

# Water



MODULE SPONSOR:



## Part I: Educate

Let's begin with some background information to provide foundational water knowledge to your team.

**Directions:** Contact your campus facilities department and ask a representative the following questions. You may share this question list with them ahead of time so they can prepare. Answer in **200 words or less** per question.

After you have answered the primary question, use extra writing space to explore the *Student Considerations* question.

1. What department oversees stormwater infrastructure on our campus? Is it managed internally or by a city or county public works department?

**Student Considerations:** At home, ask your parents or guardians if they know where runoff from rain goes. Research whether or not stormwater runoff from the city where your campus is located is regulated by a municipal separate storm sewer system (MS4) permit issued by a Regional Water Quality Control Board or the State Water Resources Control Board.

2. What watershed is our campus located in? What are the primary pollutants of concern in our watershed (e.g., bacteria, nutrients, trash)? What are the downstream receiving water bodies where runoff from our campus is discharged?

**Student Considerations:** Research how stormwater pollution affects local beaches, streams, creeks, and ecosystems. What can students do to reduce runoff pollution?

**Sponsor Resource:** Use the [Show Me My Watershed](#) tool to view local drainage and flow paths for anywhere in Orange County.

3. Where are the stormdrains located on campus? Are they clearly marked? Are there any educational signs or markers identifying them as stormdrains?

**Student Considerations:** Take a walk around campus and photograph or sketch where stormdrains are located. Are they clean or clogged? What do you think ends up in them?

4. Does our campus have any nature-based solutions for stormwater management (e.g., bioswales, rain gardens, permeable pavement)?

**Student Considerations:** Research how these features work. Which areas of campus could benefit from these features?

**Sponsor Resource:** [H2OC RainSmart Rebates Pilot Program](#) — Schools in OC are eligible for rebates through the Large Landscape Upgrade Program. Areas of your campus could be upgraded to capture runoff from rain events.

5. After a rain event, are there areas on campus that experience pooling, flooding, or erosion? How long does it take for water to drain from these areas?

**Student Considerations:** If it rains during an audit, observe and document water movement. Are there signs of oil, trash, sediment, or other pollutants?

6. What kind of maintenance is performed on stormwater infrastructure on campus (e.g., catch basin cleaning, inspections)? How often is it done?

**Student Considerations:** Research how often stormdrains should be cleaned and what happens if they are not properly maintained.

7. Are there any stormwater education programs or partnerships in place (e.g., with the city where the campus is located, the County of Orange, water/wastewater agencies, and environmental nonprofits)?

**Student Considerations:** Explore local organizations working on stormwater related issues. Could your campus partner with one? Start with searching local government websites and environmental groups. Examine your city's webpage.

**Sponsor Resource:** [H2OC Stormwater Program](#) — A one-stop shop for stormwater education materials including blogs, fact sheets, and brochures.

8. How does stormwater infrastructure interact with other aspects of campus sustainability including energy, waste, transportation and health?

**Student Considerations:** Research how ineffective stormwater systems could have impacts on waste management, mobility and student wellbeing. How could these topics in turn impact effective stormwater management?

9. Research the different types of structural stormwater BMPs and the various ways they are engineered to reduce pollutants in stormwater runoff (filtration, infiltration, evapotranspiration, biotreatment). Are there opportunities on campus where stormwater could be treated or infiltrated by a structural best management practice (BMP)?

**Student Considerations & Sponsor Resource:** [OC Stormwater Tools Planning Module](#) — Create an account in the OC Stormwater Tools Planning Module and add a “new project” for your campus (OC Stormwater Program staff will be available for technical support).

# Part II: Assess

Welcome to the audit portion of the Water Module! This section will challenge you to perform a hands-on assessment of your campus infrastructure.

**Directions:** Obtain a map of your campus. Identify and label the four elements defined below. Work with your facilities maintenance team for support as you assess runoff patterns and conditions, inspect drainage infrastructure, investigate possible pollution sources, and identify opportunities for nature-based solutions and other potential improvements. Try to complete this assessment after a rainy day.

**Definitions:**

- **Runoff Condition:** When it rains, what are the runoff conditions on campus? Are there areas where water ponds or flows with high velocity? When it is not raining, are there visible discharges on campus from irrigation runoff and other sources?
- **Drainage Infrastructure:** Where are the stormdrains located on campus where runoff enters a drainage conveyance? Are these identified with signage? What is their condition?
- **Pollution Prevention:** Where on campus do you think is most likely to introduce pollution to the waterways? What kinds of pollution do you expect to me most prevalent. Are there simple solutions to reduce pollution?
- **Opportunities for Improvement:** Are there locations on campus where runoff could be reduced through nature-based solutions? Are there opportunities to improve the drainage infrastructure on campus? Are there locations where pollutants could be captured?

**ELEMENT 1:** Runoff Patterns & Condition

Provide a short description of your Selected Area of Assessment.

Select a score for each element.

| Assessment         | 1 – Poor                            | 2 – Satisfactory                       | 3 – Excellent                        |
|--------------------|-------------------------------------|----------------------------------------|--------------------------------------|
| Pooling After Rain | Standing water persists for hours   | Minor pooling drains within 30 minutes | No pooling observed                  |
| Surface Type       | Fully impervious (asphalt/concrete) | Mixed surfaces                         | Mostly permeable or landscaped       |
| Dry Weather        | Standing water during dry weather   | No pooled water during dry weather     | No evidence of runoff in dry weather |

**ELEMENT 2:** Drainage Infrastructure

Provide a short description of your Selected Area of Assessment.

Select a score for each element.

| <b>Assessment</b> | <b>1 – Poor</b>          | <b>2 – Satisfactory</b> | <b>3 – Excellent</b>            |
|-------------------|--------------------------|-------------------------|---------------------------------|
| Drain Condition   | Clogged or damaged       | Minor debris            | Clean and operational           |
| Signage Presence  | No markings or education | Basic signage           | Educational art or messaging    |
| Flow Direction    | Unclear or misdirected   | Partially directed      | Clearly directed and functional |

### **ELEMENT 3:** Pollution Prevention

Provide a short description of your Selected Area of Assessment.

Select a score for each element.

| <b>Assessment</b>            | <b>1 – Poor</b>                  | <b>2 – Satisfactory</b>              | <b>3 – Excellent</b>               |
|------------------------------|----------------------------------|--------------------------------------|------------------------------------|
| Pollution Evidence           | Visible trash, oil, or sediment  | Minor debris                         | Clean and well-maintained          |
| Pollution Source             | Many potential sources           | Medium Potential sources             | Few potential sources              |
| Existing Prevention Measures | No pollution prevention measures | Medium pollution prevention measures | Many pollution prevention measures |

### **ELEMENT 4:** Opportunities for Improvement

Provide a short description of your Selected Area of Assessment.

Select a score for each element.

| <b>Assessment</b>  | <b>1 – Poor</b>       | <b>2 – Satisfactory</b> | <b>3 – Excellent</b>           |
|--------------------|-----------------------|-------------------------|--------------------------------|
| Vegetation Health  | Dead or sparse plants | Mixed health            | Lush and thriving              |
| Water Absorption   | Water bypasses system | Partial absorption      | Fully absorbed with no runoff  |
| Maintenance Status | Overgrown or clogged  | Some maintenance        | Well-maintained and functional |

**SUMMARY:** Write your initial thoughts related to above scoring assessment. Which areas were the weakest on your campus? Could improvements be made quickly with additional maintenance or are the issues infrastructural?

# Part III: Survey

This last section of the Water Module asks you to survey your peers with a set of questions related stormwater and runoff. Teams should survey a minimum of 15 students and 5 campus staff although a greater sample size is encouraged. These questions are meant to challenge your peers' perceptions.

You can complete this portion by creating and distributing a survey submission link or by filming a "questions on campus" video, similar to what might be seen on TikTok, Reels, or YouTube. Feel free to be creative!

See the question list and submission form below. If you are quizzing your peers in a live format, feel free to share answers so everyone can learn!

## QUESTION LIST:

1. Where do you think rainwater goes after it hits the ground on campus?
  - A: Generally, water goes to the local drainage and ends up in local creeks, lakes, bays and beaches. Use the [Show Me My Watershed](#) tool to reveal runoff pathways to your peers.
2. Does stormwater runoff go to a treatment plant where pollutants are removed before it reaches our creeks, harbors, bays, and beaches?
  - A: Stormwater does not get treated before reaching our waterways.
3. Have you ever noticed pollution (trash, oil, etc.) near or in stormdrains?
4. What do you think is the biggest source of stormwater runoff pollution in your community?
  - A: Stormwater pollution is a complex issue, and different pollutants can have different sources depending on geography and land use. In general, some of the most common pollutants include:
    - Trash – sources include improper disposal, accidental or intentional, and unmaintained trash receptacles
    - Bacteria – sources include pet waste that has not been picked up
    - Yard debris – sources include improper disposal
    - Fertilizer and Pesticides – sources include the over application of these chemicals and overwatering
5. Do you know what a bioswale or rain garden is? Have you seen one?
6. How often do you see educational signage about stormwater on campus? How often do you see it in your city?
7. What actions can students take to reduce stormwater pollution?
8. Are there locations on campus where you think stormwater runoff could be captured in a container for irrigation use, or infiltrated into the ground?