

**Louisiana PWS Design,
Construction, and Maintenance
Standards**

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SUBMISSION OF PLANS

PART 1

1.0 GENERAL

All reports, final plans, specifications, and design criteria should be submitted at least 60 days prior to the date on which action by the Department of Health and Hospitals, Office of Public Health (DHH-OPH) is desired. Environmental assessments, and permits for construction, to take water, for waste discharges, for stream crossings, etc., may be required from other federal, state, or local agencies. No approval for construction can be issued until final, complete detailed plans and specifications have been submitted to the DHH-OPH and found to be satisfactory. Documents submitted for formal approval shall include but not be limited to:

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- a. engineer's report, where pertinent;
- b. summary of the design criteria;
- c. operation requirements, where applicable;
- d. general layout;
- e. detailed plans;
- f. specifications;
- g. cost estimates;

h. documentation of adequate source of supply (i.e., water purchase contracts between water supplies, and/or inter-municipal agreements), where applicable;

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i. evaluation of technical, managerial, and financial capacity,

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1. Public water systems are required by the DHH-OPH to demonstrate adequate capacity development under LAC 48:V.Chapter 77. Subchapter B.

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2. Except as may otherwise be required under LAC 48:V.Chapter 77. Subchapter B., the evaluation for existing public water systems shall include;

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a. a discussion of the system's current technical capacity along with any project related changes with respect to operator certification requirements and the operator's ability to implement any system changes that may be required upon project completion;

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b. a discussion of the system's current overall management and how the system's management will be impacted by the project including but not limited to whether the system has an asset management plan and, if so, how the project components will be incorporated into that plan;

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c. a discussion of the water system's overall financial capacity along with user projected water rates including the system's outstanding obligations combined with the anticipated debt from the current project under review and the overall operation and maintenance. If applicable, the financial capacity discussion should include details of any energy efficiency components included as part of the project along with the estimated long-term cost and energy savings associated with them.

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j. other information as required by DHH-OPH which may not be covered by any of the above listed items but is required or is needed to ensure compliance with applicable provisions of LAC 48, LAC 51, and 40 CFR 141-143.

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1.1 ENGINEER'S REPORT

Where the design/build construction concept is to be utilized, special consideration must be given to: designation of a project coordinator; close coordination of design concepts and submission of

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plans and necessary supporting information to the [DHH-OPH](#); allowance for project changes that may be required by the [DHH-OPH](#); and reasonable time for project review by the [DHH-OPH](#). The engineer's report for water [supply system](#) improvements shall, where pertinent, present the following information:

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1.1.1 General

information,

Including:

- a. description of the existing water [supply system](#) and sewerage facilities;
- b. identification of the municipality or area served;
- c. name and mailing address of the owner or official custodian;
- d. imprint of professional engineer's seal or conformance with engineering registration requirements of the [Louisiana Professional Engineering and Land Surveying Board](#).

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1.1.2 Extent of water [supply](#) system,

Including:

- a. description of the nature and extent of the area to be served;
- b. provisions for extending the water [supply](#) system to include additional areas;
- c. appraisal of the future requirements for service, including existing and potential industrial, commercial, institutional, and other water supply needs.

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1.1.3 Justification of project

Where two or more solutions exist for providing public water [system](#) facilities, each of which is feasible and practicable, discuss the alternatives. Give reasons for selecting the one recommended, including financial considerations, operational requirements, operator qualifications, reliability, and water quality considerations.

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1.1.4 Soil, groundwater conditions, and foundation

problems, including a description of:

- a. the character of the soil through which water mains are to be laid;
- b. foundation conditions prevailing at sites of proposed structures;
- c. the approximate elevation of ground water in relation to subsurface structures.

1.1.5 Water use

data, Including:

- a. a description of the population trends as indicated by available records, and the estimated population which will be served by the proposed water supply system or expanded system 20 years in the future in [5](#) year intervals or over the useful life of critical

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structures/equipment;

- b. present water consumption and the projected average and maximum daily demands, including fire flow demand (see Section 1.1.6);
- c. present and/or estimated yield of the sources of supply;
- d. unusual occurrences;
- e. current percent of unaccounted water for the system and the estimated reduction of unaccounted for water after project completion if applicable, *i.e.*, project is to replace aged water mains, leaking storage, or other improvements that will result in reduced water loss.

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1.1.6 Flow

requirements,

Including:

- a. hydraulic analyses based on flow demands and pressure requirements (see Section 8.2.1)

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1.1.7 Sources of water supply

Describe the proposed source or sources of water supply to be developed, the reasons for their selection, and provide information as follows:

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1.1.7.1 Surface water

sources, Including:

- a. hydrological data, stream flow and weather records;
- b. safe yield, including all factors that may affect it;
- c. maximum flood flow, together with approval for safety features of the spillway and dam from the appropriate reviewing authority;
- d. description of the watershed, noting any existing or potential sources of contamination (such as highways, railroads, chemical facilities, land/water use activities, etc.) which may affect water quality;
- e. summarized quality of the raw water with special reference to fluctuations in quality, changing meteorological conditions, etc.;
- f. source water protection issues or measures, including erosion and siltation control structures, that need to be considered or implemented.

1.1.7.2 Groundwater

sources, Including:

- a. sites considered;
- b. advantages of the site selected;

- c. elevations with respect to surroundings;
- d. probable character of formations through which the source is to be developed;
- e. geologic conditions affecting the site, such as anticipated interference between proposed and existing wells;
- f. summary of source exploration, test well depth, and method of construction; placement of liners or screen; test pumping rates and their duration; water levels and specific yield; water quality;
- g. sources of possible contamination such as sewers and sewage treatment/disposal facilities, highways, railroads, landfills, outcroppings of consolidated water-bearing formations, chemical facilities, waste disposal wells, agricultural uses, etc;
- h. wellhead protection measures being considered (see Section 3.2.3.2 and 3.2.3.3).

1.1.8 Proposed treatment processes

Summarize and establish the adequacy of proposed processes and unit parameters for the treatment of the specific water under consideration. Alternative methods of water treatment and chemical use should be considered as a means of reducing waste handling and disposal problems. Bench scale test, pilot studies, or demonstrations may be required to establish adequacy for some water quality standards.

1.1.9 Sewerage system available

Describe the existing sewerage system and sewage treatment works, with special reference to their relationship to existing or proposed water supply system structures which may affect the operation of the public water system, or which may affect the quality of the supply.

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1.1.10 Waste disposal

Discuss the various wastes from the water treatment plant, their volume, proposed treatment and points of discharge. If discharging to a sanitary sewerage system, verify that the system, including any lift stations, is capable of handling the flow to the sewage treatment works and that the treatment works is capable and will accept the additional loading.

1.1.11 Automation

Provide supporting data justifying automatic equipment, including the servicing and operator training to be provided. Manual override must be provided for any automatic controls. Highly sophisticated automation may put proper maintenance beyond the capability of the plant operator, leading to equipment breakdowns or expensive servicing. Adequate funding must be assured for maintenance of automatic equipment.

1.1.12 Project

sites,

Including:

- a. discussion of the various sites considered and advantages of the recommended ones;

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- b. the proximity of residences, industries, and other establishments;
- c. any potential sources of pollution that may influence the quality of the supply or interfere with effective operation of the water supply system, such as sewage absorption systems, septic tanks, privies, cesspools, sink holes, sanitary landfills, refuse and garbage dumps, etc.

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1.1.13

Financing,

Including:

- a. estimated cost of integral parts of the system, broken down by dollar amount or percentages for source development, storage, distribution mains, pumping, transmission mains, treatment, and planning (including all soft costs);
- b. detailed estimated annual cost of operation;
- c. proposed methods to finance both capital charges and operating expenses.

1.1.14 Future extensions

Summarize planning for future needs and services.

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¶ Including, if required by the reviewing authority;¶

¶ a. a discussion of the system's current technical capacity along with any project related changes with respect to operator certification requirements and the operators ability to implement any system changes that may be required upon project completion;¶

¶ b. a discussion of the system's current overall management and how the system's management will be impacted by the project including but not limited to whether the system has an asset management plan and if so how the project components will be incorporated into that plan;¶

¶ c. a discussion of the water system's overall financial capacity along with user projected water rates including the system's outstanding obligations combined with the anticipated debt from the current project under review and the overall operation and maintenance. If applicable, the financial capacity discussion should include details of any energy efficiency components included as a part of the project along with the estimated long term cost and energy savings associated with them.¶

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1.2 PLANS

Plans for water supply system improvements shall provide the following:

1.2.1 General

layout,

Including:

- a. suitable title;
- b. name of municipality, or other entity or person responsible for the water supply;
- c. area or institution to be served;
- d. scale;
- e. north point;
- f. datum used;
- g. boundaries of the municipality or area to be served,;
- h. date, name, and address of the designing engineer;
- i. imprint of professional engineer's seal or conformance with engineering registration requirements of the Louisiana Professional Engineering and Land

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- j. [Surveying Board](#); legible prints suitable for reproduction;
- k. location and size of existing water mains;
- l. location and nature of existing water [supply system](#) structures and appurtenances affecting the proposed improvements;

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1.2.2 Detailed

plans,

Including:

- a. stream crossings, providing profiles with elevations of the stream bed and the normal and extreme high and low water levels;
- b. profiles having a horizontal scale of not more than 100 feet to the inch and a vertical scale of not more than 10 feet to the inch, with both scales clearly indicated;
- c. location and size of the property to be used for the groundwater development with respect to known references such as roads, streams, section lines, or streets;
- d. topography and arrangement of present or planned wells or structures, with contour intervals not greater than two feet;
- e. elevations of the highest known flood level, floor of the structure, upper terminal of protective casings and outside surrounding grade, using United States Coast and Geodetic Survey, United States Geological Survey or equivalent elevations where applicable as reference;
- f. plat and profile drawings of well construction, showing diameter and depth of drill holes, casing and liner diameters and depths, grouting depths, elevations, and other details to describe the proposed well completely; [and upon completion, submit record drawings \(as-builts\) reflecting geologic formations and water levels;](#)
- g. location of all existing and potential sources of pollution which may affect the water source or, underground treated water storage facilities;
- h. size, length, and materials of proposed water mains;
- i. location of existing or proposed streets; water sources, ponds, lakes, and drains; storm, sanitary, combined and house sewers; septic tanks, disposal fields and cesspools;
- j. schematic flow diagrams and hydraulic profiles showing the flow through various plant units;
- k. piping in sufficient detail to show flow through the plant, including waste lines;
- l. locations of all chemical storage areas, feeding equipment and points of chemical application (see Part 5);
- m. all appurtenances, specific structures, equipment, water treatment plant waste disposal units and points of discharge having any relationship to the plans for water mains and/or water [supply system](#) structures;

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- n. locations of sanitary or other facilities, such as lavatories, showers, toilets, and lockers, when applicable or required by the [DHH-OPH](#);
- o. locations, dimensions, and elevations of all proposed plant facilities;
- p. locations of all sampling taps;
- q. adequate description of any features not otherwise covered by the specifications.

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1.3 SPECIFICATIONS

Complete, detailed technical specifications shall be supplied for the proposed project, including:

- a. a program for keeping existing water [supply system](#) facilities in operation during construction of additional facilities so as to minimize interruption of service;
- b. laboratory facilities and equipment;
- c. the number and design of chemical feeding equipment (see Section 5.1);
- d. procedures for flushing, disinfection and testing, as needed, prior to placing the project in service;
- e. materials or proprietary equipment for sanitary or other facilities including any necessary backflow or back-siphonage protection.

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1.4 DESIGN CRITERIA

A summary of complete design criteria shall be submitted for the proposed project, containing but not limited to the following:

- a. long-term dependable yield of the source of supply;
- b. reservoir surface area, volume, and a volume-versus-depth curve, if applicable;
- c. area of watershed, if applicable;
- d. estimated average and maximum day water demands for the design period;
- e. number of proposed services;
- f. fire fighting requirements;
- g. flash mix, flocculation and settling basin capacities;
- h. retention times;
- i. unit loadings;
- j. filter area and the proposed filtration rate;
- k. backwash rate;
- l. feeder capacities and ranges;
- m. minimum and maximum chemical application rates.

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1.5 REVISIONS TO APPROVED PLANS

Any substantial deviations from approved plans or specifications must be approved by the [DHH-OPH](#) before such changes are made. These include, but are not limited to deviations in: capacity, hydraulic conditions, operating units, the functioning of water treatment processes, or the quality of water to be delivered. Revised plans or specifications should be submitted in time to permit the review and approval of such plans or specifications before any construction work, which will be affected by such changes, is begun.

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1.6 ADDITIONAL INFORMATION REQUIRED

The reviewing authority may require additional information which is not part of the construction drawings, such as head loss calculations, proprietary technical data, copies of deeds, copies of contracts, etc.

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2.0 GENERAL

The design of a water supply system or treatment process encompasses a broad area. Application of this part is dependent upon the type of system or process involved.

2.1 DESIGN BASIS

The system including the water source and treatment facilities shall be designed for maximum day demand at the design year.

2.2 PLANT LAYOUT

Design shall

consider:

- a. functional aspects of the plant layout;
- b. provisions for future plant expansion;
- c. provisions for expansion of the plant waste treatment and disposal facilities;
- d. access roads;
- e. site grading;
- f. site drainage;
- g. walks;
- h. driveways;
- i. chemical delivery.

2.3 BUILDING LAYOUT

Design shall provide

for: a. adequate

ventilation; b.

adequate lighting;

c. adequate heating;

d. adequate drainage;

e. dehumidification equipment, if necessary;

f. accessibility of equipment for operation, servicing, and removal;

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- g. flexibility of operation;
- h. operator safety;
- i. convenience of operation;
- j. chemical storage and feed equipment in a separate room to reduce hazards and dust problems.

2.4 LOCATION OF STRUCTURES

The appropriate regulating authority must be consulted regarding any structure which is so located that normal or flood stream flows may be impeded.

2.5 ELECTRICAL CONTROLS

Main switch gear electrical controls shall be located above grade, in areas not subject to flooding (see 2.20). All electrical work shall conform to the requirements of the applicable code(s) adopted under the authority of Act 12 of the 2005 First Extraordinary Session and any applicable local code(s) which may have stricter requirements.

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2.6 STANDBY POWER

Dedicated Standby power shall be required by the DHH-OPH so that water may be treated and/or pumped to the distribution system during power outages to meet the average day demand. Alternatives to dedicated standby power may be considered by the DHH-OPH with proper justification.

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Carbon monoxide detectors should be installed when fuel-fired generators are housed.

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2.7 SHOP SPACE AND STORAGE

Adequate facilities should be included for shop space and storage consistent with the designed facilities.

2.8 LABORATORY FACILITIES

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Each public water system shall have its own equipment and facilities for the routine laboratory testing necessary to ensure the proper operation of the water supply system. Laboratory equipment selection shall be based on the characteristics of the raw water source, the complexity of the treatment process involved, the contaminants or analytes for which monitoring is required or desired, and the particular laboratory methodology and minimum accuracy required to be performed for such contaminants or analytes. Laboratory test kits which simplify procedures for making one or more tests may be acceptable. An operator or chemist qualified to perform the necessary laboratory tests is essential. Other than those analytes allowed to be analyzed in a DHH-OPH Approved Chemical Laboratory/Drinking Water (see Chapter 15 of this Part), analyses conducted to determine compliance with drinking water regulations shall be performed in a DHH-OPH-certified or a U.S. Environmental Protection Agency (EPA)-certified laboratory in accordance with the requirements of this Part. Persons designing and equipping laboratory facilities should confer with the DHH-OPH before beginning the preparation of plans or the purchase of equipment. Methods for verifying adequate quality assurances and for routine calibration of equipment shall be provided.

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2.8.1 Testing equipment

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As a minimum, the following laboratory equipment shall be provided:

- a. Surface water systems or groundwater under the direct influence of surface water (GWUDISW) systems shall have a nephelometric turbidimeter meeting the requirements of the approved turbidity methods in Chapter 11 of this Part.
- b. Each surface water treatment plant or GWUDISW plant utilizing flocculation and sedimentation, including those which lime soften, shall have a pH meter, jar test equipment, and titration equipment for both hardness and alkalinity.
- c. Each ion-exchange softening plant, and lime softening plant treating only groundwater shall have a pH meter and titration equipment for both hardness and alkalinity.
- d. Each iron and/or manganese removal plant shall have test equipment capable of accurately measuring iron to a minimum of 0.1 milligrams per liter, and/or test equipment capable of accurately measuring manganese to a minimum of 0.05 milligrams per liter.
- e. Public water systems which chlorinate shall have test equipment for determining both free and total chlorine residual by the applicable method listed in Table 1 of §1105.C of this Part..
- f. If a public water system adjusts its fluoride level, equipment shall be provided for measuring the quantity of fluoride in the water. Such equipment shall be subject to the approval of the DHH-OPH.
- g. Public water systems which feed poly and/or orthophosphates shall have test equipment capable of accurately measuring phosphates from 0.1 to 20 milligrams per liter.
- h. Public water systems that use chlorine dioxide shall have an amperometric titrator with platinum-platinum electrodes capable of measuring chlorite to a minimum accuracy of plus or minus 0.05 milligrams per liter.
- i. Surface water systems, GWUDISW systems, and any groundwater system required to or choosing to achieve a minimum CT value [residual disinfectant concentration ("C") times the contact time "T" when the pipe, vessel, etc., is in operation] at or before the first customer shall have a method of measuring water temperature using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius (0.5°C).

Deleted: a. Surface water supplies shall provide the necessary facilities for microbiological testing of water from both the treatment plant and the distribution system. The reviewing authority may allow deviations from this requirement.¶

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2.8.2 Physical facilities

Sufficient bench space, adequate ventilation, adequate lighting, storage room, laboratory sink, and auxiliary facilities (e.g., restroom facilities available on-site of the in-house lab for the operator, analyst, or chemist running the lab tests; special fire-proof cabinets for storing volatile reagents as may be required by the state fire marshal; special ventilation hoods as may be required by OSHA over the work area; refrigerator; Bunsen burner; stirrers; etc.) shall be provided. Air conditioning may be necessary.

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2.9 MONITORING EQUIPMENT

Water treatment plants should be provided with equipment (including recorders, where applicable)

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to monitor the water as follows:

- a. Plants treating ground water using iron removal and/or ion exchange softening shall have the capability to monitor and record free chlorine residual.
- b. Ion exchange plants for nitrate removal shall continuously monitor and record the treated water nitrate level.

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2.10 SAMPLE TAPS

Sample taps shall be provided so that water samples can be obtained from each water source and from appropriate locations in each unit operation of treatment, and from the finished water. Taps shall be consistent with sampling needs and shall not be of the petcock type. Taps used for obtaining samples for bacteriological analysis shall be of the smooth-nosed type without interior or exterior threads, shall not be of the mixing type, and shall not have a screen, aerator, or other such appurtenance.

2.11 FACILITY WATER SUPPLY

The water treatment plant's service connection line and the finished water sample tap line shall both be supplied from a source of finished water at a point where all chemicals have been thoroughly mixed, and the required disinfectant contact time has been achieved (see Section 4.4.2). Please note that, in some cases, the take off point of the water treatment plant's service connection line and the finished water sample tap line may be downstream of the plant itself but at or before the first customer. There shall be no cross-connections between the water treatment plant's service connection line or the finished water sample tap line and any piping, troughs, tanks, or other treatment units containing wastewater, treatment chemicals, raw or partially treated water.

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2.12 WALL CASTINGS

Consideration shall be given to providing extra wall castings built into the structure to facilitate future uses whenever pipes pass through walls of concrete structures.

2.13 METERS

All public water systems shall have an acceptable means of measuring the flow from each source, the washwater, the recycled water, any blended water of different quality, and the finished water.

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2.14 PIPING COLOR CODE

To facilitate the identification of piping in treatment plants and pumping stations of a water supply system, the following color scheme shall be utilized:

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Water Lines

Raw or Recycle	Olive
Green Settled or Clarified	Aqua
Finished or Potable	Dark Blue

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Chemical Lines

Alum or Primary Coagulant	Orange
Ammonia	White
Carbon Slurry	Black
Caustic	Yellow with Green Band
Chlorine (Gas and Solution)	Yellow
Chlorine Dioxide	Yellow with Violet Band
Fluoride	Light Blue with Red Band
Lime Slurry	Light Green
Ozone	Yellow with Orange Band
Phosphate Compounds	Light Green with Red Band
Polymers or Coagulant Aids	Orange with Green Band
Potassium Permanganate	Violet
Soda Ash	Light Green with Orange Band
Sulfuric Acid	Yellow with Red Band
Sulfur Dioxide	Light Green with Yellow Band

Waste Lines

Backwash Waste	Light
Brown	Sludge
Dark Brown Sewer (Sanitary or Other)	
Dark Gray	

Other

Compressed Air	Dark
Green	
Gas	
Red	
<u>Reclaimed Water</u>	<u>Purple</u>
Other Lines	Light
Gray	

In lieu of the color coding of pipes as described above, all pipes may be painted similar colors as long as each and every pipe is banded and labeled at 5 foot intervals with the name of the liquid or gas clearly displayed on the pipe. Arrows indicating the direction of flow should be included in this labeling.

For liquids or gases not listed above, a unique color scheme and labeling should be used. In situations where two colors do not have sufficient contrast to easily differentiate between them, a six-inch band of contrasting color should be on one of the pipes at approximately 30 inch intervals. The name of the liquid or gas and arrows indicating the direction of flow should also be on the pipe.

As a point of information, please note that any nonpotable water lines considered as plumbing (e.g., piping and outlets conveying nonpotable water within an office building, restroom, or other

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structure normally served by finished, potable water) and located on the water supply system's property is required to be identified in accord with LAC 51:XIV.607 (Identification of Nonpotable Water).

2.15 DISINFECTION

Water from new systems, or from any new part(s) of existing systems, shall not be furnished for consumer's use until all wells, pipes, tanks, and equipment which can convey or store potable water are disinfected in accordance with §353.A and B of this Part. In accord with §353.C of this Part, the highly chlorinated water shall then be flushed from the new system, or from the new part(s) of the existing system until normal residual chlorine levels have been achieved. Bacteriological samples shall then be collected and the sample results from either a DHH-OPH-certified or EPA-certified laboratory shall indicate that such samples are free from contamination by coliform bacteria before the water is furnished for consumer's use.

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Current American Water Works Association (AWWA) disinfection procedures may be employed in lieu of utilizing §353.A and B of this Part; however, any AWWA disinfection procedure utilized in an existing system shall include:

- 1.) the issuance of a boil water advisory when drinking water being provided to the consumer is potentially contaminated (e.g., repair of a water main break when the main is depressurized below 20 psi);
- 2.) the collection of bacteriological samples following flushing to normal residual chlorine levels; and
- 3.) sample results from either a DHH-OPH-certified or EPA-certified laboratory that indicate that such samples are free from contamination by coliform bacteria before the boil water advisory is lifted and water is furnished for consumer's use.

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Plans or specifications shall outline the procedure and include the disinfectant dosage, contact time, and method of testing the results of the procedure.

2.16 OPERATION AND MAINTENANCE MANUAL

An operation and maintenance manual including a parts list and parts order form, operator safety procedures and an operational trouble-shooting section shall be supplied to the water supply system as part of any proprietary unit installed in the facility.

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2.17 OPERATOR INSTRUCTION

Provisions shall be made for operator instruction at the start-up of a plant or pumping station.

2.18 SAFETY

Consideration shall be given to the safety of water plant personnel and visitors. The design shall comply with all applicable safety codes and regulations that include, but are not limited to, the codes adopted under the authority of Act 12 of the 2005 First Extraordinary Session, State Fire Marshal regulations (see LAC 55.V), National Fire Protection Association (NFPA) standards, and state and federal Occupational Health and Safety Administration (OSHA) standards. Items to be considered include, but are not limited to, noise arresters, noise protection, confined space entry, protective equipment and clothing, gas masks, safety showers and eye washes, handrails and guards, warning signs, smoke detectors, toxic gas detectors and fire extinguishers.

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2.19 SECURITY

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Security measures including, but not limited to, the requirements of §315.A and 327.A.13 of this Part, shall be installed and instituted. Other appropriate design measures to help ensure the security of water system facilities shall be incorporated. Such measures, as a minimum, shall include means to lock all exterior doorways, windows, gates and other entrances to source, production, treatment, pumping and water storage facilities. Other measures may include fencing, signage, close circuit monitoring, real-time water quality monitoring, intrusion alarms, as well as safety measures to prevent tampering with any electronic, computer or other automated system which may operate or assist in the operation of the water supply system.

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[Additional Information/Suggestion concerning Security: On June 12, 2002 the federal Public Health Security and Bioterrorism Preparedness and Response Act of 2002 – Title IV, Section 401, amended the federal Safe Drinking Water Act (42 USC 300f, et seq.) by inserting Section 1433 (42 USC 300i-2). In this amendment, each community water system serving a population of greater than 3,300 persons is required to conduct an assessment of the vulnerability of its system to a terrorist attack or other intentional acts intended to substantially disrupt the ability of the system to provide a safe and reliable supply of drinking water. The vulnerability assessment is required to include, but is not be limited to, a review of pipes and constructed conveyances, physical barriers, water collection, pretreatment, treatment, storage and distribution facilities, electronic, computer or other automated systems which are utilized by the public water system, the use, storage, or handling of various chemicals, and the operation and maintenance of such system. Public water systems were required to submit their vulnerability assessment directly to the USEPA. The deadline for such submittal has since passed. For any new additions or substantial renovations to existing public water systems, information gleaned from such assessment should be utilized to install and institute security measures. It appears that 42 USC 300i-2 does not directly address the need for new public water systems to conduct a vulnerability assessment prior to operation; therefore, DHH-OPH urges and requests that any such proposed new public water system, particularly those which intend to serve a population of greater than 3,300 persons, consult with the Public Water Supply Supervision (PWSS) program of the Region VI Office of the USEPA.]

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2.20 FLOOD PROTECTION

Other than surface water intakes, all water supply facilities (including structures, electrical and mechanical equipment) shall be protected to at least the 100 year flood elevation or maximum flood of record. Water treatment facilities shall be readily accessible by access roads built to at least the 25 year flood level elevation. The minimum width of access roads shall be 8 feet to permit access for maintenance vehicles. Flood plain regulations of state and federal agencies shall be considered. Minimum freeboard for access roads to water treatment facilities shall be 3 feet, except that for water supply systems serving less than 3,300 persons 2 feet is acceptable. These requirements apply to new construction and to existing facilities undergoing substantial renovation (as that term is specifically defined under Clause "i." of Subparagraph "a." of LAC 51:I.101.A).

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The above Section shall not be construed to allow existing water supply facilities to be inaccessible during flooding conditions. The water supply system shall provide high water vehicles, boats, or other acceptable means and methods to be able to access, safely operate, and maintain its water supply facilities during floods or other high water events.

2.21 CHEMICALS AND WATER CONTACT MATERIALS

Chemicals and water contact materials shall meet the appropriate American National Standards Institute/American Water Works Association (ANSI/AWWA) and/or American National Standards Institute/NSF International {formerly National Sanitation Foundation} (ANSI/NSF) standards.

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2.22 OTHER CONSIDERATIONS

GENERAL DESIGN CONSIDERATIONS

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Consideration must be given to the design requirements of other federal, state, and local regulatory agencies for items such as energy efficiency, water conservation, environmental impact, safety requirements, special designs for the handicapped, plumbing and electrical codes, construction in the flood plain, etc.