PERMITTING & COMPLIANCE DIVISION

♦ ***New NonCommunity Water Supply Well*** ♦

EXPEDITED REVIEW CHECKLIST

August 8, 2014 Edition

New NonCommunity Water Supply Well Expedited Review Checklist Instructions:

This checklist procedure may be used to gain approval to drill new non community water supply wells when the conditions listed below are met. Construction of a new well is unlawful until approval is granted by the department, typically issued in a letter to the design engineer submitting the plans and specifications. Normally, the Department will review complete submittals within 15 working days. Submittals that do not contain all of the required information are not considered complete.

Conditions for use of the New Noncommunity Water Supply Well Checklist:

1. New wells that require a deviation from the Standards of DEQ-3 are not eligible for checklist review.
2. Review and approval is limited to location and construction of the well. Appurtenances such as discharge piping, pitless adapters, well pumps and well houses are not covered. Storage, treatment and distribution are not covered.
3. Radial well collectors, infiltration lines, and dug wells are not eligible for checklist reviews.
4. The checklist must be signed by a professional engineer.

Required Documentation: ***Checklists submitted without all of the required documentation will be considered incomplete and will not be processed until all of the required information has been submitted.***

1. A completed New Noncommunity Water Supply Well Expedited Checklist Application.
2. An engineering report presenting, at a minimum, the information required in DEQ-3, Chapter 1.
3. Three sets of plans signed and stamped by the professional engineer responsible for the design of the project.
4. Three sets of well specifications signed and stamped by the professional engineer responsible for the design of the project.
5. Three copies of a PWS-6 "Source Water Protection Delineation" report. The report must meet the standards listed in Department Circular PWS-6.
6. Owner certification that a professional engineer will be retained for construction inspection and will certify completion in accordance with the approved plans and prepare as-builts for submittal to the Department within 90 days of project completion.
7. Review Fee as specified in ARM 17.38.106.

Completed checklist submittals may be mailed to: Department of Environmental Quality, Permitting & Compliance Division, Public Water and Subdivisions Bureau, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901; or for those systems served by the Kalispell Office: Department of Environmental Quality, Public Water Supply Section, 109 Cooperative Way, Suite 105, Kalispell, MT 59901; or for those systems served by the Billings Office: Department of Environmental Quality, Public Water and Subdivisions Bureau, Airport Business Park 1P-9, 1371 Rimtop Drive, Billings, MT 59105-1978. Questions can be answered by writing the above address or calling (406) 444-4400 in Helena, (406) 755-8985 in Kalispell and (406) 247-4455 in Billings.

DEPARTMENT OF ENVIRONMENTAL QUALITY
NEW PUBLIC WATER SUPPLY WELL EXPEDITED REVIEW CHECKLIST

Project Name _____

Nearest City _____ County _____

Public Supply Owner _____

Developer _____

Mailing Address _____

Engineer _____

Mailing Address _____

Will this well be connected to an existing system? If so, PWSID number of system: _____

Will this well be associated with a Subdivision? If so, Subdivision name: _____

REQUIRED DOCUMENTATION:

Checklists submitted without all of the required documentation will be considered incomplete and will not be processed until all of the required information is submitted.

Included?

Y	**No**	
☐	☐	An engineering report presenting, at a minimum, all of the information listed below in ENGINEERING REPORT.
☐	☐	Three sets of plans signed and stamped by the professional engineer responsible for the design of the project. The plans must show all of the required information listed below under PLANS.
☐	☐	Three sets of well specifications signed and stamped by the professional engineer responsible for the design of the project. The specifications must meet all of the standards listed below under WELL SPECIFICATIONS.
☐	☐	Two copies of a PWS-6 "Source Water Protection Delineation" report. The report must meet the standards listed in Department Circular PWS-6.
☐	☐	Owner certification that a professional engineer will be retained for construction inspection and will certify completion in accordance with the approved plans and prepare as-builts for submittal to the Department within 90 days of project completion.
☐	☐	Review Fee as specified in ARM 17.38.106.

Every "Yes" answer must have the page number where the information can be found listed. Every "N/A" answer must be accompanied by a written explanation of the reason the standard is not applicable.

ENGINEERING REPORT:

Included?			
Y	**N/A**	**Page**	
			1.1.1 General information, including:
☐	☐	_____	a. description of any existing water works and sewerage facilities,
☐	☐	_____	b. identification of the municipality or area served, and
☐	☐	_____	c. name and mailing address of the owner developer, and the official custodian.
			1.1.2 Extent of water works system, including
☐	☐	_____	a. description of the nature and extent of the area to be served,
☐	☐	_____	b. provisions for extending the water works system to include additional areas, and
☐	☐	_____	c. appraisal of the future requirements for service, including existing and potential water supply needs.
☐	☐	_____	**1.1.3 Alternate plans.** Where two or more solutions exist for providing public water supply facilities, each of which is feasible and practicable, discuss the alternate plans. Give reasons for selecting the one

recommended, including financial considerations, and a comparison of the minimum classification of water works operator required for operation of each alternative facility.

1.1.4 Water use data, including:

☐ ☐ _____ a. The estimated population which will be served by the proposed water supply system or expanded system

☐ ☐ _____ b. present water consumption and the projected average and maximum daily demands or peak instantaneous demand, where appropriate, used as the basis for design including fire flow demand, if provided

☐ ☐ _____ c. present and/or estimated yield of the sources of supply.

1.1.5, Flow requirements, including

☐ ☐ _____ a. hydraulic analyses based on flow demands and pressure requirements, and

☐ ☐ _____ **b.** fire flows, when fire protection is provided, meeting the recommendations of the fire protection agency in which the water system is being developed, or in the absence of such a recommendation, the fire code adopted by the State of Montana. Documentation from the fire protection agency may be required if the flow requirements vary significantly from typical values.

1.1.6 Groundwater sources of water supply. Describe the proposed source or sources of water supply to be developed, including:

☐ ☐ _____ a. sites considered,

☐ ☐ _____ b. advantages of the site selected,

☐ ☐ _____ c. elevations with respect to surroundings,

☐ ☐ _____ d. sources of possible contamination such as sewers and sewage treatment/disposal facilities, highways, railroads, landfills, outcroppings of consolidated water-bearing formations, storm water facilities, chemical facilities, waste disposal wells, agricultural uses, etc.

☐ ☐ _____ **1.1.7 Sewage System Available**. Describe the existing or proposed sewage collection system and sewage treatment works, with special reference to their relationship to existing or proposed water works structures which may affect the operation of the water supply system, or which may affect the quality of the supply

☐ ☐ _____ **3.2.1.1 Quantity.** The total developed groundwater source capacity must equal or exceed the design maximum day demand. Adequate storage per DEQ-1 Section 7.0.1 will be required if source capacity is inadequate to meet peak instantaneous demand.

3.2.1.2 Water use estimates for design purposes

☐ ☐ _____ a. Domestic use - 100 gpcd must be provided for average domestic use unless the designer has sufficient data, acceptable to MDEQ, to show a lesser quantity to be adequate.

☐ ☐ _____ b. Commercial/Industrial use – for non-residential public water systems, the system must be capable of meeting peak demands. This is typically calculated from a Fixture Unit analysis per the UPC, AWWA Fixture Value Method, or by applying a peaking factor to the Average Day Demand in gallons per minute, or other means acceptable to MDEQ

☐ ☐ _____ c. Irrigation - when irrigation water is provided, information must be submitted to show that adequate water will be available. Such information must include: the area to be irrigated in acres or square feet, water requirements in inches/week, proposed methods for controlling irrigation beyond the capacity of the system.

☐ ☐ _____ d. Fire flows - fire flows must meet the recommendations of the agency in which the water system is being developed, or in the absence of such a recommendation, the fire code adopted by the State of Montana.

☐ ☐ _____ **3.2.3.1 Well location**. Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm or sanitary waste and state or federal highway rights-of-way.

☐ ☐ _____ **3.2.3.2 Continued protection.** Continued protection of the well site from potential sources of contamination must be provided either through ownership, zoning, easements,, deed notices or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection must extend for a radius of at least 100 feet around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6. The well isolation zone of a proposed or existing well must not be in a groundwater mixing zone as defined in ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required.

PLANS:

Included? Y	N/A	Page	
			1.2.1 General layout, including:
☐	☐	_____	a. suitable title,
☐	☐	_____	b. name of entity or person responsible for the water supply,
☐	☐	_____	c. area or facility to be served,
☐	☐	_____	d. scale, in feet,
☐	☐	_____	e. north point,
☐	☐	_____	f. date, and name of the designing engineer,
☐	☐	_____	g. location and size of existing water facilities, if any.
			1.2.2 Detailed plans, including, where pertinent:
☐	☐	_____	a. arrangement of present or planned wells or structures.
☐	☐	_____	b. plan and profile drawings of well construction, showing diameter and depth of drill holes, casing and liner diameters and depths, grouting depths, elevations and designation of geological formations, water levels and other details to describe the proposed well completely,
☐	☐	_____	c. location of all existing and potential sources of pollution which may affect the water source or underground treated water storage facilities
☐	☐	_____	d. location, size and length of existing or proposed streets; water sources, including ponds, lakes and drains; storm, sanitary, combined and house sewers; septic tanks, disposal fields and cesspools; and abandoned wells.
			3.2.3.1 and 3.2.3.2 Well location and continued protection zone
☐	☐	_____	Plans must identify the well isolation zone and all sewer lines, septic tanks, holding tanks, groundwater mixing zones and any structure used to convey or retain industrial, storm or sanitary waste and state or federal highway rights-of-way located within 100 feet of the proposed well.

WELL SPECIFICATIONS:

Included? Y	N/A	Page	
☐	☐	_____	**3.2 GROUNDWATER** All wells must be constructed by a licensed water well contractor in accordance with Title 37, Chapter 43, MCA and Title 36, Chapter 21, ARM, current edition, (Water Well Contractor rules) with the following additional requirements.
			3.2.2.1 Microbiological quality
☐	☐	_____	a. Disinfection of every new, modified or reconditioned groundwater source must be provided in accordance with ARM 36.21.662(1) prior to placement of permanent pumping equipment
☐	☐	_____	b. More than 72 hours after disinfection, two or more water samples must be submitted to a laboratory certified by the Department of Public Health and Human Services for microbiological analysis with satisfactory results reported to MDEQ prior to placing the well into service.
			3.2.2.2 Physical and chemical quality
☐	☐	_____	a. Every new, modified or reconditioned groundwater source must be examined for applicable physical and chemical characteristics by tests of a representative sample in a laboratory certified by the Department of Public Health and Human Services, with the results reported to MDEQ.
☐	☐	_____	1. Testing must include nitrate/nitrite and total dissolved solids or conductivity as a minimum for multiple user systems and transient noncommunity, public water systems. Additional testing may be required for other parameters where MDEQ has information suggesting they may be present in harmful quantities or where additional regulatory requirements apply.
☐	☐	_____	2. Testing must include the constituents of ARM 17.38.216 for nontransient, noncommunity public water systems.
☐	☐	_____	b. Samples must be collected and analyzed at the conclusion of the test pumping procedure prior to disinfection. MDEQ may require sample results to be submitted to the Department for review and approval to demonstrate compliance with Title 17, Chapter 38, Sub-Chapter 2, ARM, prior to use of a new source or construction of a new system.
			3.2.4.1 Yield and drawdown tests:
☐	☐	_____	a. A test must be performed on every production well after construction or subsequent treatment and prior to placement of the permanent pump,

☐ ☐ _____ b. The test methods clearly indicated in the project specifications. The test pump must have a capacity, at maximum anticipated drawdown, at least equal to the quantity required under 3.2.4.1.d and the test must provide for continuous constant rate pumping at either 1.5 times the design pump capacity for at least 24 hours, or 1.0 times the design pump capacity for at least 72 hours.

☐ ☐ _____ e. provide data of the following at one-hour intervals or less as may be required by MDEQ: 1. Pumping rate, 2. pumping water levels, 3. static water level, 4. water recovery rate and levels, and 5. time of starting and ending each test cycle,

☐ ☐ _____ f. Data collection must begin at time zero. The test may be terminated if stabilized drawdown occurs for at least eight hours during the test. Stabilized drawdown is defined as a water level that does not fluctuate plus or minus 0.5 feet for every 100 feet of drawdown at the design pumping rate. When sufficient historical information is available, a step drawdown test may be approved by MDEQ.

☐ ☐ _____ **3.2.4.2 Results** must be reported electronically to MDEQ on Aquifer test data form 633.

☐ ☐ _____ **3.2.4.3 Geological data must** be determined in accordance with ARM 36.21.667. A copy of the well log must be submitted to MDEQ. For public water supply systems, an accurate geological location such as latitude and longitude or GIS coordinates as determined by GPS to an accuracy of +/- 25 feet must be provided.

3.2.5.1 Minimum protected depths for public water systems

☐ ☐ _____ a. Minimum protected depths of drilled wells must provide watertight construction to such depth as may be required by MDEQ to exclude contamination and seal off zones that are or may be contaminated or yield undesirable water.

☐ ☐ _____ b. Wells must have unperforated casing to a minimum depth of 25 feet or full-time microbial treatment must be provided.

☐ ☐ _____ c. Full time microbial treatment is required where the water source is an aquifer with a seasonally high static water level that is within 25 feet of the ground surface.

3.2.5.2 Permanent steel casing pipe must:

☐ ☐ _____ a. be in accordance with ARM 36.21.640,

☐ ☐ _____ b. when driven, be equipped with a drive shoe in accordance with ARM 36.21.644; and

☐ ☐ _____ c. have joints in accordance with ARM 36.21.642.

☐ ☐ _____ **3.2.5.3 Nonferrous casing materials.** Plastic well casing must be in accordance with ARM 36.21.645 and ARM 36.21.646.

☐ ☐ _____ **3.2.5.4 Packers.** Packers must be of material that will not impart taste, odor, toxic substance or bacterial contamination to the well water. Lead packers must not be used.

3.2.5.5 Grouting requirements

☐ ☐ _____ b.1. All permanent well casing must be surrounded by a minimum of 1 ½ inches of grout around the outside of the casing. The grout must extend to at least 25 feet below ground surface or as specified in Standard 3.2.6 for special aquifer types. Grout may be cement/sand, bentonite chips or pellets, or neat cement. Grout may be applied by gravity into an annular space where chips or pellets are used, or by tremie pipe or other conductor from the bottom up. Bentonite must be applied per the manufacturer's instructions. Where casing centralizers preclude the use of chips a high-solids bentonite-sand slurry, cement, or neat cement should be used.

☐ ☐ _____ b.2 Application Sufficient annular opening must be provided to permit a minimum of 1 ½ inches of grout around permanent casings, including couplings. Prior to grouting through creviced or fractured formations, bentonite or similar materials may be added to the annular opening, in the manner indicated for grouting. After cement grouting is applied, work on the well must be discontinued until the cement or concrete grout has properly set in accordance with ARM 36.21.654 (1)(d). Grout placement must be sufficient to achieve proper density or percent solids throughout the annular space and must be applied in accordance with ARM 36.21.634. The type of grout, quantity, and method of placement must be reported on the well log.

☐ ☐ _____ c. The casing must be provided with centralizers in accordance with ARM 36.21.649.

3.2.5.6 Upper terminal well construction

☐ ☐ _____ a. Permanent casing for all groundwater sources must be in accordance with ARM 36.21.647.

☐ ☐ _____ c. Sites subject to flooding must be provided with an earth mound surrounding the casing and terminating at an elevation at least two feet above the 100 year flood level or highest known flood elevation.

☐ ☐ _____ d. The top of the well casing at sites subject to flooding must terminate at least three feet above the 100 year flood level or the highest known flood elevation.

☐ ☐ _____ e. Protection from physical damage must be provided.

☐ ☐ _____ f. The upper terminal must be constructed to prevent contamination from entering the well.

☐ ☐ _____ g. Where well appurtenances protrude through the upper terminal, the connections to the upper terminus must be mechanical or welded connections that are water tight.

3.2.6.1 Consolidated Formations. In drilled wells that penetrate an aquifer either within a consolidated or confining formation, sealing of the casing must conform with one of the following procedures:

☐ ☐ _____ 1. an upper drill hole, at least three inches greater in diameter than the nominal size of the permanent well casing, must extend from land surface to at least three feet into sound, consolidated formation. In no instance must said upper drill hole extend less than 25 feet below land surface; and

☐ ☐ _____ 2. unperforated permanent casing must be installed to extend to this same depth, and the lower part of the casing must be sealed into the rock formation with cement grout. The remainder of the annular space to land surface must be filled with an appropriate sealing material.

☐ ☐ _____ b. If temporary surface casing is used in either of the above procedures, this casing must be of sufficient diameter to conform to the upper drill hole specifications. Withdrawal of the temporary casing must take place simultaneously with proper sealing of the annular space to land surface.

3.2.6.2 Unconsolidated Formations without significant clay beds

☐ ☐ _____ a. In drilled wells that penetrate an aquifer overlain by unconsolidated formations such as sand and gravel without significant clay beds, an unperforated well casing must extend to at least one foot below the known seasonal low water table. An upper drill hole having a diameter at least three inches greater than the nominal size of the permanent casing must extend to at least 25 feet below land surface.

☐ ☐ _____ b. The annular space between the upper drill hole and the well casing must be kept at least one-half full with bentonite slurry throughout the driving of the permanent casing into the aquifer. After the permanent casing is set in its final position, the remaining annular space must be filled to land surface with appropriate sealing material.

☐ ☐ _____ c. If the oversized drill hole is extended to the same depth as the permanent casing, a suitable bridge must be installed between the casing and the drill hole at a position directly above the production aquifer. The remaining annular space must be completely filled and sealed to land surface with appropriate sealing material.

☐ ☐ _____ d. A suitable bridge is one that prevents the sealing material from dropping into the producing formations and reducing the output of the well.

☐ ☐ _____ e. If temporary casing is used to maintain the oversized drill hole, the annular space must be kept full with appropriate sealing material as the temporary casing is being withdrawn.

☐ ☐ _____ **3.2.6.3 Unconsolidated Formations with clay beds**. In drilled wells that penetrate an aquifer overlain by clay or other unconsolidated deposits such as sand and gravel in which significant (at least 6 feet thick) interbeds of clay are present, the well casing must be terminated in such clay strata, provided that the casing be sealed in substantially the same manner as is required in the case of consolidated formations.

☐ ☐ _____ **3.2.6.4. Flowing Wells**. When flowing water is encountered in the well, an unperforated well casing must extend into the confining stratum overlying the artesian zone. The casing must be adequately sealed into the confining stratum so as to prevent surface and subsurface leakage from the artesian zone. If the well flows at land surface, it must be equipped with a control valve so that the flow can be completely stopped. The well must be completed with packers or appropriate sealing material that will eliminate leakage around the well casing.

☐ ☐ _____ **3.2.5.7 Development.** Every well must be developed in accordance with ARM 36.21.653. The method of well development must be described on the well log.

☐ ☐ _____ **3.2.5.8 Capping requirements.** Temporary capping must be in accordance with ARM 36.21.661

Additional Comments: _____

_____

_____

_____

_____

I certify that the plans, specifications, certified checklist and supporting documentation and attachments to be in compliance with all of the applicable standards of the Department of Environmental Quality Circular DEQ 3.

_____ _____

(Signature of Professional Engineer) (Date Signed)

PE Stamp

Final Source Approval

Approval to drill a new noncommunity well will be conditioned on compliance with applicable DEQ-3 requirements. In order to obtain final source approval to use the new well, the following items need to be submitted to DEQ for approval once the well has been completed:

1. A final assessment for proposed groundwater sources that may be under the direct influence of surface water, prepared in accordance with PWS-5, "Assessment of Groundwater Sources Under the Direct Influence of Surface Water" (DEQ-3, Standard 1.1.6.e).

2. A final Source Water Protection Plan prepared in accordance with PWS-6 if field results differ substantially from that predicted in the preliminary Source Water Protection Plan, (DEQ-3, and Standard 1.1.6.f).

3. Documentation that the continued protection zone has been provided through ownership, zoning, easements or deed notice. Easements must be filed with the County Clerk and Recorders Office. (DEQ-3, Standard 3.2.3.2)

4. Test Pump results demonstrating compliance with DEQ-3, Standard 3.2.4.1.

5. Water quality sample results demonstrating compliance with DEQ-3, Standard 3.2.2.1 Microbiological quality, and DEQ-3, Standard 3.2.2.2 Physical, chemical and radiological quality.

6. A copy of the completed well log. (DEQ-3, Standard 3.2.4.3), including latitude and longitude coordinates.

7. A discussion of the maximum and peak instantaneous demand in relation to developed source capacity to demonstrate compliance with DEQ-3 Standard 3.2.1.1.

8. A discussion of the static water level of the well and compliance with DEQ-3, Standard 3.2.5.1.

Please note that source approval is limited to location and construction of the well. Plans and specifications for approval of well appurtenances (discharge piping, pitless adapters, and well pumps) must be submitted separately and will not be reviewed under an expedited process. If required, plans and specifications for storage, treatment, distribution, and Appendix information must also be submitted separately and will not be reviewed under an expedited process.