

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

# NR 845 Level 1

## Private Well Location

March 6, 2024 | [DNR.WI.GOV](https://DNR.WI.GOV)



# Level 1 Delegation Includes:

- Permits
- Inspections
  - Inspections & Setbacks
  - Inspections & Well Casing Height/Depth
  - Inspections & Well Cap / Seal
  - Inspections – Basements Pits & Alcoves
- Enforcement Actions
- Filling and Sealing Wells (Covered by others).

# Level 1 - Permits

# Level 1 - Location Permit Review

- ▶ County/State Well Location Permit found under “Useful Forms and Applications”

# Level 1 - Inspections

# Level 1 - Conducting Inspections

- Goals of Permitting and Inspection
  - NR 812 separation distances
  - County Ordinances
  - Well construction
  - Safe water

# Level 1 - Conducting Inspections

- Inspect county-permitted private wells.
- New, replaced, reconstructed or rehabilitated wells.
- *After* drilling new & replacement wells.
- *Before* reconstructing/rehabilitating existing wells recommended.



# Level 1 - Conducting Inspections



- *Before* reconstructing/rehabilitating existing wells recommended.  
← Here's why



# Level 1 - Conducting Inspections

- **Compliant Setbacks & Distances** Inspector should be prepared to measure distances. (Separation distances will be discussed in the next section).
- **Sanitary Condition**, NR 812.07(93) “Sanitary condition”
  - General area is free from filth and debris
  - No localized flooding risk

# Level 1 - Inspections Well Cap/Seal

# Level 1 - Well Cap & Seal

- New wells shall be sealed or covered with an approved weather and vermin-proof well cap or seal on the top of the well casing pipe.
- Well seal must have a solid top plate.
- **Split top plate (pictured right)** only allowed when well is located in a weatherproof shelter.
- Well caps may be vented, screened (non-corrosive material) & downward facing.
- Vent may be plugged on flowing wells or when air-entrained bacteria threaten water quality.



# Level 1 - Well Cap & Seal

- Electrical Conduits (Riser)
- For u/g electrical leads to well:
  - Listed Sch. 80, Sunlight Resistant Rigid PVC
  - Listed Intermediate Metal Conduit (IMC), or
  - Galvanized Rigid Metal Conduit.
- Threaded into well cap or equivalent watertight sealed (Silicone, urethane, butyl caulk).
- Minimum 2 feet depth (when the electrical lead is buried).





- Electric Example-  
Unfinished Well
- Electrical Leads in  
PVC Conduit
- Report anything  
unusual to DNR



# Level 1 - Well Cap

- **Vermin-proof Cap**
  - Required for all new wells.
  - Replace when broken or damaged.

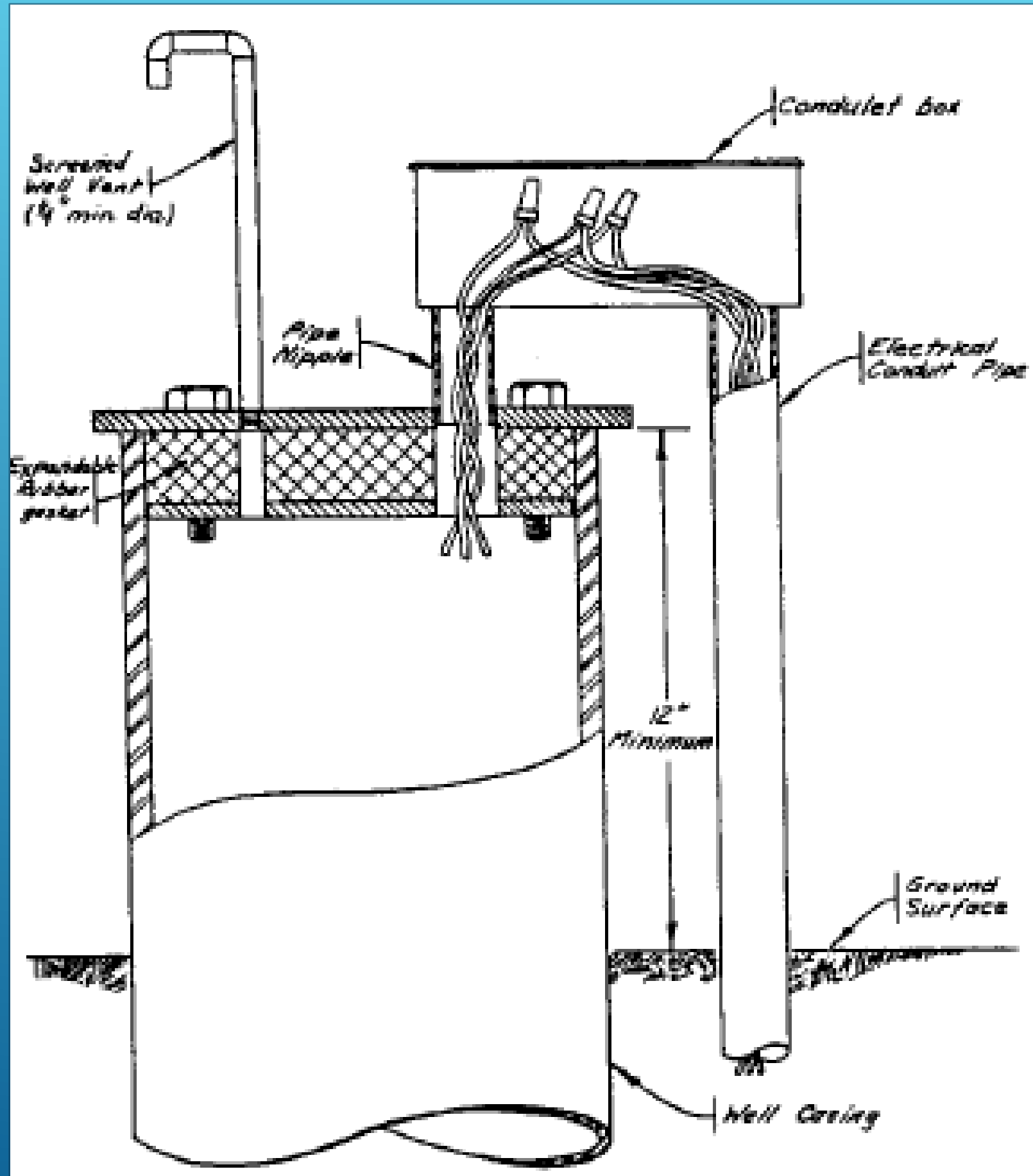




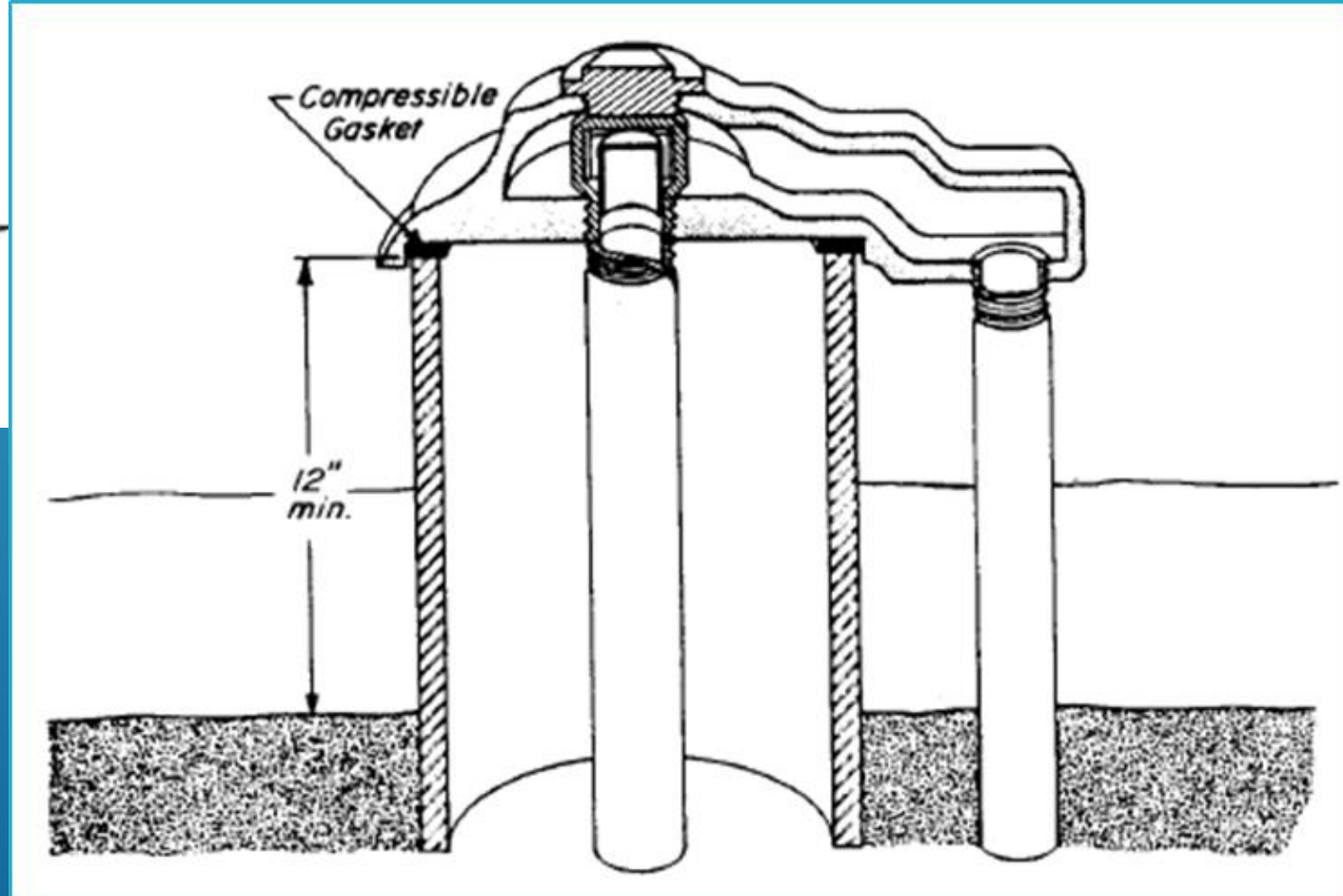
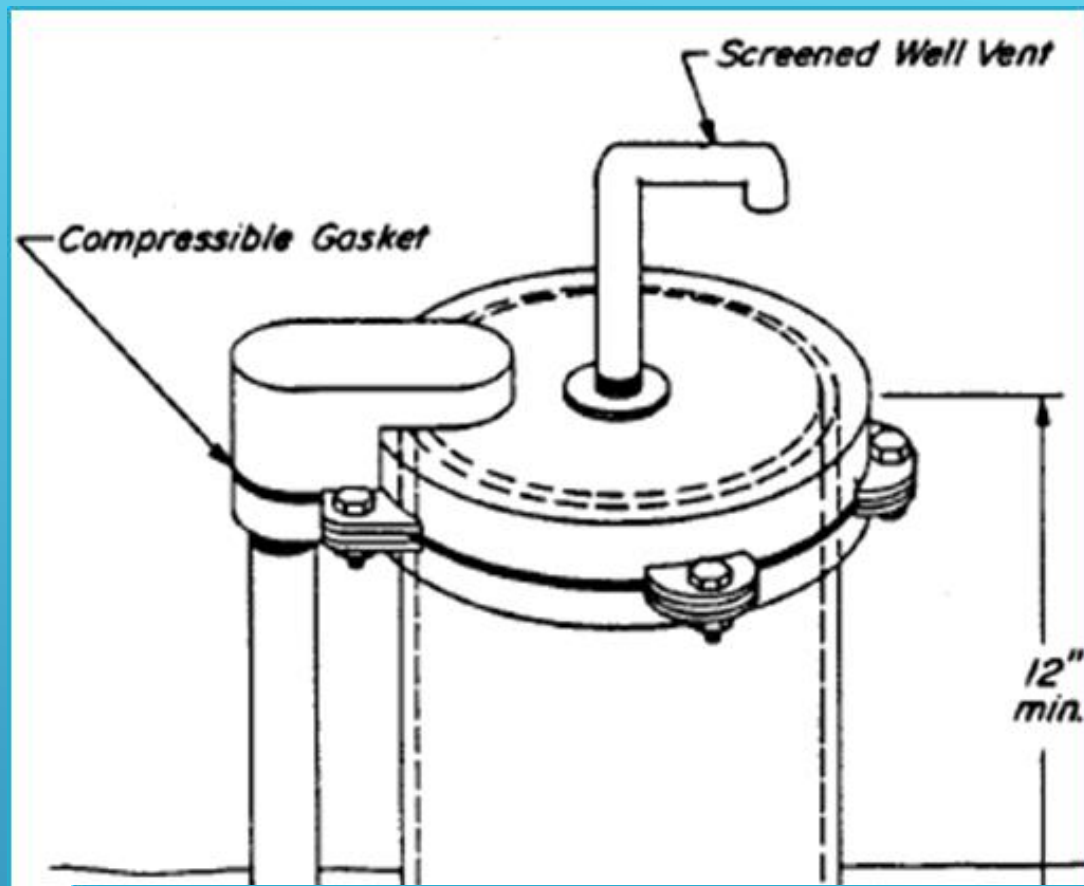
This well cap has several cracks in the gasket –  
Sanitary defect.

















# Level 1 - Conducting Inspections

- **Vermin-proof Cap...**
  - Overlapping Caps must be replaced with a vermin-proof cap whenever the well is entered for work.
  - Split-plate sanitary seals may be used only in a pump house or building.
- Well cap replacement is always strongly recommended, when needed.

# Level 1 - Conducting Inspections

- **Flowing Wells (NR 812.15) – Water flows from the ‘top’ of the completed well.**
  - No flow alongside casing.
  - Special construction requirements.
  - Cement grouted annular space.
  - Controlled overflow pipe – freeze protection/pressure relief.
  - Air Gap - 2 pipe diameters above drain.
  - Discharge outlet – 2 feet above regional flood elevation.



# Level 1 - Conducting Inspections



- Locate wells at highest possible point on site.

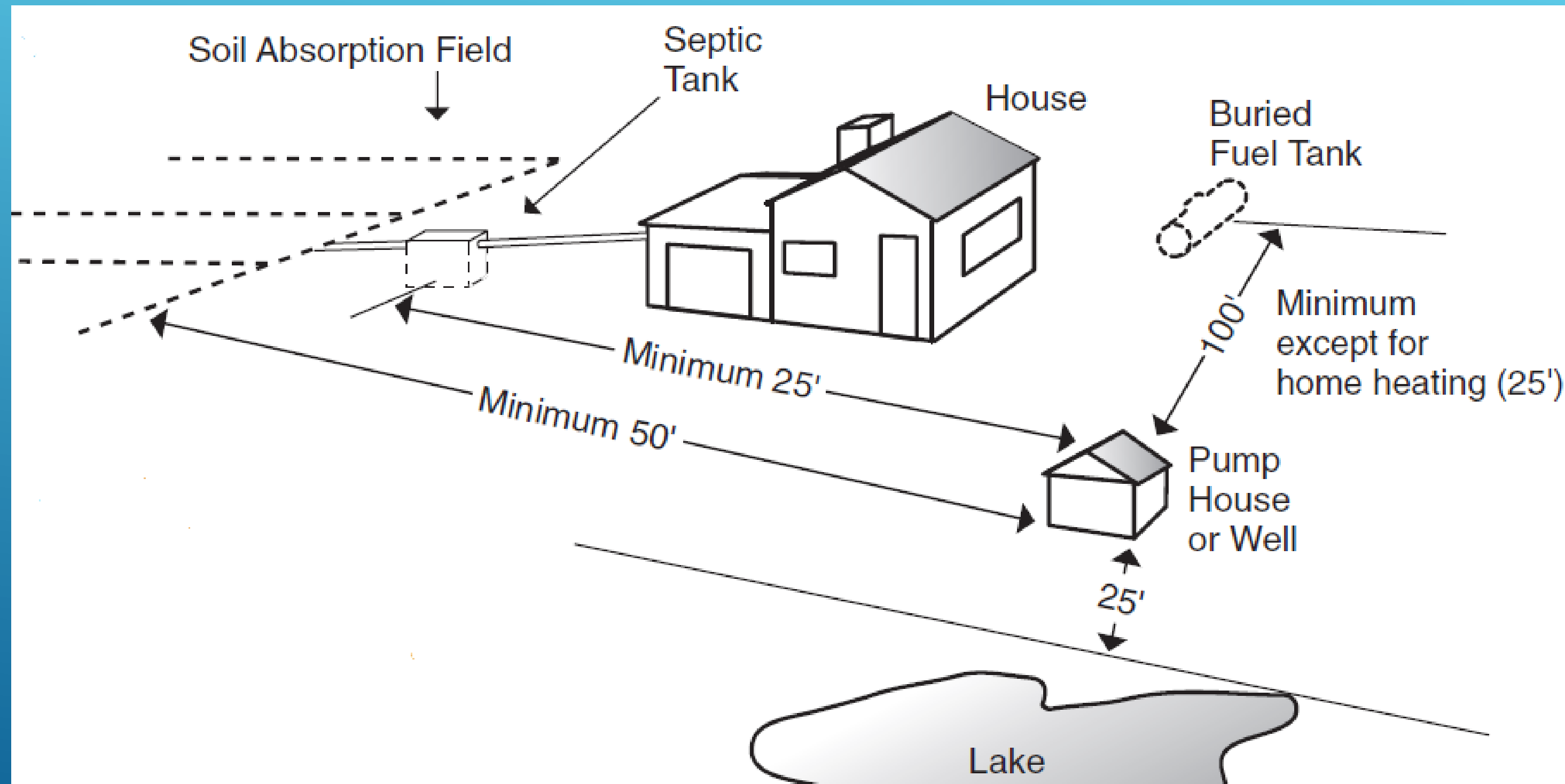




# Every Site Is Different, May Present Unique Challenges



# Level 1 - Inspections and Separation Distances





# Level 1 - Separation Distances and Special Casing Requirements

- Minimum separation distances between contamination sources and wells & reservoirs.
- Setback text in NR 812.08 Table A.
- Definitions in NR 812.07.
- Apply to both Permitting and Inspections.

# Level 1 - Separation Distances and Special Casing Requirements

- General Categories
  - Wastes (animal, industrial, non-commercial, & disposal areas)
  - Animal Areas (Yards and Structures)
  - Feed (silage)
  - Fertilizers
  - Fuels (Gas, Diesel, other)
  - Septic & Sewage Areas
  - Stockpiles & Storage Areas
  - Water Bodies & Drainage Areas
  - Quarries



# Level 1 - Separation Distances\_ Know Where To Measure From



- Important To Know Where To Measure From
  - Example: Toe of POWTS Mound, Not Center



# Level 1 - Separation Distances and Special Casing Requirements

- Separation requirements may have changed since a well was installed or reconstructed.
- **Contamination sources installed after the well was installed must meet the setback distances.**

# NR 812.42 Table E

Source	Prior to Oct. 1, 1975	Oct. 1, 1975 to Sept. 30, 1981	Oct. 1, 1981 to Jan 31, 1991	Feb. 1, 1991 to Sept. 30, 1994	Oct. 1, 1994 to Sept. 30, 2014	Oct. 1, 2014 to June 30, 2020
Animal Yard—Includes Calf Hutch (but not including residential lot dog kennel enclosing 5 or fewer adult pets)	None	50'	50'	50'	50'	50'
Barn, Animal	—	—	—	—	—	50'
Barn Gutter	None	25'	25'	25'	25'	50'
Building Overhang (from centerline of well)	2'	2'	2'	2'	2'	None
Cemetery Grave Sites	None	100'	100'	50'	50'	50'
Cistern	10'	10'	10'	8'	8'	8'
Coal Storage (greater than 500 tons)	None	None	None	1,200'	1,200'	1,200'
Composting Site (See Solid Waste Processing Facility)	None	None	None	None	250'	250'
Culvert, stormwater	None	None	None	None	None	8'
Discharge to ground from a Water Treatment Device	None	None	None	25'	25'	None
Ditch—Edge of	None	None	None	None	25'	8'
Doghouse or kennel housing 5 or fewer adult pets on residential lot	None	None	None	50'	8'	8'
Downspout Outlet (Rainwater, including the discharge therefrom)	10'	10'	10'	8'	8'	None
Drain – Sanitary building (having pipe conforming to ch. SPS 384) (Buried)	10'	8'	8'	8'	8'	8'
Drain – Sanitary building (not having pipe conforming to ch. SPS 384) (Buried)	10'	25'	25'	25'	25'	25'
DRAIN (any material) (Buried)						
— Clear Water Drain	10'	10'	10'	8'	8'	None
— Building—Foundation Drain	10'	10'	10'	8'	8'	None
— Building—Foundation Drain—Sewer Connected	15'	15'	15'	8'	8'	None
Drillhole used for the underground placement of any						



# Level 1 - Separation Distances and Special Casing Requirements

- Examples: Effective October 1994, 100-foot setback distance between a well and a silage storage structure (SSS).
  - In 1990, a well was installed; in 1999, a SSS was installed within 70 feet of the well = **Noncomplying**.
  - In 1993, a SSS was installed; in 1998 well was installed within 70 feet of the SSS = **Noncomplying**.
  - In 1996, a SSS was installed, in 1997 well was installed within 70 feet of the SSS = **Noncomplying**.
  - In 1990, well installed; in 1993, a SSS was installed within 70 feet of the well = **Complying**.

# Level 1 - Separation Distances and Special Casing Requirements

- Setback distances that become more restrictive.
- Setback distances that become less restrictive.
- Know the type of well being permitted and the applicable setbacks.



# Level 1 - Separation Distances and Special Casing Requirements

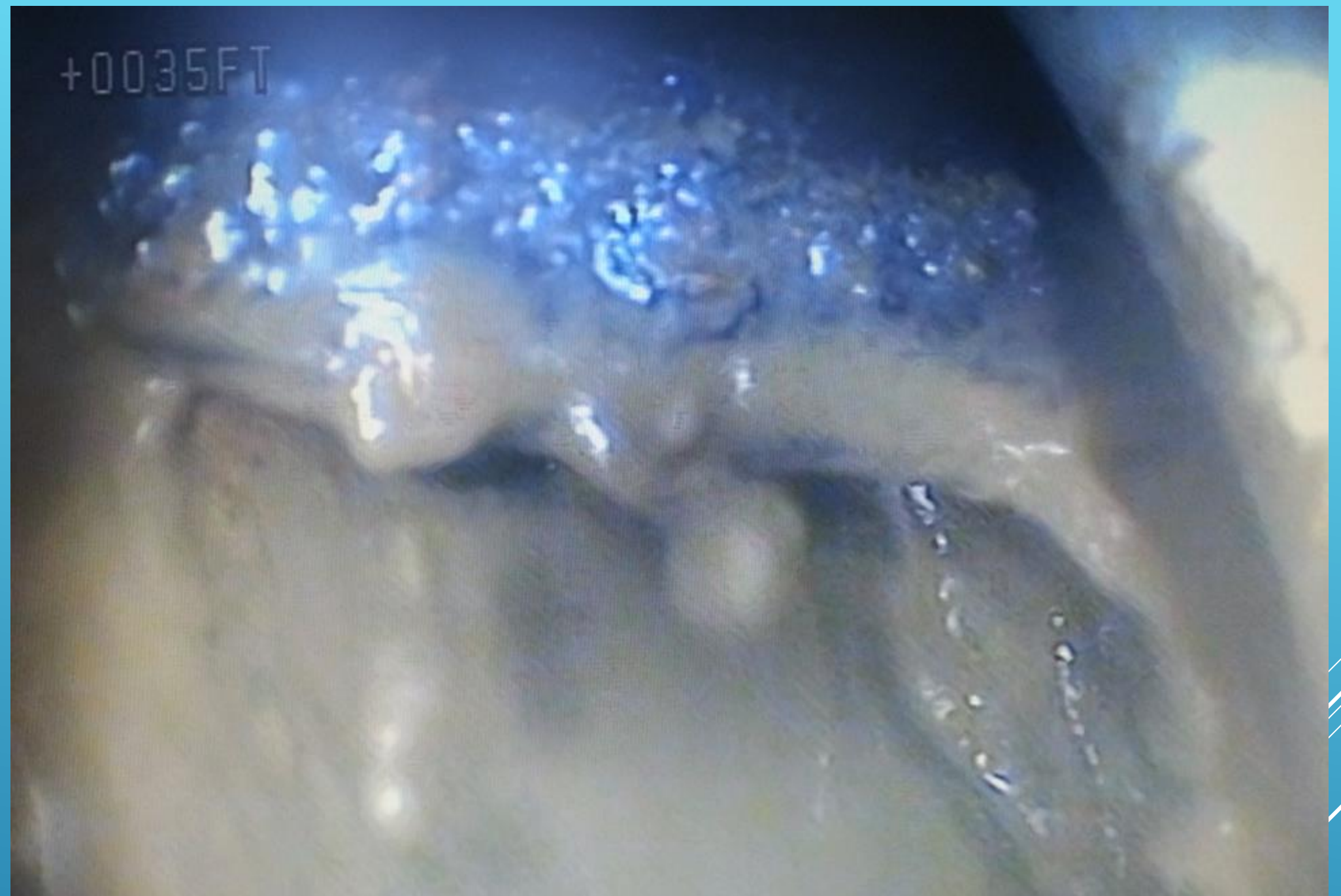
- Special casing areas exceed NR 812 construction requirements.
- Known contamination and sensitive geology areas.
- Consider special well casing areas when permitting and inspecting.
- DNR List is updated annually.

# Level 1 - Separation Distances and Special Casing Requirements

- Would you drink the water?
- If no, why not?















# **Level 1 - Inspections & Well Casing Height/Depth**

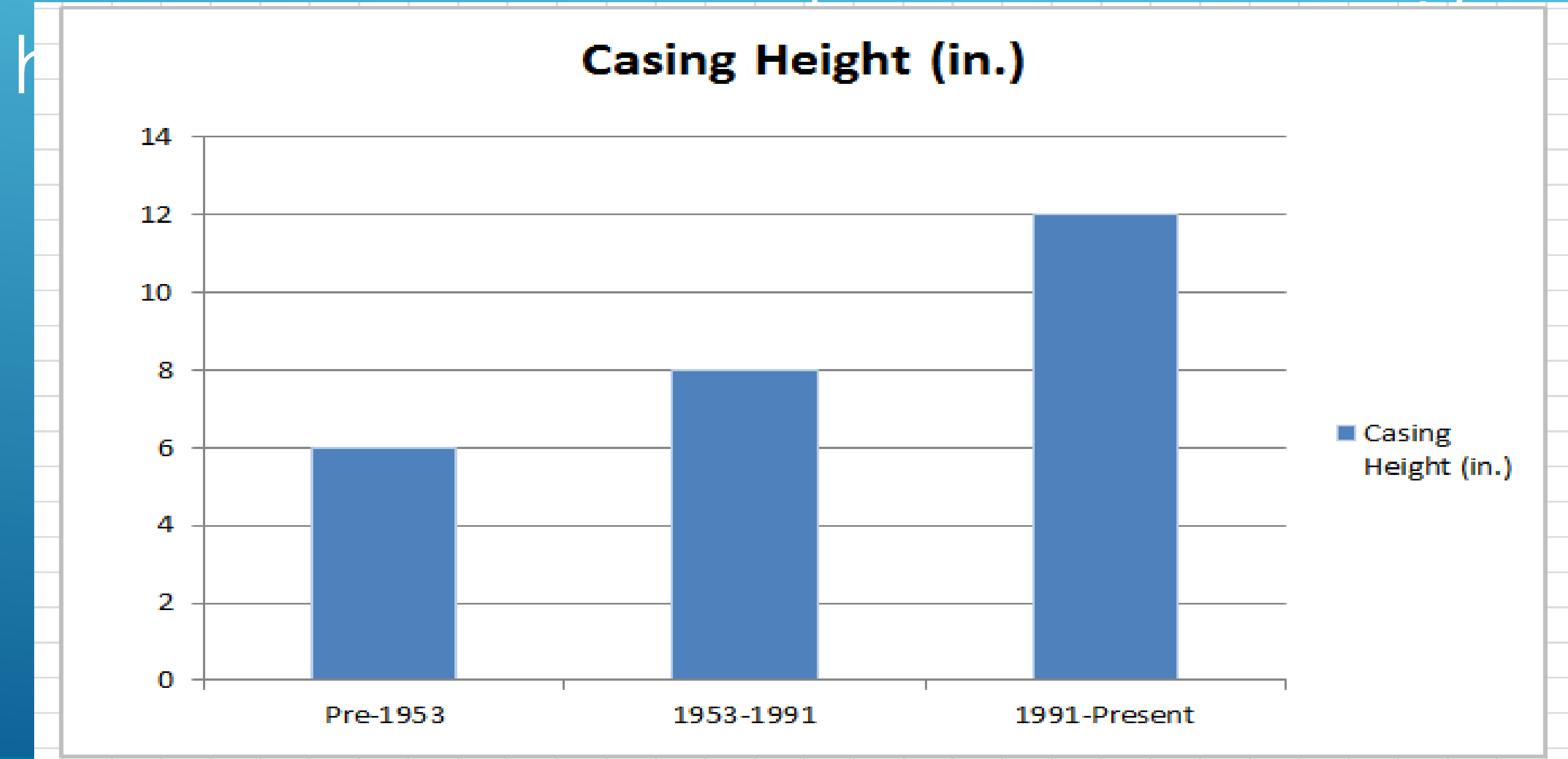


# Level 1 - Well Casing Height/Depth

- Verifying Proper Well Casing Height
- Casing height must comply with NR 812 and,
- Appropriate cap / seal on the well casing.

# Level 1 - Well Casing Height/Depth

What are code-compliant well casing





# Level 1 - Well Casing Height/Depth

- Correct violations by welding additional casing.
- Other requirements of NR 812 are met.
- Consider casing depth prior to raising a well casing
  - No well construction report.
  - Licensed contractor measures depth.

# Level 1 - Well Casing Height/Depth

- Does the owner wish to fill and seal a pit (or alcove), raise the well casing and keep the well?
- No well record available?
- Does the work involve entry into the well located outside?
- Measure casing depth, complete a well inventory report (Form 3300-067), submit to DNR.



# Level 1 - Well Casing Height/Depth

- What are the required well casing depths?

	Pre-February 1, 1991	February 1, 1991- June 30, 2020	June 30, 2020 - Present
Formation/Rock Type	Casing Depth (Feet)		
Unconsolidated Formation	25 feet (Excluding Screen)	25 feet (Excluding Screen)	25 feet (Excluding Screen)
Unconsolidate + Static WL > 15 ft bgs	Static WL Depth + 10'	Static WL Depth + 10'	Static WL Depth + 10'
Sandstone	25	30	30
Limestone or Dolomite	40	40	40
Limestone or Dolomite <10' bgs	60	60	60
Limestone or Dolomite ≥ 10' bgs and < 20' bgs	40	40	60
Other Bedrock	40	40	40

# Level 1 - Well Casing Height/Depth





# **Level 1 - Inspections Wells in Basements, Pits & Alcoves**

# Level 1 - Inspections Basements

- Wells in basements, pits and alcoves subject to contamination & sanitary hazard.
- Wells constructed after July 1951, terminating under a building addition shall be filled and sealed.
- Effective 1953 - No new wells located in or extend through basements.
- Wells installed in basements after April 10, 1953, shall be filled and sealed.
- Pits & alcoves constructed after April 10, 1953, require DNR approval.



# Level 1 - Inspections Basements

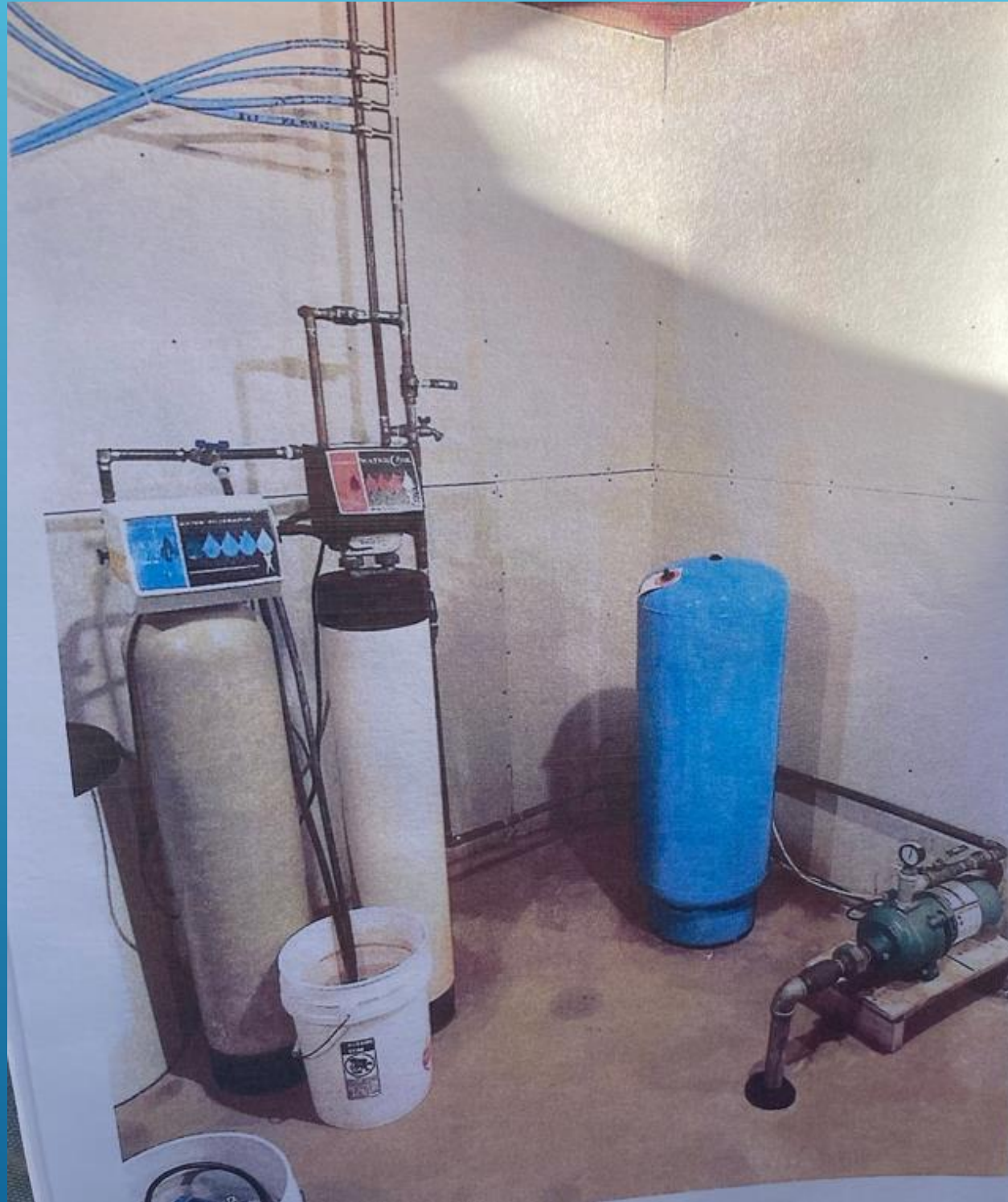
- Alcoves or pump rooms adjoining basements are considered separately from 'Basements'.
- Wells in walkout basements may be allowed, conditions apply.
- Wells terminating in basement, pit or alcove shall be (minimum) 6 inches above the floor.
- No well point screens can be replaced for wells in basements.

# Level 1 - Inspections Basements

- Must drain to basement floor if the basement is adequately drained.
- Alcove floors must not be lower than the basement floor.
- Must not be connected to a sewer.
- Not subject to flooding.
- Alcove room can remain if the alcove well is filled and sealed.



# Level 1 - Inspections Basements



- Contractor called out to perform Property Transfer Inspection
- Well was installed in 2000
- Driven-Point Well
- **Non-Compliant**



# Level 1 - Inspections Pits and Alcoves





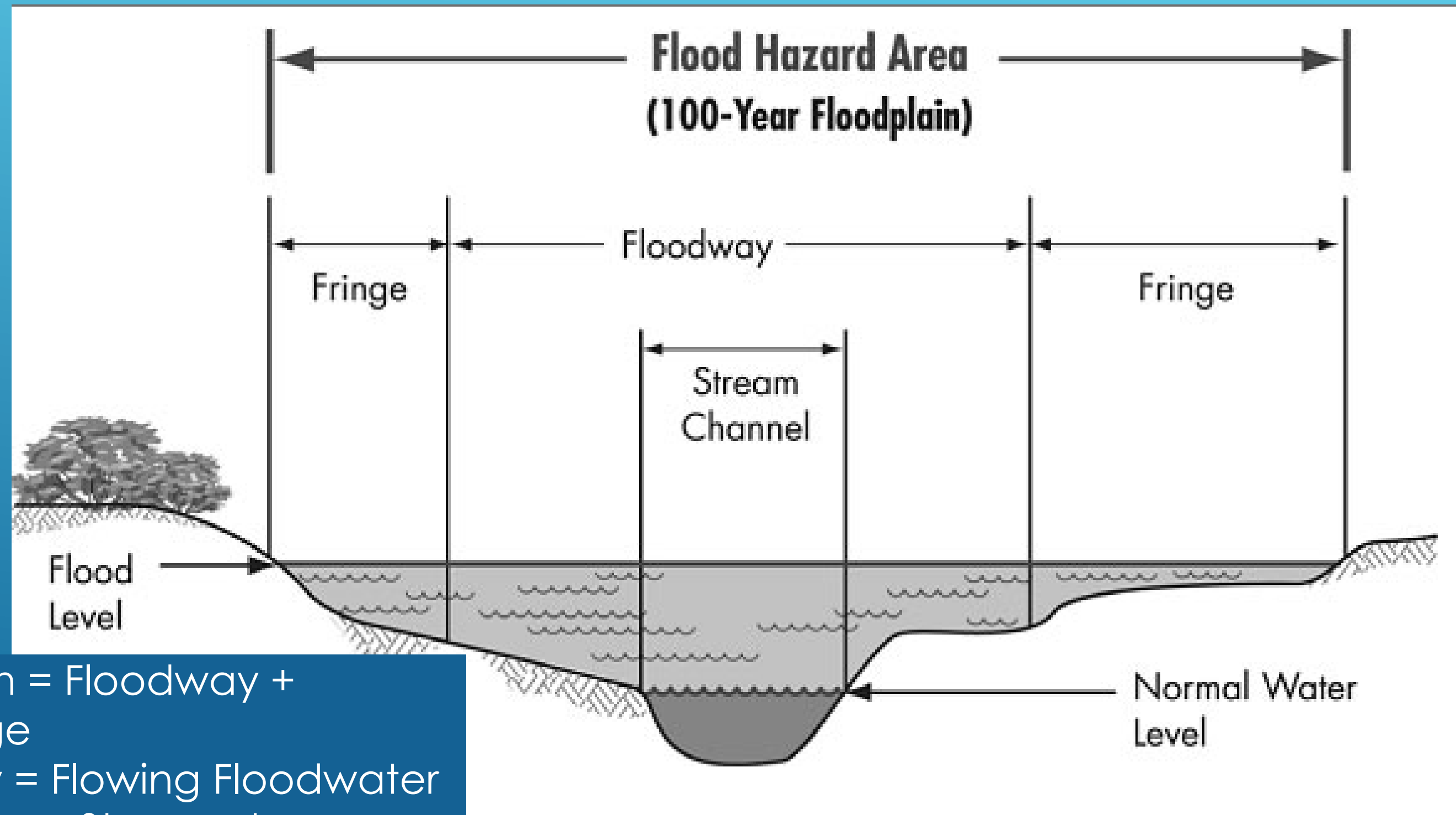
# Level 1 - Inspections Pits and Alcoves

- Stand-alone pit must be filled and sealed when a well in the pit is filled and sealed. Or,
- When the well is kept and the well casing is extended above-grade.
- Pit filling and sealing must comply with code.
- Pit may be kept when it only contains valves and/or the pit is code-compliant.

# **Level 1 - Inspections Wells in Flood Areas**



# Level 1 - Inspections Flood Areas



- Floodplain = Floodway + Floodfringe
- Floodway = Flowing Floodwater
- Floodfringe = Stagnant Floodwater

# Level 1 - Inspections Flood Areas

- Well Casing Height = 2-feet above regional flood level for:
  - Floodfringe
  - Floodway
- Well overflow outlets must be 2-feet above regional flood level.



# Level 1 - Inspections Flood Areas

- Wells in flood areas may be constructed, reconstructed or replaced.
- Wells in floodway: only reconstruction & replacement on developed properties.
- No new wells in a floodway, even on developed properties
- No well pits or driveway ramps in flood areas.







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