Welcome to Contract County Training for 2013

WELL COMPONENTS

- Location
- Terminus
- Set Back Distances
- Well Abandonment (filling and sealing)

NR 812 Well Construction & Pump Installation

- Since 1936, with major revisions in 1953, 1975, 1991
  - Currently being revised again

- Establishes standards & requirements for
  - Well construction
  - Pump installation
  - Treatment installation
  - “Appurtenances” - Sampling faucets, check valves, etc.

- Rules apply to
  - Private wells
  - Non-community public wells

    Examples: Churches, campgrounds, bars, restaurants

Source (Well)

Possible Significant Deficiencies:

- Well near source of fecal contamination
- Well in flood zone
- Improperly constructed well
- Well in location to other possible contamination sources

Typical System Configurations

- Driven point well with off-set pump
- Drilled Well with submersible pump and below-ground discharge
- Drilled well with submersible pump and above-ground discharge in well house
- Drilled well with above-ground pump and discharge in well house

Driven Point Well with Off-set Pump

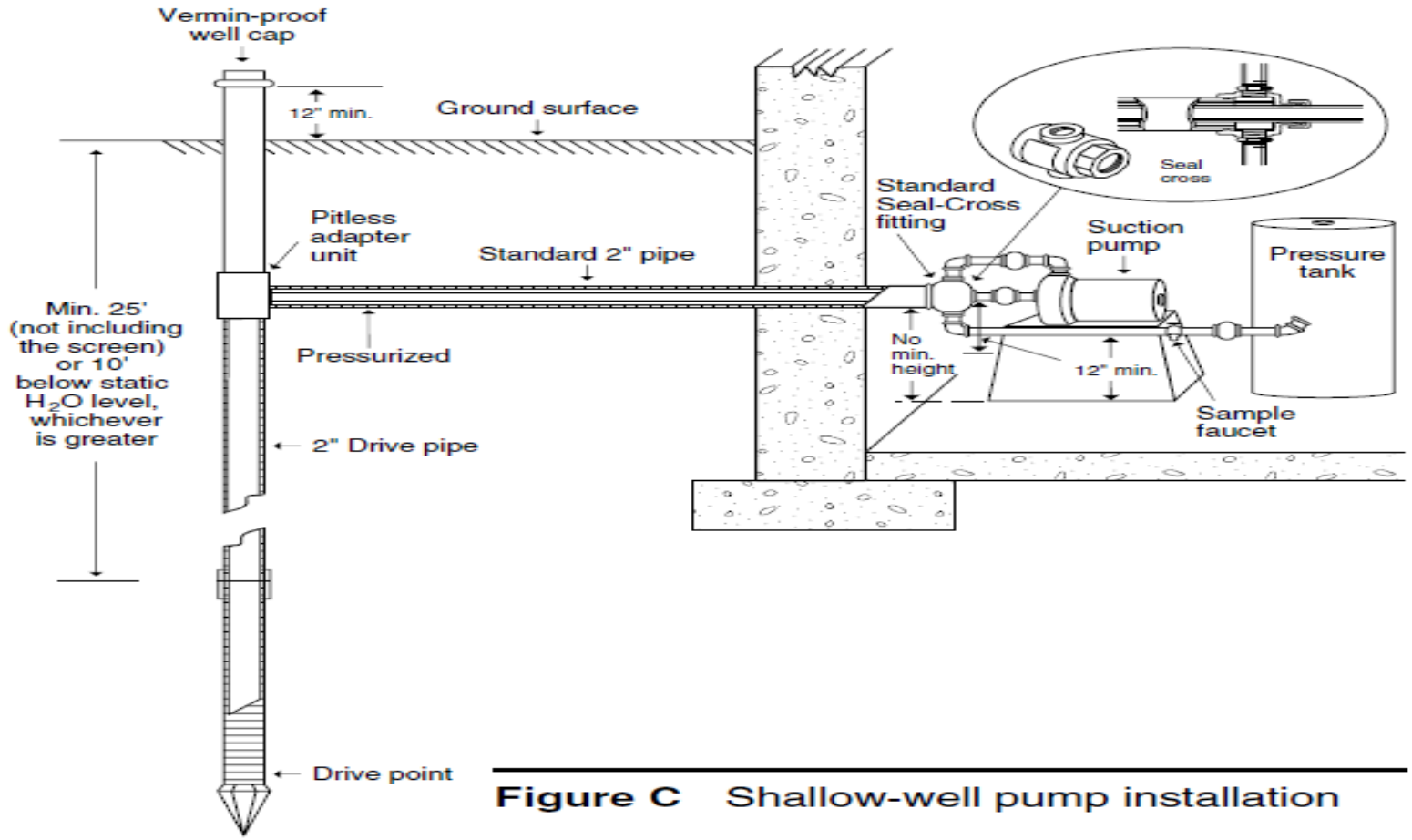


Figure C Shallow-well pump installation

Drilled Well with Submersible Pump/Below-ground Discharge

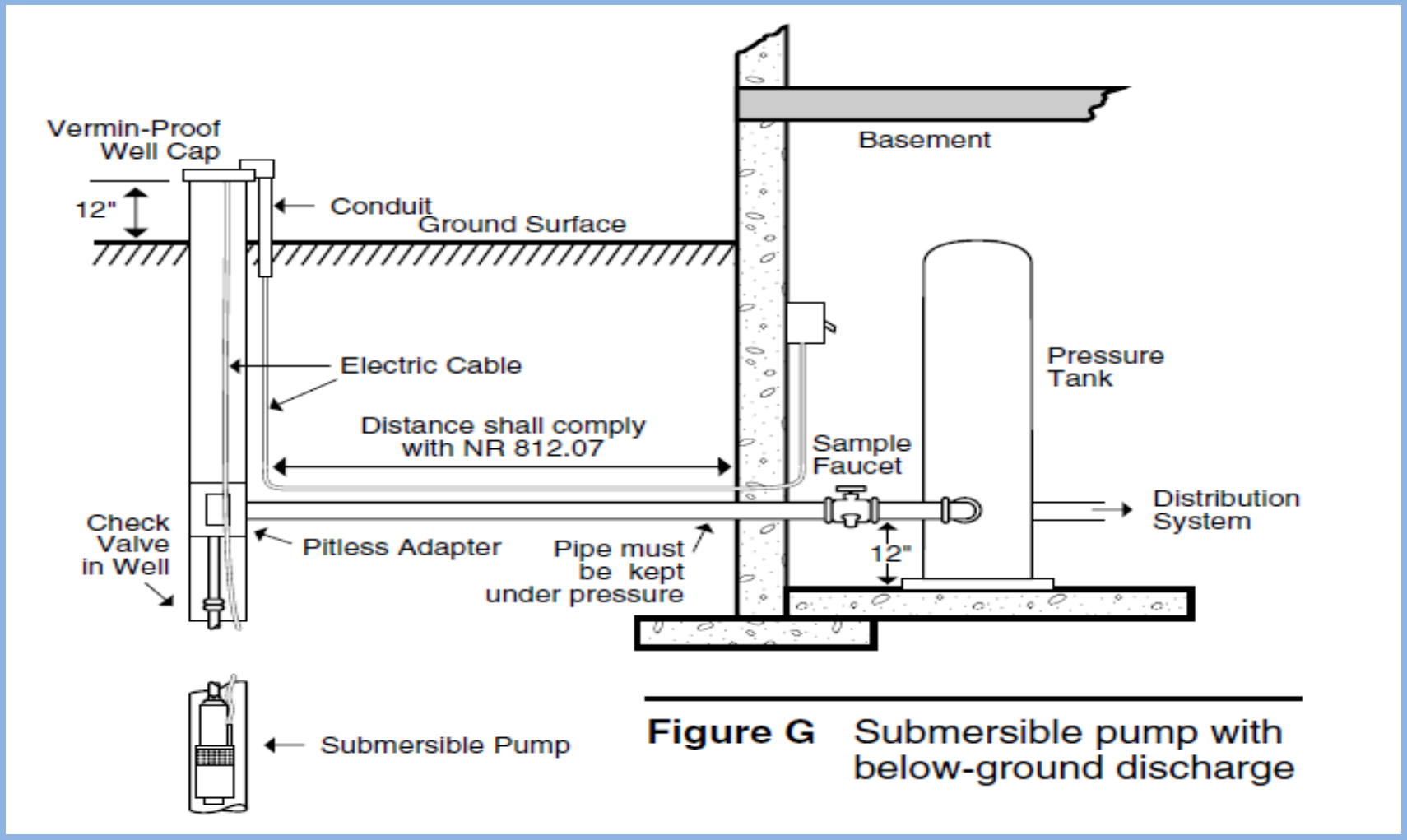


Figure G Submersible pump with below-ground discharge

Drilled Well with Submersible Pump and Above-ground Discharge in Well House

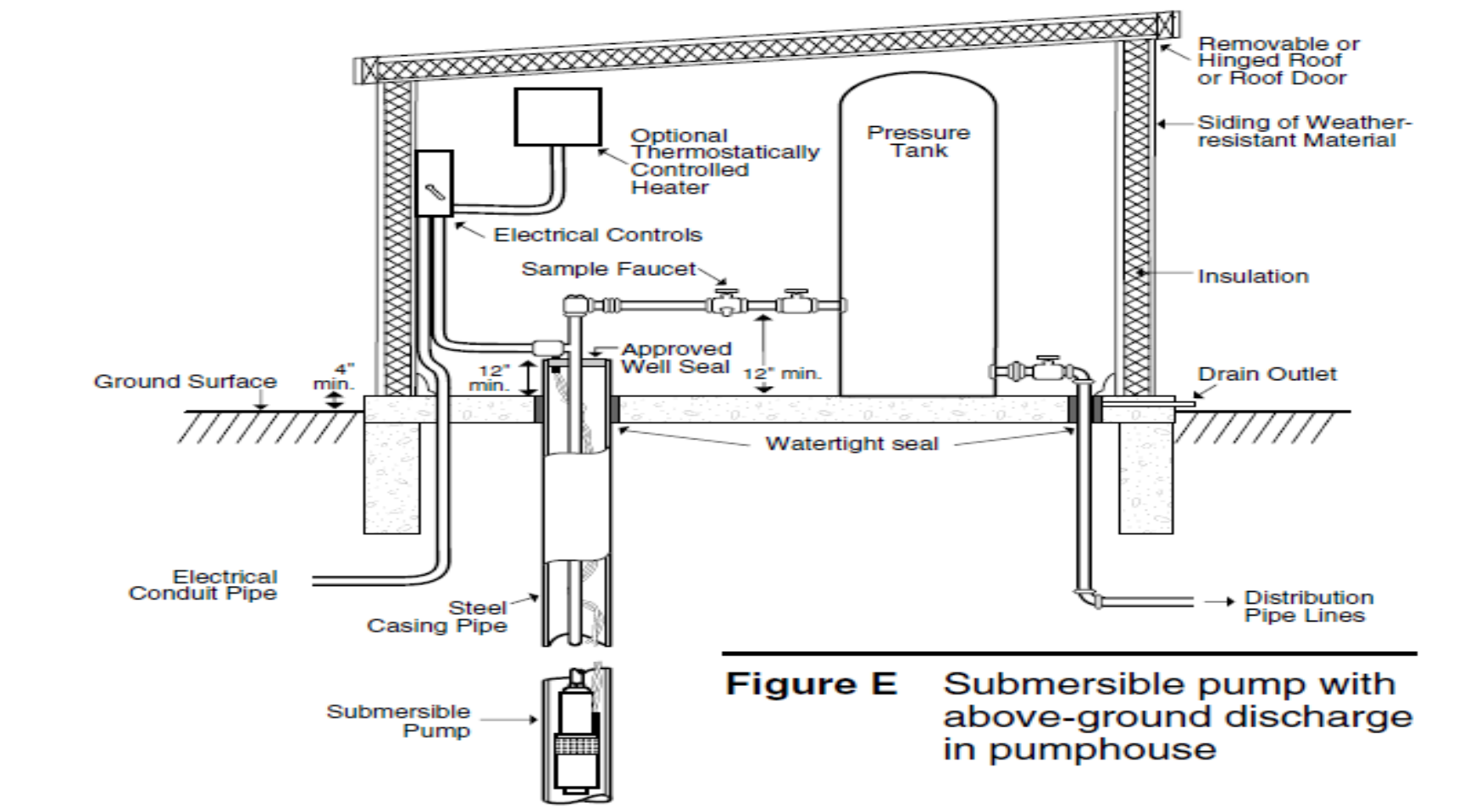


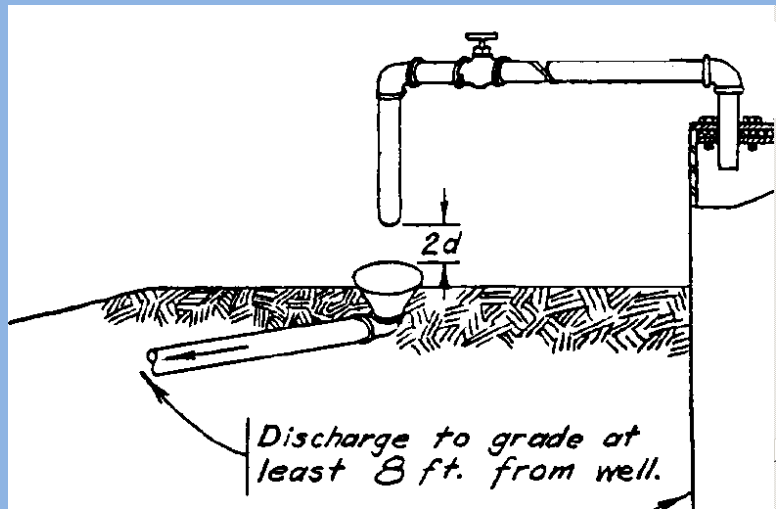
Figure E Submersible pump with above-ground discharge in pumphouse

Other System Types

- Artesian (flowing) well
- Drilled well with top discharge

Artesian (Flowing) Wells

- Throttling valve & air gap present (flowing wells)?
  - Needs throttling valve
  - Needs controlled overflow pipe with:
    - 2 pipe diameter air gap
    - Terminating >8 ft from well



Well Location

- **Not** in unsanitary or illegal basement location?

- Cannot be below grade in basement or crawlspace

- Allowed pre 1953

- Walk out basements ok (at or above grade)

LOCATION

- Wells should be located in a code complying location that is easily accessible for maintenance.
- Wells should be not be located in an area that is subject to traffic, damage, or in non-complying pits or alcoves, basements, or under building floors.

BASEMENT WELLS

- Wisconsin Well Code (NR 812) has prohibited placing wells in basements since 1953. Can continue to exist if a well construction report indicates installation prior to April 1953.
- Wells can be located in a walkout type basement if it is possible to walk outside without walking upstairs or uphill.
- Screens (screened well points) may not be replaced on driven point wells in basements. Well point replacement constitutes new well construction, and the well must be driven down in a location outside the basement to meet current well code requirements.

WELLS IN PITS

- The construction of a well pit, be it for a well, pump or pressure tank, was PROHIBITED by the 1953 Wisconsin well code.
- Pits constructed prior to April 1953 may be continued in use provided:
  - Have a concrete floor
  - Have a drain that terminates at least 8 feet from the well casing
  - Must have an access hatch directly over the well
  - The access hatch should have 4 inches of raised curbing and an overlapping hatch cover
  - A watertight, cast iron manhole frame and cover with a gasket may be substituted for a curbed manhole.

WELL PITS

- Upgrading of substandard well pits is not permitted. Substandard pits must be abandoned by extending the well casing a minimum of 12 inches above ground surface, breaking up the floor, breaking or removing at least one wall and filling with clean native compacted soil landscaped to provide drainage away from the well casing

Pits & Alcoves

- Not allowed since April 1953

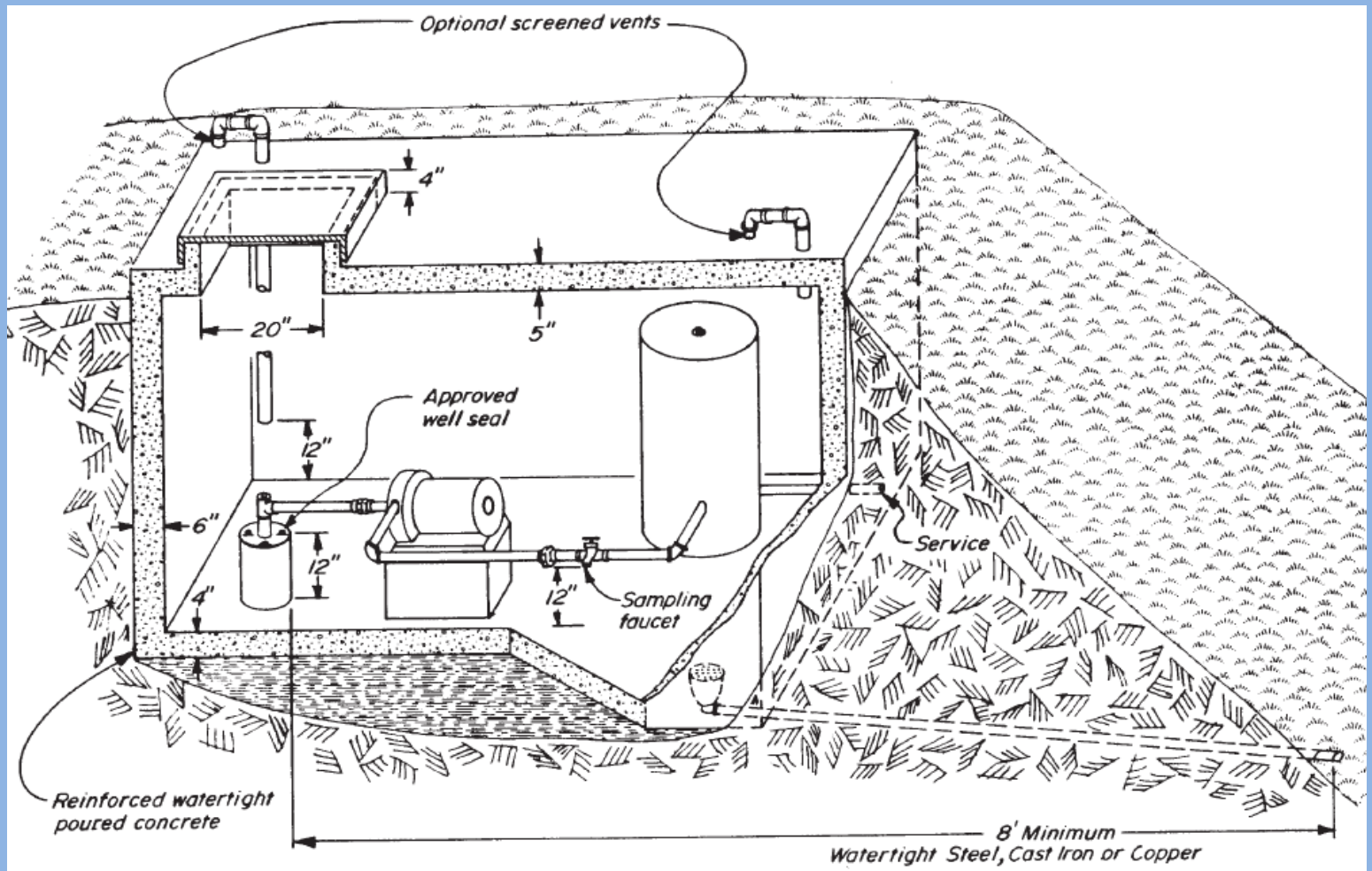


Figure 45. Minimum requirements for approved new well pits.

Well Casing

- Casing Height
  - Greater than 12” above ground for wells constructed during or after 1991
  - Greater than 8” above ground for wells pre 1991
  - Greater than 6” above ground for wells pre 1953
  - 12” for all reconstructed wells
- All wells constructed or reconstructed after 10/1975 in a flood plain
  - 2 feet above regional flood elevation

Well Cap and Seal

Vermin Proof

- Vermin-proof vented caps
  - Required since 1991
  - Prevents - bug entry, debris
  - Recommended, low cost upgrade for all drilled wells

- Electric conduit
  - Must be threaded to cap
  - Extended 3’ below grade w/end sealed watertight

Well Cap and Seal

Overlapping Well Cap

- Allowed until 1991 (since 1991 new wells require vermin-proof caps)
- No barrier to insect entry
- Electric conduit must be connected to cap and extended 3’ below grade w/end sealed watertight
- Always recommend upgrade to vermin-proof cap

Old style overlapping cap – not vermin proof no longer approved

Well Cap and Seal

Sanitary Seals

- Sandwich construction
  - Metal top and bottom plates
  - Drawbolts
  - Expandable gasket in between
- One-piece top plate
  - Required if wellhead is not housed
- Electrical, vent and pipe openings
  - Must be plugged and/or sealed by tightening drawbolts and compressing gasket against inside of casing
- Installed properly, provides a watertight seal at well terminus

Setback Distances

- A site sketch should be included in the assessment report that displays the location of the well(s) in relation to potential sources of contamination and buildings associated with the system.
- The sketch can be hand drawn, however aerial photos can be pasted into Pre-survey and Sanitary Survey Reports and labeled electronically.

Set Back (Separation) Distances

B. Is the well adequately separated and protected from contaminant sources? (NR 812.08)	Yes ☐	No ☐	N/A ☐		

Check if Noncomplying & Indicate Distance if <2X Allowable

Septic or Holding Tank, 25 ft., 1951	☐ _____	Barn Gutter, 25 ft., 1975	☐ _____
Sewage Absorption Field, 50 ft., 1951	☐ _____	Manure Sewer (see code)	☐ _____
Wastewater Sump/Watertight, 25 ft., 1991	☐ _____	Perm. Manure Stack, 250 ft.,1991	☐ _____
Grease Trap, 25 ft., 1951	☐ _____	Temp. Manure Stack, 150 ft., 1994	☐ _____
Gravity Building Sewer, 8 ft., 1936	☐ _____	Silo, 50 ft., 1975, 1991	☐ _____
Pressurized Building Sewer, 25 ft., 1975	☐ _____	Animal Yard or Shelter, 50 ft., 1975	☐ _____
Collector Sewer > 6", 50 ft., 1975	☐ _____	Buried Home Heating Oil Tank, 25 ft., 1975	☐ _____
(Number of Units served) _____		Buried Petroleum Tank & Piping, 100 ft., 1975	☐ _____
Noncomplying Pit, 8 ft., 1975	☐ _____	Landfill, 1200 ft., 1975	☐ _____
Lake, Stream or River, 25 ft., 1975	☐ _____	Other _____	☐ _____
Yard Hydrant, 8 ft., 1951	☐ _____	Other _____	☐ _____
Cemetery, 50 ft., 1991	☐ _____	Other _____	☐ _____

Is there a variance? _____

Common Separation Distances

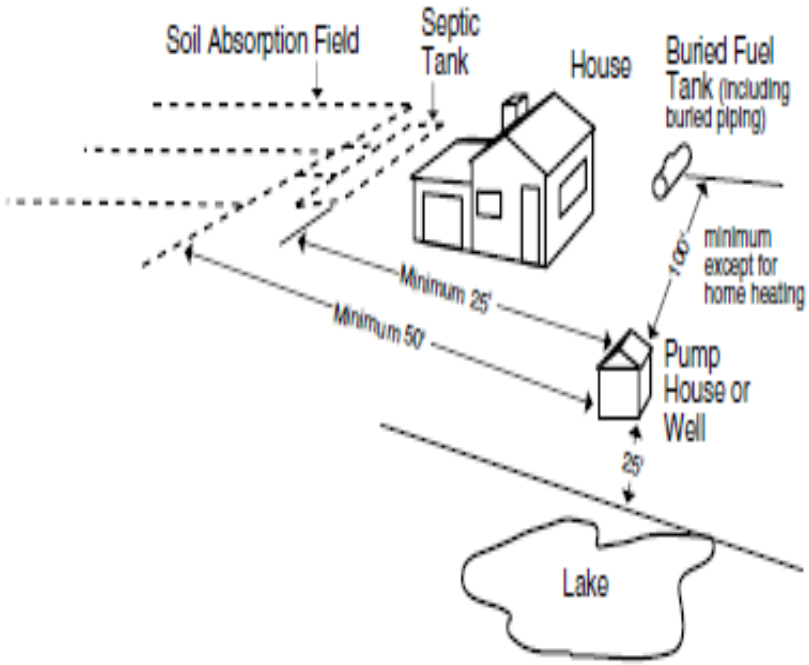


Figure A Common separation distances on residential lots

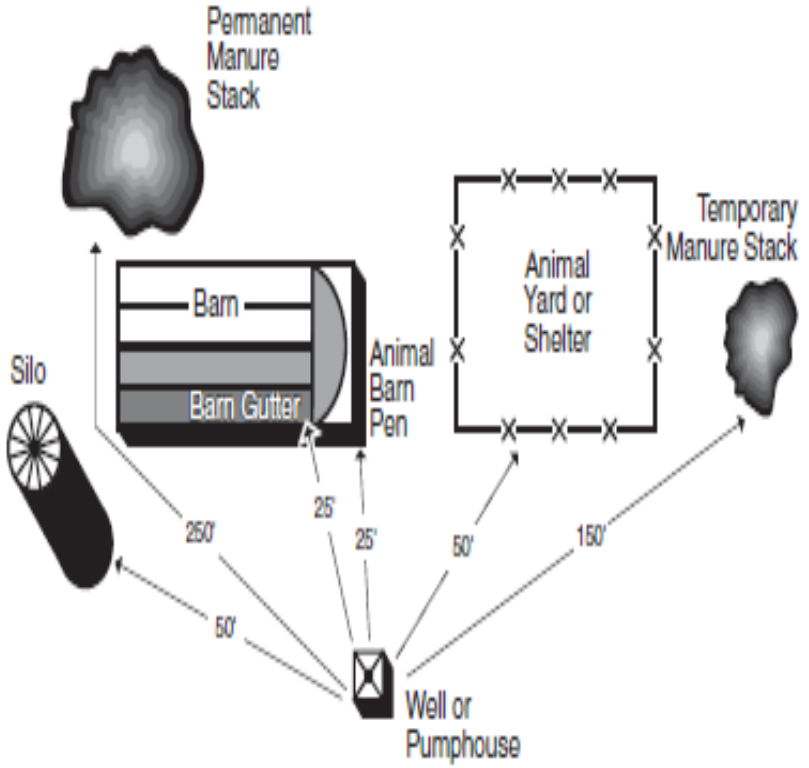


Figure B Common separation distances on farms

Well Abandonment

- Verify that there are no wells on-site that require abandonment (filling and sealing).
- Wells that have not been in use for more than three years, or have one or more water quality parameters over the primary drinking water standard must be properly filled and sealed.
- Well filling and sealing must be performed by a licensed individual.
- Emergency wells can have an extended abandonment agreement provided they do not exceed MCLs, meet NR 812 construction requirements, and are sampled for bacteria and nitrate.

Questions?