**DRINKING WATER - WELL CONSTRUCTION PLAN REVIEW CHECKSHEET** rev Jan 2013

Note: Refer to "Type I Well Approval Process" checksheet and complete the appropiate requirements ( 1 to 7) before using this checklist

| **GENERAL INFORMATION** | | Well ID | |
|---|---|---|---|
| Supply Name | | WSSN | |
| Project Name | | District | |
| Design Engineer | | Date Received | |
| Review Engineer | | Date Reviewed | |
| Well Specs on File | Water Well Contractor Certification | YES | NO |

| | | | | References | | | | |
|---|---|---|---|---|---|---|---|---|
| **BASIC WELL INFORMATION AND FINAL SITE PLAN VERIFICATION** | | | | 10 States | Rules in Act 399 | Sugg. Pract. Part | Part 127 Well Const | Plans meet rule or practice |
| 1 | Purpose | | Replacement ( R), New (N), Additional Capacity (A) | | | | | |
| 2 | Location | | Lat/Long, well location address and owner's address, keep numbering sequence for well ID | | | | | |
| | | | Identify property boundaries, hazards, nearby wells, surface water and land uses | | | | | |
| 3 | Formation | | Glacial Drift -sand, gravel- or Bedrock | 3.2.6 | | | | |
| 4 | Drill Method | | Mud Rotary, Air Rotary or Cable Tool(with prior written approval) | | | | | |
| 5 | Flooding | | A well shall not be located in an area subject to flooding. Approval in writing in flooding area | 3.2.5.10 | R 816 | P 8 (15) | R 125(1,2) | |
| | | | Ground surface graded and diverted away ( >25 ft) from casing to protect well from flooding | | | P 8 (16) | | |
| 6 | Nearest source of possible contamination shall be identified on the drawing | | | | | | | |
| | | | Type of contamination, distance to the well, isolation area and direction of groundwater | 3.2.3.1 | R 807 to 812 | P 8 (8,13) | R 122 | |
| | | | Hydrogeological conditions allowed modification of isolation area ? (Show protective layer ) | | R 809,812,813 | P 8 (14) | R 113(2)(A) | |
| | | | Deviations from min Stds? It shall be approved in writing and be part of permit conditions | | R 809, 812 | P 8 (3,10,13) | R 113(3) | |
| 7 | Verify documentation for well site ownership | | | | | | | |
| | | | Owner, Lease and/or Easements shown on the site plan | 3.2.3.2 | R 810 | P 8 (8b,11) | | |
| | | | Property boundaries clearly shown | | | | | |
| **WELL CONSTRUCTION SPECIFICATIONS** | | | | | | P 8 (9) | | |
| 8 | Well Depth | | Not less than 25 feet below the established ground surface | | R 818 | | R 132(3) | |
| 9 | Borehole | | This is the size of the hole that the casing is installed in. The diam shall be at least 2 7/8" | 3.2.5.9 | | | R 133a(4) | |
| | | | or larger than the nominal size of the permanent casing | | | | | |
| | **Well Casing** | | | 3.2.5.3 to 6 | R 821 | | R 121 to 131c | |
| 10 | Material | | Shall conform to manufactured standards listed on AWWA A100 & Rule 325.1626 to1631 | 3.2.5.4 | | | R 126 to 131 | |
| | 10-a Steel | | Include carbon steel, high-strength steel, low-alloy steel and stainless steel | | | | | |
| | | | **Wall thickness:** | | | | | |
| | | | Min thickness as specified in Tables 3,4 and 5 of AWWA A100 | 3.2.5.4 | | | R 126 | |
| | | | For ID <= 10": at least std weight or sch. 40 Larger diam shall be at least standard weight | | | | R 126 | |
| | | | **Joints:** | | | | | |
| | | | Watertight and have circumferencial welds (# passes varies by pipe diameter) or threaded cou | 3.2.5.4 (f) | | | R 127 | |
| | | | **Fittings:** A driven steel permanent casing shall be protected by a drive shoe | 3.2.5.4 (e) | | | R 132(5) | |
| | 10-b PVC | | Type 1120 or 1220. Conforms with ASTM F 480-90 and ANSI/NSF std 14 certified | 3.2.5.5 (a) | | | | |
| | | | PVC pipe shall only be installed in an oversized borehole without driving | | | | R 132(2) | |
| | | | Shall not be used at sites where permeation by hydrocarbons or degradation may occur | 3.2.5.5 | | | | |
| | | | **Wall thickness:** | | | | | |
| | | | For depth < = 200 ft use SDR 21 or heavier. | 3.2.5.5 (b) | | | R 131a(2) | |
| | | | For depth > 200 feet, and/or 8" diam or above use SDR 17 or heavier | | | | R 131a(2) | |
| | | | **Joints:** | | | | | |
| | | | Deep socket bell ends or couplings manufact conforming ASTM F480. | | | | | |
| | | | A two step solvent cementing process shall be used to form the joints. | 3.2.5.5 (e) | | | R 131c(1) | |
| | | | Screws or mechanical fasteners not allowed | | | | R 131c(4) | |
| | | | **Fitting:** Shall not be driven | 3.2.5.5 (f) | | | R 132(2) | |
| 11 | Diameter | | Permanent casing shall have an inside diameter of not less than 5 inches if PVC | | | | R 132(2) | |
| | | | Adequate annular space between the pump assembly and the casing Refer to A100 (Table 3) | | | | | |
| 12 | Grouting | | Refer to Policy DWRP - 03 -016 and all cited references for additional grouting requirements | | | | R 103(5,6) | |
| | | | Neat Cement must be used for the entire length of the casing. | | | P 8 (20) | | |
| | | | Annular space between a permanent casing and the borehole or between two permanent casings shall be completely filled from a point not more than 10 feet above the top of the well screen up to the ground surface. | | | | R 134a(1) | |
| | **Well Screen** | | | | | | | |
| 13 | Material | | Stainless Steel, PVC, other. Corrosive resistance. Column and collapse strength | 3.2.5.8 | | | | |
| 14 | Slot size | | Selection of the screen opening (slot size) shall be based on the aquifer geological material. | | | | | |
| 15 | Entrance Velocity | | Screen open area must allow water production at the max pumping rate of selected pump at the recommended low entrance velocity & prevent solids entrance | 3.2.5.8 | | | R 139(1) | |
| | | | V=Pumping Rate/Screen Open Area. Recommended V < 0.1 ft/sec. Calcs must be provided | 3.2.5.8 | | | | |
| 16 | Length | | Verify lineal ft of screen and depth settings. Screen Specf Capac(sqft/ lineal ft) from manufact | | | | | |
| | | | Doubling a screen length increases the well yield 100%, doubling a well diam incr it only 10% | | | | | |
| 17 | Fittings | | Filter pack around the outside of screen for filtration and stabilization of borehole. | 3.2.5.7 | | | | |
| | | | To reduce the possibility of corrosion the well screen & fittings should be of the same material | | | | | |

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| **WELL APPURTENANCES AND PUMP SPECS** | | | | | | | |
| | **Wellhead Completion** | | | | | | |
| 18 | Well Caps | Caps shall be weathertight, vermin proof, provide for venting, tightly secured to casing | | | | R 157a | |
| 19 | Seals | Reason for using drawdown seals shall be stated (pollution barriers, eliminate aeration to control iron prec; increase well effic and yield; protect submersible pump from running dry) | | | P 8 (19) | | |
| | | Drawdown Seal are acceptable if 25 ft below the established GS, as close to pump intake as possible, and at least 5 ft above the screen | | | P 8 (19) | | |
| 20 | AboveGrade | Connection into the top or side of the well casing > 12" above the GS, or floor of pump house 2 ft above the100 yr flood, or above max flood elev, whichever is higher | | R 825(1) | P 8 (21) | R 141 | |
| | | Connect may be: threaded,welded,rubber expansion seal,bolted flanges,well cap,pump base | | | | R 141 | |
| | | Clamps-on units are not recommended for wells with capacities > 50 gpm | | | P 8 (21)(a) | | |
| 21 | BellowGrade | Approved pitless adapter per cited references (for submersible pumps) | 3.2.7.5 | | Part 8 (21/22) | R 142(1) | |
| 22 | Casing Vents | Provisions shall be made for venting the well casing to atmosphere. Vents shall be screened & pointed downward. | 3.2.7.6 | R 828 | | R 157 | |
| | | Min sizes vents per Rule. Screening not less than 20-mesh/inch and not more than 30-mesh per inch screen. Vent open area >50% | | | | R 157(1&2) | |
| | | For Vertical Turbine Pumps vents into the side of the casing may be necessary. | | | | | |
| 23 | Water Level | Provisions shall be made for periodic measurement of water levels in the completed well | 3.2.7.7 | R 829 | P 8 (25) | | |
| 24 | Sample Tap | A raw water sample tap shall be provided for each well | | R 828(2) | | R 158 | |
| | **Pump Specifications - see pump & motor check sheet** | | | | | | |
| **ABANDONED WELL PLUGGED** | | | | | | | |
| 25 | | For (R) wells, Is the old well abandoned and plugged ? (Y/ N) - If not, check for explanation | 3.2.5.14 | R 832 | | R 169 | |
| | | For (R) wells, check plug method & verify that abandonment well-log (AW) is submitted | | R 832 | | R 175(3) | |
| | | Well Diam and Well Depth of Abandoned Well - Verify if Well Equipped | | | | | |
| | | Verify if pumping equipment and/or well casing has been removed | | | | R162(2) | |
| **WELL DISINFECTION / Water Quality Test** | | | | | | | |
| 26 | | In accordance with AWWA C654. After completion of work and after install of pump | 3.2.5.12 | R 831 | | R 161(1) | |
| | | Microbiological Analysis | | R 831(2) | | R 161(2) | |
| | | Physical and Chemical Analysis | | | | | |
| | | Radiological Analysis | | | | | |
| 27 | **CONSTRUCTION PERMIT NUMBER AND ISSUE DATE** | | | | | | |