into the irrigation system from the outside eliminating the need for any inside plumbing work.

Your Estimated Cost:
\$ _____



Removal and/or Reuse of Drilling Debris

Usually drilling debris can be incorporated into new or existing landscaping, saving you the added expense of removal.

Your Estimated Cost:
\$ _____



Re-landscape

Spreading *loam*, *seed* and *fertilizer* over disturbed areas.

Your Estimated Cost:
\$ _____



Sediment Filter

Clear view sediment filter with easy flush valve

Your Estimated Cost:
\$ _____



Water Testing

Testing per town requirements. Includes *well disinfection*, *pump off* and *sampling*.

Your Estimated Cost:
\$ _____

Total Additional Services \$ _____



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