HOW (AND WHY) WE DO ARCHAEOLOGY

An Introduction to the Indigenous Archaeological Record

A Lesson Plan by Cora Woolsey and Patsy McKinney

Lesson Plan 5: Surveying, Testing, and Excavation

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Statement of recognition: This lesson plan has been developed using educational facilities and resources within the traditional lands of the Wolastoqiyik and many other First Nations of Canada. The material in these lesson plans deals with the culture and history of the Wolastoqiyik, the Mi'kmaq, and the Peskotomuhkadi, as well as the First Nations in the Northeast of North America and across all of the Americas. Much of the knowledge base shared in this lesson plan is the direct result of the sharing of knowledge by the First Peoples of the Americas. The authors gratefully acknowledge that the unceded territories of the Mi'kmaq, Wolastoqiyik, and Peskotomuhkadi and all First Peoples made this lesson plan possible and that the rich cultural history of these peoples created the sites that we study.

Note Concerning Ethical Treatment of the Archaeological Record

This lesson plan is not intended to replace archaeological education or give students or teachers the skills to conduct archaeology. The authors and NCCIE in no way endorse seeking out Indigenous artifacts, withholding archaeological information from regulatory bodies, looking for archaeological sites, or digging with the intention to find artifacts or sites. Conducting archaeology, including excavation, testing, surveying, and monitoring, is only to be undertaken by an archaeologist or under the direction of an archaeologist who meets the criteria to be permitted by the provincial regulatory body of the province in question. The authors and NCCIE strongly condemn any activity that endangers the archaeological record, treats artifacts in a disrespectful way (such as selling or destroying artifacts), or impedes the ability of regulatory bodies to protect cultural resources.

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Lesson 5

Surveys, Testing, and Excavation (Field Work)

In this lesson, you will learn about the practice of archaeology, especially what the rules and procedures are to do archaeology, and how to avoid poor practices such as looting.

Now that we know a bit about the science of archaeology and the Two-Eyed Seeing of archaeology as contributing to Traditional Knowledge (TK), we need to learn about how archaeology is done. There are strict procedures for how archaeology is conducted so that everyone is recording sites properly and caring for artifacts respectfully. After archaeology projects are finished, the artifacts, field notes, and photos of the project are sent to the government branch responsible for regulating archaeology so that others can understand what was in the site and study the artifacts.

1. Looters digging up a shell midden in southeastern Nova Scotia.

This archaeological data is usually not available to the public because the government, archaeologists, and First Nations are concerned about protecting these sites from **looters**. Looters are people who dig up artifacts and human remains (like bones) but do not have the skills to interpret the archaeological record and who might not respect the artifacts and human remains they find. Some people want to dig up artifacts in order to sell them, destroying the sites they are digging in and sending Atlantic Canada's cultural resources away from their origins to anyone who might want to buy them. This means that the Mi'kmaw, Wolastoqiyik, and Peskotomuhkati descendants of the people who made these artifacts do not have access to these **cultural resources**—the things in the archaeological record that are valuable because they give us knowledge and links to the past. It also means that archaeologists do not have the opportunity to study the sites.

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Finally, it means that sacred places—such as burials—are disrespected or destroyed by looters. Many important sites have been destroyed by people digging for artifacts, both here and in many other regions; therefore, most countries have strict regulations about who can do archaeological work.

Requirements for Doing Archaeology

Archaeologists are required to receive training from a university in order to be considered an archaeologist. How much training is required differs from country to country, but in Canada, archaeologists usually need an undergraduate degree (four years of university in Anthropology) and a Masters degree (two or more years in Archaeology). With this education, archaeologists are able to conduct archaeology as long as they have knowledge of the region they are working in.

During these degrees, students are usually required to conduct some archaeology, both in the field and in the lab. This work is called **academic archaeology** because students are encouraged to think of an archaeological problem and to try to solve it by excavating a site or looking at **artifact assemblages**—collections of artifacts that came out of a site. In other words, students are expected to scientifically investigate something in archaeology.

Although a Masters degree is required to conduct archaeology, most people who are doing archaeology are students and seasonal workers who do not have this much education. These workers sometimes have training to be called an Archaeological Field Technician, but often, they are in the middle of getting an Undergraduate degree or have never even taken archaeology in school. These workers can only work if they are hired by an archaeologist qualified to run an archaeological project.

Cultural Resource Management

Although archaeology is a science, it is often done not for scientific reasons but instead to save cultural resources from destruction because of building projects, erosion, or logging activities. This is sometimes referred to as **cultural resource management**, or CRM, and sometimes it is also called **salvage archaeology**. Most sites in Atlantic Canada have been discovered through CRM: when roads or buildings are built, archaeologists test to see if cultural resources will be **impacted** (meaning damaged, destroyed, or lost), and sometimes they find that there are large amounts of cultural resources that would be destroyed. The Jemseg Site, about a 20 minute drive outside of Fredericton in New Brunswick, was discovered because the Department of Transportation and Infrastructure had planned to build a highway between Fredericton and Moncton. When archaeologists tested near the Wolastoq River, they found a very large site dating back at least 6000 years ago. The Gaspereau Lake Reservoir Site Complex—composed of 21 Indigenous sites dating back about 8,000 years—was also found because of development. The Gaspereau River Dam needed an upgrade, and while the archaeologists were testing the area that

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would be **impacted**, they discovered the largest site yet excavated in the Maritime Provinces.

Archaeological Impact Assessments

Archaeological Impact Assessments, or AIAs, are required in the Maritimes before any activities that **break ground** can begin. Breaking ground means that construction will dig or stir up the soil in some way, which could put cultural resources below the surface in danger. A number of procedures to assess the **potential** of cultural resources in an area have to be followed to make sure no cultural resources are lost. Potential is usually called "low," "medium," or "high" and the procedures we follow depends on which level of potential is assessed in an area.

There are four different procedures to follow depending on the potential:

1) Pedestrian Survey (also called a "walkover" survey)

2) Testing

3) Excavation

4) Monitoring

Each of these procedures is used to decide if the next procedure must be followed or if potential is low, meaning groundbreaking can start without putting resources in danger.

Pedestrian Survey

A **pedestrian survey** is done to see what kind of terrain may be impacted and whether it is likely to have been an important place for people to work or live or do some other activity in the past. It is also called a **walkover survey** because it is really just a walk over the area you are interested in. It is important to remember that people throughout the past probably went everywhere in the Maritimes, even swamps and the tops of mountains, but they would not have left traces everywhere that would survive in the archaeological record. Only places where many people visited or where people spent a lot of time, like a house or a fishing spot, would probably leave enough traces to make an archaeological site that would survive to the present.

2. An archaeologist surveying a wooded area.

We know that people tended to prefer certain places. We call these places **high potential**, meaning that we should definitely test in these places if they occur inside the

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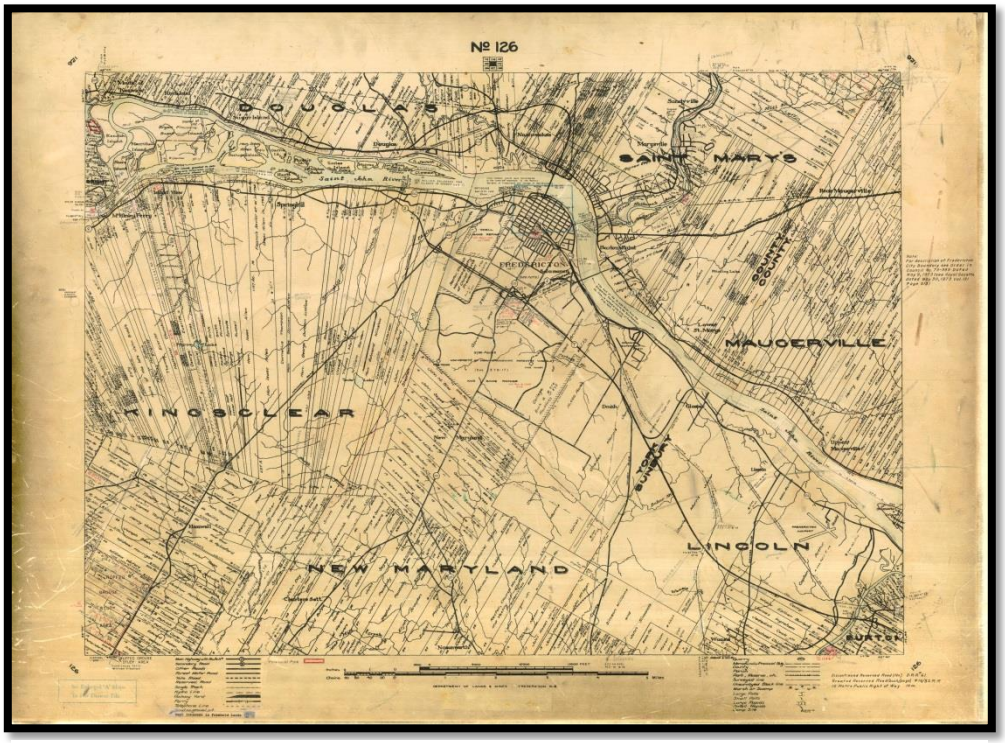
area where groundbreaking is to happen, also called a **project footprint**. Surrounding these high potential places, where people liked to live, hunt, fish, and gather, are what we call places with **medium potential**, because people move around a lot from their favourite places and may have set up camps nearby or they might have done things that leave a site for a less obvious reason. Think of what it is like for you when you go shopping at the nearest grocery store: usually, maybe you just go straight there and home again, but sometimes maybe you see someone you know down the street and go talk to them for a while, and then maybe you both decide to head somewhere else together. In the same way, people spent a lot of time in some places but sometimes they moved off the beaten path to go somewhere else, where they might or might not have left traces behind for us to find.

In areas of **low potential**, we do not believe we are likely to find archaeological sites because people would not have had a reason to stay there for long enough to leave traces behind. This does not mean there are no sites in low-potential areas, just that we don't know where to look for them because they would have been formed for more random reasons than the sites in high-potential areas. For instance, maybe someone got lost in the woods a few miles from their home and made a fire to stay warm for the night, caught a rabbit to eat, and dug a little bed into a small hill for more comfy sleeping and to protect from wild animals. This site would be impossible for archaeologists to predict. We would still like to find this site and save it from destruction, but the chances of finding it with testing are very small.



3. A cadastral map showing the original land grants around Fredericton.

The area must first be well researched to find out if other archaeological sites in the area were found, whether there is any local knowledge of activities in the area, and whether historic sources (books written by people learning about the area long ago) give any ideas about what went on in the area. This involves going to the library and looking at rare copies of books, going to the local archives to look at old pictures and maps, going to the government office for archaeology to find previous reports and excavation notes

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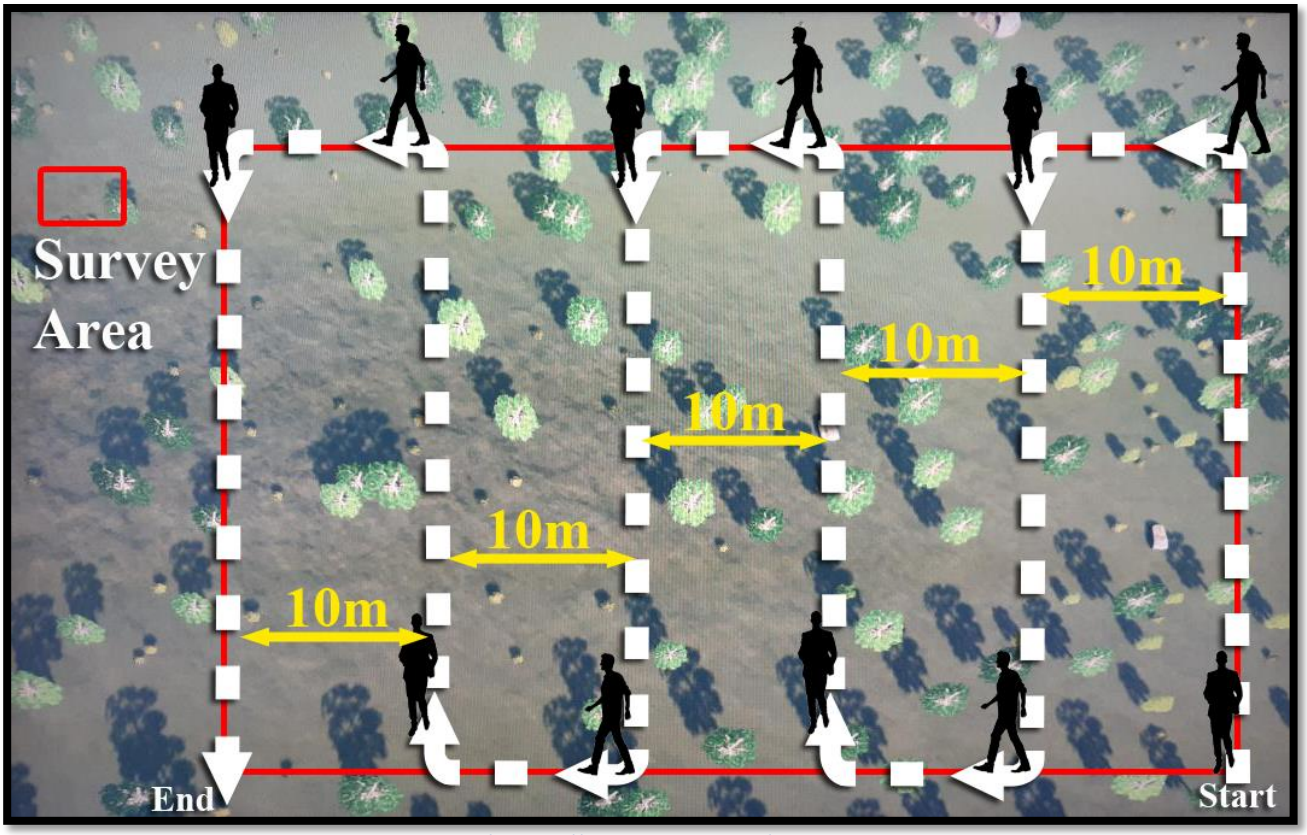
from the area, and—most importantly—talking to people around the area to find out what their families have told them about the area and what they have found during the time they lived there. This may actually be the part of the survey that takes the most work!

Next, you need to walk over the area and **ground-truth** any information you have, like where you believe buildings and other landmarks are, what the terrain is like, and what shape roads and bridges are in. Ground-truthing means that you can verify what your research has told you about the area because you have observed it yourself. You need to keep careful notes about what you are doing the whole time, and you need to map the area as you go. Another important thing you need to do is track your path by **GPS**, which stands for Global Positioning System and is a way of knowing where you are by using satellite data. A GPS track means you have a device recording your position the whole time you are surveying and making a track that will prove you went where you said you went and that you did see the whole area for yourself.



4. How to do a walkover survey with 10m transects.

The survey begins by starting in one corner of the area and walking in a straight line along the edge. This line is called a **transect**. Then, you turn and walk along the far edge about 10 meters, and walk back in a transect parallel to the first transect you walked until you reach the other edge. Then, you turn again and walk along the edge

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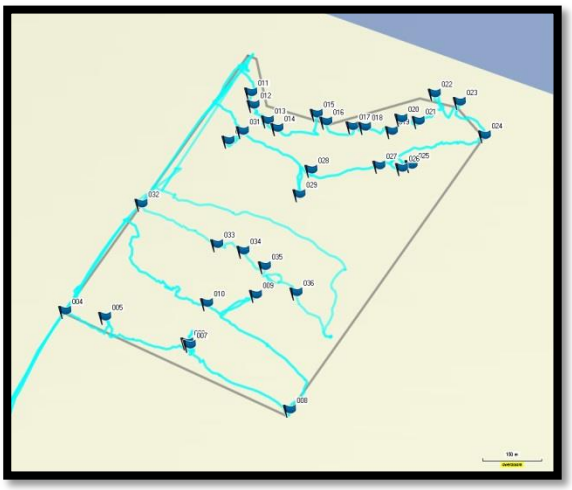
until you are another 10 meters from your last transect. You will walk again in a straight line parallel to your last two lines. You continue in this manner until you have covered the entire area. This is called a 10 m transect survey. If you have many people, everyone can choose a transect to walk, which makes it go much faster.



5. A map showing the GPS track of a walkover survey.

As you can see from the map at the left, it is not easy to walk a straight line all the time! Especially if there are thick woods, a lot of hills and rocky features, or swampy areas, you are going to have to deviate a bit from the plan. However, as long as you make a note of why you had to deviate, and keep mapping everywhere you go, you are doing a great survey.

RECOMMENDATIONS

Once we have determined the potential in the areas we want to survey and mapped this out in our notes and using GPS, we need to make recommendations about the next steps. In areas of high and medium potential, we need to recommend testing, but in low-potential areas, no further archaeological action is required. This is written in a final report and given to the government along with all field notes, maps, and the GPS track and important points of note. This report is then used as a guide for the next stage of testing or, if the area was found to be entirely low potential, it is used as the reason why no more work will be done and breaking ground can begin.

Testing

If the pedestrian survey uncovered areas of medium or high potential, **archaeological testing** those areas needs to happen before anyone can break ground. Testing, also called **test-pitting**, is the practice of digging **test pits** (50x50 cm holes that are perfectly square) down to **sterile** soil, meaning soil that has no possibility of containing cultural materials. In this region, we usually dig down to **glacial till**, which is the soil that was left by the ice sheet during the last Ice Age. The reason this is considered sterile is that the ice sheet covered this region for about 115,000 years ago and only melted around 10,000 years ago, so even if humans were around before about 15,000 years ago, we are not likely to find their artifacts because they would have been on top of the ice sheet or—more likely—they would have been further south. Therefore, when we reach glacial till, we are pretty sure nothing else of human origin is going to show up.

6. A test pit.

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7. A test pit with a north arrow and scale.

The number of test pits depends on the potential (high or medium) and on the size of the area considered to have archaeological potential. In areas of medium potential, test pits have to be dug in 10 meter **intervals** (or spaces), meaning that they are laid out in a grid with rows every 10 meters apart. This is called a 10 m grid. In high potential areas, test pits are dug in a 5 m grid. Each province has a set of regulations that tells archaeologists which areas are to be tested using 5 or 10 m grids.

Grids. Test pits are laid out using measuring tapes in the desired grid (5 or 10 m intervals). At each interval, a flag is placed in the ground. Each flag will be in the northeast corner of the test pit.

8. A crew of archaeologists laying out a grid for testing.

Measuring the Square. Then, the archaeologist lays out the 50x50 cm square to be dug using a template or rulers. When archaeologists get good at doing this, they can judge the right shape and size without even measuring it! Nearby, a screen is laid on the ground ready for dirt from the test pit to be placed in it and **screened**. All material from the pit has to be screened—much like sifting flour—through ¼" mesh screen.

9. A team of archaeologists digging and screening dirt.

Digging. The archaeologist starts by taking off the sod layer and shaking as much dirt out as possible into the screen, then laying the sod aside. Next, the pit is dug, each shovel of dirt placed in the screen. Any artifacts that are found are placed in bags and labelled with the test pit number and the depth it was found at, along with the date, the site name, and the person who dug the test pit. This recording process is very important in **documenting** the site.

Recording. After the pit has been dug down to sterile soil or to 1.2 meters (whichever comes first), the archaeologist has to record it. This is done by taking some notes about what the soil is like, what was found in the pit, any features or remnants of human activity, and any other information that would help understand the site better. Then, the stratigraphy in the test pit wall is drawn and a picture is taken with a **scale** (basically a big ruler) and a

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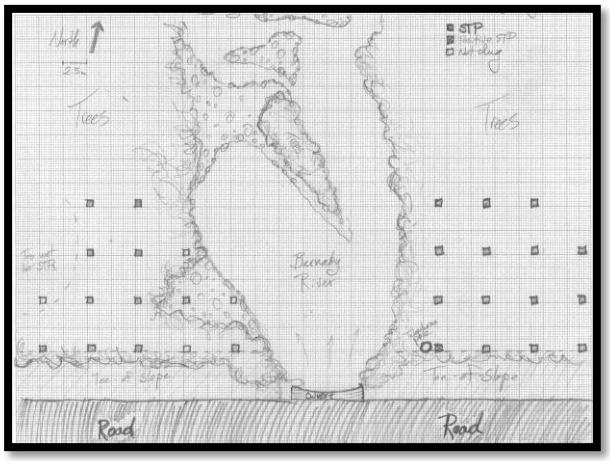
north arrow (showing the direction of north). After the test pit has been recorded, it is filled in again and the sod is replaced on top.

RECOMMENDATIONS

After all the pits have been dug, and if no site was identified during testing, it is time to study the data. Back in the office, the archaeologist looks at the stratigraphy to try to figure out whether there is any evidence of cultural resources (artifacts, features, or anything to indicate that a site might have been missed during testing). Artifacts (if any were found) are analyzed to suggest whether any human activities happened at the site, and what they were. If evidence suggests that there are more cultural resources, then the archaeologist has three choices:



10. A map drawn in the field to document a site.

1) Recommend that the development not take place;

2) Recommend further testing or excavation of some or all of the site;

3) Go back and do the excavation.

Usually, the archaeologist decides this by working with the government branch of archaeology (usually called an **Archaeological Regulator**) to decide what to do next.

Excavation

If it seems like a site has been found, or exists but hasn't been found yet, it is time to do an **archaeological excavation**. Excavations are time-consuming and expensive, but if there is a site to find, you will definitely find it with excavation! This method involves carefully digging down in layers with a small tool called a **trowel** and removing dirt a bit at a time. In this way, if you find an artifact or feature, you will be able to record its position precisely without accidentally digging it out before you find it in the screen. This means you can see how artifacts and features occur spatially within the stratigraphy much more precisely, so you can discover more things about the site.

11. An excavation at Gaspereau Lake in Nova Scotia.

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METHODS FOR EXCAVATION

Just like in testing, dirt is dug out of a square hole and screened. Also just like in testing, artifacts and features are recorded carefully as they are discovered. But unlike in testing, excavation goes slower and more precisely and different layers are recorded as you come to them. If you find a feature, you can excavate all around it before you excavate that feature, so you can get an idea of what it looks like before you take it down to the next level. Another difference is that testing makes a lot of small holes, but excavation makes one big hole, dug at different rates in different places. Basically, excavation is a much slower and more thorough version of testing.

12. A site being excavated in a checkerboard pattern.

Datum. The first thing an archaeologist has to do is figure out where to dig. If an important artifact or feature has already been found, this might be the best place to start, even though there is no guarantee that this is the centre of the site. Usually, this means creating the **datum point**, the position from which all the other parts of the site are measured.

Grid. After the archaeologist decides where to dig, it's time to lay out the grid. The grid divides up the area into 1x1 m squares, called **units**, each of which gets a name based on its position in the site. Usually, the grid is oriented along north-south and east-west lines.

13. Foot bones of an animal.

Digging. Once the grid is in place, you can start by removing the sod, the same as in testing. Then the unit is brought down layer by layer, stopping at all artifacts and features and recording them, until glacial till is reached. Every artifact found should get mapped and its depth recorded.

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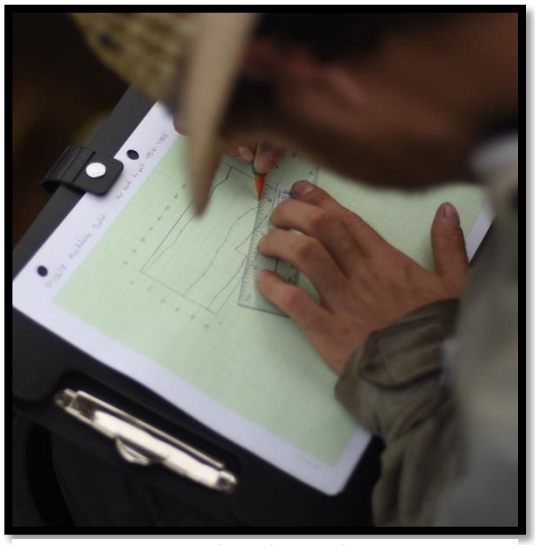

14. An archaeologist drawing a stratigraphic profile of a unit.

During excavation, a lot of time is spent on recording, bagging, and cataloguing artifacts, especially if there are a lot of artifacts. If we don't take a lot of time doing this right, artifacts can get lost or mislabeled. The context of the artifacts is the main reason why we excavate, so treating artifacts properly is very important. We keep a **log** (basically, a record)of artifacts as they are found that records depth and unit, as well as who found them in case we need to ask questions, and the day they were found on, in case we got some part of the labelling wrong and need to retrace our steps on that day. The artifacts are packed up and should be placed in a compartment for shipping back to the lab, where analysis will be done.

Because stratigraphy is very important for interpreting the site's chronology, it is recorded in a few different ways. First, we excavate layer by layer, and we try to excavate the whole layer in a unit before we go on to the next one. Each layer gets its own record. We also draw the stratigraphy that we can see in the unit wall after we have excavated down to till. This way, we can see if what we draw lines up with what we excavated; if not, we try to decide what we got wrong before we move onto the next unit.

15. Two balk walls have been left for later excavation.

Another way we study stratigraphy is by using balk walls between units or balk columns at corners. In this method, we leave part of the unit unexcavated until the very end. Then we might actually cut out these balk samples and take them back to the lab, or we might excavate them there as the last thing we do. This allows us to very carefully excavate a small sample of the stratigraphy to understand even better what it looks like.

When the excavation is finished, the units are backfilled so that the ground is level again. Sometimes archaeologists leave some plastic bags in the bottom so that if they come back to the site, or another archaeologist excavates, they can find the edges of the excavation. It is best to leave an offering at the end to thank the Earth and the creatures around the site for allowing us to study the history of the area.

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Monitoring

16. Monitoring an excavator on a coastline.

Archaeological **monitoring** is the practice of monitoring a project during the time while it is breaking ground. An archaeologist watches construction equipment like excavators or bulldozers as they dig to see if any archaeological resources come up. This is not meant to be the main way of protecting resources, because testing and excavation should already have done this job. Monitoring is only meant to be used after potential or cultural resources have been thoroughly assessed and, if necessary, excavated. Monitoring is only a last precaution in case anything was missed during the previous stages.

17. Monitoring around a culvert.

During monitoring, archaeologists have to get very good at spotting objects and features from far away. This is because you can't get too close to an excavator! Monitors have to maintain a safe distance at all times, but still be able to watch closely as the ground is turned up. This means keeping your eye on the ground for a long time as digging progresses, but still taking notes of everything that is happening and of anything that is found. Although to bystanders it might look like monitors are just standing there not doing anything, in fact, monitoring a site for cultural resources is one of the hardest jobs to do.

Wrapping Up Our Intro to Field Work

In this lesson, we looked at how archaeology is done in the field. This part of archaeology is very important because it is how we learn about the past by directly observing the evidence for it. Whether artifacts or features come out of the ground during excavation, or are found on the surface during a survey, or even if they were accidentally discovered during construction, the past is never more easily seen than when this evidence is freshly discovered,. It is why many archaeologists prefer field work over any other kind of archaeological work. Even getting to look at and touch artifacts in the lab (which is really cool) is not the same as seeing an artifact next to a fire place or nestled in a wall where someone, long ago, dropped or placed their possession. Because field work is such an important part of archaeology and is such a great experience, you should take your opportunities to participate in archaeology

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whenever they arise, either by volunteering in an excavation, accompanying an archaeologist on a survey, or working as an archaeological technician for the summer. It is hard work, but the experience is very rewarding, and you will remember it for the rest of your life.

This is the end of our archaeology lesson plan series. We encourage you to go on and learn more about the history of the Atlantic Provinces and the importance of archaeology here and elsewhere. The important thing to remember is that the more archaeologists who care about the Indigenous archaeological record, the better for archaeology.

Photo Credits

1. Looters digging up a shell midden. Photo: John Erskine, courtesy of Michael Deal.
2. An archaeologist surveying a wooded area. Photo: Cora Woolsey.
3. A cadastral map, courtesy of New Brunswick Archives.
4. How to do a walkover survey. Illustration: Cora Woolsey.
5. A map showing a GPS track. Map: Cora Woolsey.
6. A test pit. Phot: Mikael Basque.
7. A test pit with scale and north area. Photo: Cora Woolsey.
8. A crew laying out a grid. Photo: Cora Woolsey.
9. A team of archaeologists digging and screening dirt. Photo: Cora Woolsey.
10. A map drawn in the field. Drawing: Cora Woolsey.
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