

BIRD'S EYE VIEW: Interdisciplinary Unit by Lorelei Westbrook and Laura Zettler

ESSENTIAL QUESTION: What are the types of impacts that individuals have on our watershed?

**Introductory Lesson #1:
Where is the Lake Champlain Basin (visual)? What land is in the Lake Champlain Basin? What do people enjoy doing in the Basin?**

Examine Lake Champlain Drainage Basin map and have students locate where they like to go and what they like to do in this area. Hike up Hard'ack to view St. Albans watershed and reflect upon favorite activities and places in the Basin. Outcome: class map of each student's favorite spot and activity in Lake Champlain Basin.

Lesson Ideas

2 What is a watershed? How is my favorite activity part of the watershed?

Explain what a watershed is. Students map a drip's journey from their favorite spot to St. Albans Bay.

3 What is the human history of St. Albans Bay? (Science lens: Invasive species history)

Students will write a narrative from the point of view of an invasive species about how it got to a favorite place in the Basin (use primary sources, articles, or other resources).

4 How have citizens enjoyed, cared for, and witnessed changes in St. Albans Bay over time?

Interview parents, grandparents, and neighbors about changes they've seen and ways they cared for and enjoyed St. Albans Bay in their lifetime. Students share answers and create a timeline or visual interpretation (individual or small group research in class to compare answers and identify common threads based on interviews).

5 What happens to the water that lands in SATEC's parking lot and leaves the building through pipes? Is there a difference between what happens to water that lands in the parking lot versus the soccer field versus the nature path? Where does the water that goes down the drains go?

Invite Megan from Burlington Public Works to explain differences between permeable and impermeable surfaces. On a ticket-to-leave, students will be able to explain the effects of impermeable surfaces on St. Albans Bay.

6 What is the quality of the water coming into St. Albans Bay?

Erin DeVries leads a mini "Trip of the Drip" through Stevens Brook (biological, chemical, physical testing). Students will create an event map and add to their toolbox (collection of protective and restorative actions to preserve the watershed and lake).

7 What does rainwater bring, pick up, and carry into Lake Champlain? How do these elements impact the water quality?

Students brainstorm the different pollutants that a drop of rain in the St. Albans Bay watershed may encounter.

8 What are good citizens doing in St. Albans to protect and restore the St. Albans watershed? (Guest speakers – this lesson will span a couple of days)

a. Visit the Choiniere Farm in Highgate to see what is being done agriculturally (positive impact)

and needs to be done (negative impact) to protect the St. Albans watershed. Students will add a minimum of three “tools” to their toolbox.

- b. Visit the Wastewater Treatment Plant in St. Albans to see what is being done in the urban setting to protect the St. Albans watershed. Students will write a reflective paragraph about these two trips.

9 What are some ways I can be a model citizen and educate others about the issues associated with St. Albans watershed?

Research project – Students work in groups and choose an appropriate method to teach the community about their favorite place (includes creating an image of that place). They will pick a problem associated with that place to explain and describe possible solutions.

**CULMINATING ACTIVITY:
Summative Assessment to Essential Question**

PROCESS and PRODUCT will include:

- Create a “Save the Bay” toolbox: collection of actions you can take to protect the St. Albans Bay
- “I Pledge” document with signatures of people who will “sign on” to one protective action
- Explain human impacts on the Basin’s for an audience. Presentations choices include:
 - Brochure/informational activity for local area businesses
 - Documentary film for local TV
 - Podcast for local radio

Lesson 1: SITES OF ENGAGEMENT #1 **“Point of View”**

Lorelei Westbrook and Laura Zettler/St. Albans Town Educational Center/Grade 7

Essential Question: What are the types of impacts that individuals have on our watershed?

Focusing Question:

Where is the Lake Champlain Basin (visual)?

What land is in the Lake Champlain Basin?

What do we enjoy doing in the Basin?

Assessment Plan:

The outcome for this lesson is individual journal descriptions of favorite place and activity. Additionally, we will create a class map of favorite places (pin-up on Lake Champlain Drainage Basin map).

PRODUCT: Journal writing and classroom map.

TOOL: Journals and Lake Champlain Drainage Basin map.

CRITERIA: Have fun, show respect, participate, put pin with name and activity on map, clarity and thoughtfulness of journal writing, and create a memory map of the St. Albans watershed, features, and landmarks.

Procedure:

PRE-VISIT (in classroom)

Questions to activate prior knowledge about St. Albans watershed such as: Where is Hard’ack? What can you see from the top? What do you enjoy doing in the Basin? Have you ever thought about what happens to the water that falls from the sky?

Define watershed and explore Lake Champlain Drainage Basin map.

Give purpose of field trip: get a bird’s eye view of St. Albans watershed area and to find a quiet, peaceful place to reflect on favorite spot in the Basin.

Establish field trip behavior and safety expectations.

ON-SITE (at Hard’ack)

Review field trip expectations, hiking safety.

Ask students to record notes on: What are some elements that a raindrop might encounter as it hits the ground? (In journal)

Hike up Hard’ack.

At the top of the mountain:

Can you point out landmarks? Geographical features?

Do you notice anything from the map you saw earlier?

What path might water take from where we are standing? What would it encounter on the way (reference your journal)?

Find a quiet spot and come up with as many observations of human impact as your can. This includes on the ground next to you and in the vista.

Hike down.

Closing reflection (share highlight and human impact observation – would that observation be classified as a positive or negative impact?).

Return to school.

POST-FIELD TRIP (in classroom)

Memory map with partner: Create a sketch of the geographical features, waterways, and landmarks they can recall from memory.

Favorite spot activity: Hand out half-dollar-size cardstock for each student to write their name and illustration or symbol of their favorite activity. Locate their favorite spot on the LCDB map and pin up their token!

Display map in center area.

Lesson 8: SITES OF ENGAGEMENT #2 **“Choiniere Family Farm”**

Lorelei Westbrook and Laura Zettler/St. Albans Town Educational Center/Grade 7

Essential Question: What are the types of impacts that individuals have on our watershed?

Focusing Question:

What are farmers doing in the St. Albans area to protect and restore the watershed?

What tools can I add to my toolbox from this trip and apply to another site?

Assessment Plan:

OUTCOME: The outcome for this lesson is for each student to take away concrete steps to help restore and protect working land.

PRODUCT: Draw a site map (sketch ok) of the farm and the things you saw that Guy had done to protect the watershed and restore the land. Follow up assessment: In a small group (2-3) take one of the “tools” from this visit and write a proposal with an accompanying illustration for a site of your choice i.e. your home, school, neighborhood. This product should also include a reflection on the connection between these practices and the qualities of being a good citizen.

TOOLS: Journals, pencils and appropriate clothing.

CRITERIA: Show great respect and admiration for Guy, participate by actively listing and generating questions to deepen understanding, create an site map of the Choiniere Farm including features, landmarks, and watershed protection. Finally complete “Tool” assignment back at school.

Procedure:

PRE-VISIT (in classroom)

Questions to activate prior knowledge about impact of agriculture on watershed.

Define sustainable and organic agriculture.

Review definition of citizenship.

Give purpose of field trip – to learn what simple thing farmers are doing to restore land and protect watershed.

Establish field trip behavior and safety expectations.

ON-SITE (at farm)

Review field trip expectations, safety regarding farms such as animals and electric fences.

Ask students to go to next blank page in field journal to be ready to sketch out a map of farm and positive farming practices – they may want to use two pages.

Guy meets us and leads tour of farm, stopping frequently for 5 minutes at a time for students to sketch map and add notes and ask follow-up questions before moving on to next stop on tour.

Closing reflection (share highlight of farm visit and one quality of citizenship you saw).

Return to school.

POST-FIELD TRIP PRODUCT CREATION (in classroom the following day)

Work on product:

1. Form groups of 2-3
2. Compare drawings of site maps and create a final, polished map complete with notes and brief explanations regarding “best practices” to be hung throughout the school.
3. Take one of the “tools” from this visit and write a multi-paragraph proposal and sketch what your “tool” would look like at a site of your choice i.e. your home, school, neighborhood. Long term goal is to take the necessary steps to implement the tool.
4. Include a reflection on the connection between “best agricultural practices” and the qualities of being a good citizen.
5. Share your final products with larger audience.

Book List:

Have:

Cole-Misch, S., Price, L, Schmidt, D. *Sourcebook for Watershed Education*. Global Rivers Environmental Education Network. 1996.

Demarest, Amy. *This Lake Alive!*

The Indoor River Book, Second Edition. A Common Roots Guidebook.

Exploring Environmental Issues: Focus on Risk. Project Learning Tree.

McKay, Bev. *Trash Unlimited: Linking Environmental Studies with Everyday Life*. 1993.

Want:

Smart by Nature: Schooling for Sustainability (Contemporary Issues (Watershed Media)), Michael K. Stone

Restoring Damaged Rivers, DVD

Watershed: A Successful Voyage into Integrative Learning Mark Springer

Going to Green: A Standards-Based Environmental Education Curriculum for Schools, Colleges, and Communities, Harry Wiland and Dale Bell