

# North Carolina Surface Water Practice Exam (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

# How to Use This Guide

**This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:**

## 1. Start with a Diagnostic Review

**Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.**

## 2. Study in Short, Focused Sessions

**Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.**

## 3. Learn from the Explanations

**After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.**

## 4. Track Your Progress

**Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.**

## 5. Simulate the Real Exam

**Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.**

## 6. Repeat and Review

**Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.**

**There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!**

## **Questions**

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**1. Which disease can be transferred to a new victim through contaminated water?**

- A. diphtheria**
- B. gonorrhea**
- C. malaria**
- D. typhoid**

**2. The Primary MCL for fluoride is...**

- A. 4 mg/L**
- B. 2 mg/L**
- C. 1 mg/L**
- D. 0.5 mg/L**

**3. The term "maximum contaminant level goal (MCLG)" refers to...**

- A. maximum allowable level of a given contaminant in drinking water**
- B. level of a contaminant in drinking water which there are no known or suspected adverse health effects**
- C. level of a contaminant in drinking water that will trigger a Tier 1 violation**
- D. minimum detectable level of a given contaminant**

**4. What is the MCL for Nitrite?**

- A. 0.1 ppm**
- B. 1.0 ppm**
- C. 10 ppb**
- D. 10 ppm**

**5. What process describes the continuous exchange of water between the Earth and the atmosphere?**

- A. Reverse osmosis**
- B. Evapotranspiration**
- C. Hydrologic cycle**
- D. Cycle of infiltration**

**6. An atmosphere is considered oxygen deficient when the oxygen level is below...**

- A. 21.50%**
- B. 20%**
- C. 19.50%**
- D. 17%**

**7. What is one method to assess the effectiveness of coagulants?**

- A. Visual inspection of water color**
- B. Performing a jar test**
- C. Measuring temperature fluctuations**
- D. Calculating pH levels**

**8. The leakage of seal water around the packing on a centrifugal pump is necessary because it acts as what?**

- A. Adhesive**
- B. Coolant**
- C. Corrosion inhibitor**
- D. Scale inhibitor**

**9. What maintenance activity can prevent excessive wear on pump bearings?**

- A. Regular monitoring of pressure**
- B. Ensuring proper lubrication**
- C. Checking for leaks**
- D. Cleaning the pump casing**

**10. What is the primary function of a hypochlorinator?**

- A. To measure residual chlorine**
- B. To treat iron and turbidity**
- C. To feed a liquid solution into a water supply**
- D. To measure chlorine gas**

## **Answers**

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1. D
2. A
3. B
4. B
5. C
6. C
7. B
8. B
9. B
10. C

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## **Explanations**

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**1. Which disease can be transferred to a new victim through contaminated water?**

- A. diphtheria**
- B. gonorrhea**
- C. malaria**
- D. typhoid**

Typhoid fever is directly associated with contaminated water sources and is primarily caused by the bacterium *Salmonella Typhi*. This disease spreads when individuals consume water or food contaminated with the feces of an infected person. The connection to water contamination is crucial, as outbreaks often occur in areas with inadequate sanitation and unsafe drinking water. In contrast, diphtheria is transmitted through respiratory droplets rather than water. Gonorrhea is a sexually transmitted infection, and while it's concerned with personal contact and not water, malaria is caused by a parasite transmitted through the bite of infected mosquitoes, not through water. Hence, typhoid is the only disease in the list that is specifically linked to water contamination and can be transferred to individuals through that medium.

**2. The Primary MCL for fluoride is...**

- A. 4 mg/L**
- B. 2 mg/L**
- C. 1 mg/L**
- D. 0.5 mg/L**

The Primary Maximum Contaminant Level (MCL) for fluoride is set at 4 mg/L. This standard is established by regulatory agencies to protect public health, particularly because excessive fluoride exposure can lead to dental and skeletal fluorosis, as well as other health issues. The 4 mg/L limit reflects research and assessments of fluoride's risks versus its benefits, especially in the context of water fluoridation for dental health. This level balances the advantages of reducing cavities while minimizing the potential for harmful effects at higher concentrations. Understanding why this specific number is significant involves recognizing the science behind fluoride's effects on human health and the studies that have informed these guidelines. The MCL is not arbitrary; it is derived from comprehensive data on fluoride's behavior in the human body and its interaction with various environmental factors. As a result, public health policies around fluoride levels are carefully crafted to prioritize consumer safety while allowing for public health benefits through managed fluoride exposure in water supplies.

**3. The term "maximum contaminant level goal (MCLG)" refers to...**

- A. maximum allowable level of a given contaminant in drinking water**
- B. level of a contaminant in drinking water which there are no known or suspected adverse health effects**
- C. level of a contaminant in drinking water that will trigger a Tier 1 violation**
- D. minimum detectable level of a given contaminant**

The term "maximum contaminant level goal (MCLG)" specifically refers to the level of a contaminant in drinking water where there are no known or suspected adverse health effects. This standard is set to protect public health by ensuring that drinking water remains safe for consumption, aiming for an ideal level without the risk of adverse health consequences. MCLGs are non-enforceable health goals that are theoretical and not necessarily achievable, emphasizing a precautionary approach to water safety. They serve as a guideline for regulatory agencies when establishing enforceable Maximum Contaminant Levels (MCLs), which take into account technical and economic feasibility as well as protective health measures. Other options may involve definitions that pertain to different aspects of water quality but do not accurately define MCLG. For instance, the maximum allowable level of a contaminant is associated with MCLs, not MCLGs, which are purely health-based goals. The reference to levels that trigger violations or detectable levels also diverges from the primary focus of MCLGs on public health protection.

**4. What is the MCL for Nitrite?**

- A. 0.1 ppm**
- B. 1.0 ppm**
- C. 10 ppb**
- D. 10 ppm**

The maximum contaminant level (MCL) for nitrite is established at 1.0 ppm (part per million). This standard is set to protect public health, particularly considering that nitrite can be harmful, especially to infants and pregnant women, leading to conditions such as methemoglobinemia, or "blue baby syndrome." The MCL is determined based on toxicological data and risk assessments that consider the potential adverse health effects of nitrite ingestion over long periods. Setting the MCL at 1.0 ppm ensures that water systems maintain a safe level of nitrite, thereby minimizing health risks. This level is part of regulatory measures that ensure drinking water quality and safety for the community. The other values listed, such as 0.1 ppm, 10 ppb (which equals 0.01 ppm), and 10 ppm, do not align with the established MCL due to not providing adequate protection based on health studies or being excessively high compared to the recognized safe levels.

**5. What process describes the continuous exchange of water between the Earth and the atmosphere?**

- A. Reverse osmosis**
- B. Evapotranspiration**
- C. Hydrologic cycle**
- D. Cycle of infiltration**

The continuous exchange of water between the Earth and the atmosphere is best described by the hydrologic cycle. This cycle encompasses several processes, including evaporation, transpiration, condensation, precipitation, and runoff, illustrating how water moves through different phases and locations. In the hydrologic cycle, water evaporates from bodies of water and the soil into the atmosphere. Plants also contribute to this process through transpiration, where they release moisture into the air. The water vapor then cools and condenses to form clouds, ultimately leading to precipitation in the form of rain or snow, which replenishes water sources on Earth's surface.

Understanding the hydrologic cycle is crucial in the study of water resources and environmental management, as it highlights the interconnectedness of various components of the Earth's systems. Other processes mentioned, such as reverse osmosis and infiltration, do not encompass the complete cycle and exchange of water characteristic of the hydrologic cycle.

**6. An atmosphere is considered oxygen deficient when the oxygen level is below...**

- A. 21.50%**
- B. 20%**
- C. 19.50%**
- D. 17%**

An atmosphere is classified as oxygen deficient when the oxygen level drops below 19.5%. This threshold is significant because it represents a critical point for human safety and health. Oxygen is vital for human respiration, and levels below this percentage can lead to symptoms such as shortness of breath, decreased coordination, and impaired cognitive function. Environments with an oxygen concentration lower than 19.5% are considered hazardous and can pose serious risks to those exposed, especially for individuals engaging in physical activities. The importance of understanding this threshold is crucial for various fields, including workplace safety, environmental monitoring, and emergency response. Being aware of oxygen deficiency helps in implementing safety measures and ensuring that environments remain within safe limits for human activity.

**7. What is one method to assess the effectiveness of coagulants?**

- A. Visual inspection of water color**
- B. Performing a jar test**
- C. Measuring temperature fluctuations**
- D. Calculating pH levels**

Performing a jar test is a widely recognized and effective method to assess the effectiveness of coagulants used in water treatment processes. This test involves adding various coagulants to samples of water and observing how they interact with the impurities or suspended particles. It allows operators to determine the optimal dosage of coagulants needed to achieve the desired level of flocculation and sedimentation.

During the jar test, different jars are filled with the same water sample, and coagulants are added in varying amounts to each jar. After mixing, the samples are allowed to settle, and the clarity of the water is assessed. This process provides valuable insights into not only the coagulant's effectiveness but also the potential impact of other parameters such as temperature and pH on coagulation. Other methods like visual inspection of water color, measuring temperature fluctuations, and calculating pH levels do not directly assess the coagulation process's effectiveness. While these factors can influence coagulation, they do not provide explicit feedback on how well the coagulant is working to remove suspended particles from the water, making the jar test a more targeted and informative approach.

**8. The leakage of seal water around the packing on a centrifugal pump is necessary because it acts as what?**

- A. Adhesive**
- B. Coolant**
- C. Corrosion inhibitor**
- D. Scale inhibitor**

The leakage of seal water around the packing on a centrifugal pump is necessary primarily because it acts as a coolant. In the operation of centrifugal pumps, the packing is used to create a seal that prevents fluid from leaking out of the pump. However, this sealing can generate friction and, consequently, heat. The introduction of seal water helps to dissipate this heat, maintaining a safer operating temperature for both the pump and the packing material. By cooling the packing, the seal water prolongs the life of the packing and maintains the efficiency of the pump. If the packing overheats, it can wear out more quickly or fail entirely, leading to more significant leaks and potential pump damage. Thus, the role of seal water as a coolant is essential in ensuring the reliable and efficient operation of centrifugal pumps.

## 9. What maintenance activity can prevent excessive wear on pump bearings?

- A. Regular monitoring of pressure
- B. Ensuring proper lubrication**
- C. Checking for leaks
- D. Cleaning the pump casing

Ensuring proper lubrication is essential for preventing excessive wear on pump bearings. Bearings rely on lubricant to reduce friction between moving parts. Regular lubrication creates a protective film which minimizes direct contact between metal surfaces, reducing heat generation and wear. When bearings are not properly lubricated, they can overheat, which may lead to increased wear, failure, or even catastrophic breakdown of the pump system. Additionally, appropriate lubrication helps to prevent contamination from dirt and debris, which can further compromise the integrity of the bearings. By maintaining the correct lubrication schedule and using the right type of lubricant, the lifespan of pump bearings can be significantly enhanced, ensuring smooth and efficient operation of the pump system.

## 10. What is the primary function of a hypochlorinator?

- A. To measure residual chlorine
- B. To treat iron and turbidity
- C. To feed a liquid solution into a water supply**
- D. To measure chlorine gas

The primary function of a hypochlorinator is to feed a liquid solution of chlorine into a water supply. This process is essential for water disinfection, as hypochlorinators introduce a controlled amount of chlorine into the water system to ensure that pathogens and harmful microorganisms are effectively eliminated, making the water safe for consumption. The ability to accurately and consistently add chlorine helps maintain the required residual chlorine levels necessary for ongoing disinfection throughout the distribution system. The other options, while relevant to aspects of water treatment, do not describe the main role of a hypochlorinator. Measuring residual chlorine indicates monitoring processes and analytical techniques rather than the feeding mechanism itself. Treating iron and turbidity involves different treatment processes, such as coagulation and sedimentation, rather than the specific function of a hypochlorinator. Finally, measuring chlorine gas pertains to safety and operational protocols rather than the hypochlorination process, which focuses on the application of chlorine rather than its measurement.

# Next Steps

**Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.**

**As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.**

**If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at [hello@examzify.com](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://ncsurfacewater.examzify.com>**

**We wish you the very best on your exam journey. You've got this!**

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