

## MacLean, Billie J

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**From:** Spiess, Arthur  
**Sent:** Friday, October 13, 2017 1:58 PM  
**To:** MacLean, Billie J  
**Subject:** RE: Irving Fish River Concept Plan ZP 768 MHPC 1225\_17

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hello Billie:

We have not previously commented on the Mud Lake boat access location (hand carry or otherwise). Looking at the proposed location (whether exactly as located on the May 2017 Concept Plan maps, or a few hundred feet one way or the other), we would want an archaeological survey for prehistoric sites between Rt 162 and the lake shore, or within a distance of 50 yards of the lake shore, whichever is closer. There has been no prior archaeological survey of the Mud Lake shoreline.

Sincerely, Arthur Spiess

*Dr. Arthur Spiess*  
Senior Archaeologist, Maine Historic Preservation  
State House Station 65  
Augusta, ME 04333  
desk phone: 207-287-2789

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**From:** MacLean, Billie J  
**Sent:** Friday, October 13, 2017 11:27 AM  
**To:** Spiess, Arthur <Arthur.Spiess@maine.gov>  
**Subject:** RE: Irving Fish River Concept Plan ZP 768

A quick note on the hand carry launch area on Mud Lake. It is not in the same location as originally proposed in 2014. It is to the west several hundred feet now. Therefore, you may find a survey for the original site, but we would likely want to require one for the new site (if they plan to move forward). Thanks.

### *Billie J. MacLean*

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**From:** Spiess, Arthur  
**Sent:** Thursday, October 12, 2017 1:24 PM  
**To:** MacLean, Billie J <[Billie.J.MacLean@maine.gov](mailto:Billie.J.MacLean@maine.gov)>  
**Subject:** Irving Fish River Concept Plan ZP 768

Hello Ms. MacLean:

It is not clear to me whether or not you are still accepting comment on the ZP 768 Fish River Lakes Concept Plan. Most of this area of lake shoreline involved has NOT been surveyed for archaeological sites.

Our comment is in general a positive one. In various places in Volume 1 Part C (Questions) the statement is made that "due to the nature of the State's inventory of Cultural Resources and the characteristics of the Plan area, additional information will likely be required as part of any future development projects. This would include a Phase I archaeological survey ... and an architectural assessment ..." This language appears on pp74, 75.

As stated, this is in fact the case. Depending on development scope and location, it is highly likely that archaeological survey and/or architectural survey will be necessary for any future proposed development permits.

Sincerely, Art Spiess

*Dr. Arthur Spiess*  
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## MacLean, Billie J

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**From:** Spiess, Arthur  
**Sent:** Wednesday, October 18, 2017 3:09 PM  
**To:** MacLean, Billie J  
**Subject:** Fish River Concept Plan, Irving ZP 768 archaeology  
**Attachments:** Predictive Models for Maine Prehistoric SitesArthur Spiess and.pdf; Fish River lakes prehistoric sites.jpg

Hello Ms. MacLean:

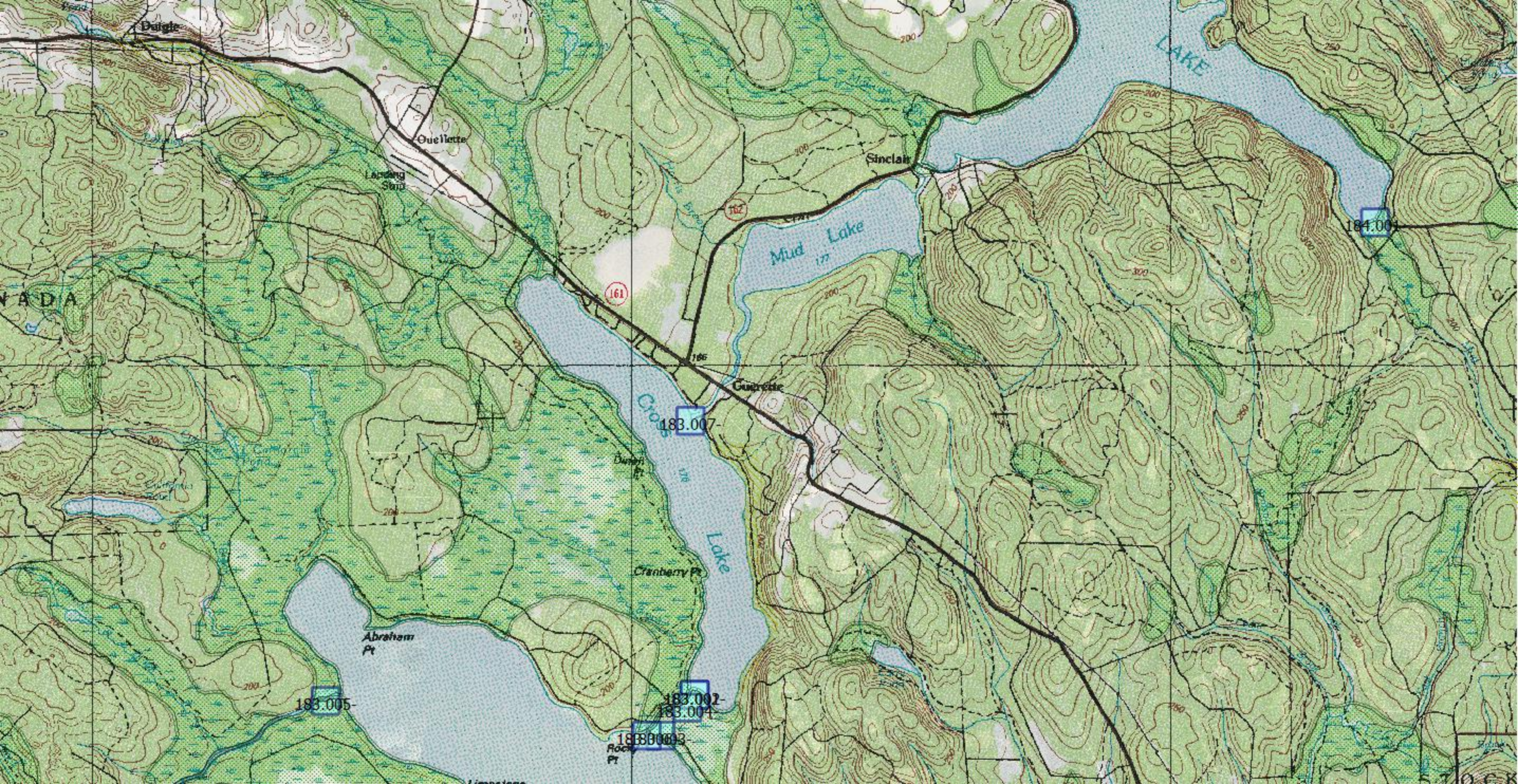
Thanks for the opportunity to work with you on the archaeology aspects of the Fish River concept plan. The attached summary is our semi-official (work in progress) predictive model of prehistoric (pre-European) habitation/village/camp site locations. (Different model applies to specialized sites, such as stone outcrops used for stone tools.) In the Fish River lakes, there are none of the special, well-drained soils (glacial outwash) that is critical to the settlement pattern model for the earliest people in Maine at the end of the ice age (the Paleoindian). So .... We are left with distance to water shorelines, topography, drainage. Plus concentrations of sites around canoe travel features, such as inter-lake Thoroughfares. The attached jpg "Fish River Lakes Prehistoric sites" is a map of known sites (shown as ½ km squares to obscure exact site locations). One can easily spot the places where people have found stone tools. (Note, there has been no systematic professional survey, so the areas with all the sites are the locations where collectors have looked.) (Also note, there is one more site not on the map – recent report – in the lake side front lawn of one of the camps on the east shore of Square Lake, well south of the stream to Mud Lake).

Basically, any substantial ground disturbance within 30 to 50 yards of the shore of a canoe-navigable body of water (lake or stream shore) needs archaeological survey, where there has not been prior archaeological survey. This would include camp construction and associated septic facilities or utilities, and water access roads and facilities, among other things.

In addition to prehistoric or pre-European sites, we are also interested in historic sites. In this area, they would be 19<sup>th</sup> or early 20<sup>th</sup> century (1800 to maybe 1930). Some of these sites might be significant. Examples would include farms for supporting the woods industry, or logging camps, log driving dams, etc. Predicting where there are located (especially the logging camps) is really difficult. Sometimes there are adequate historic records to predict their location and sometimes not.

Hope this is helpful. Happy to work with you on appropriate language for the zoning.  
Regards, Art Spiess

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Daigle

Ouellette

Sinclair

Guereite

Cranberry Pt.

Abraham Pt.

Mud Lake

Crook Lake

LAKE

CANADA

183.005

183.002  
183.004

183.003  
Rock Pt.

183.007

184.001

## PREDICTIVE MODELS FOR MAINE PREHISTORIC SITES

**Arthur Spiess and Leith Smith**

Maine Historic Preservation Commission

February 9, 2016 draft

There are now about 6350 prehistoric or pre-European archaeological sites in Maine. The location and other information on these sites is available in GIS, and we can easily compare them with topography, water, soils and other variables, including areas surveyed by prehistoric archaeologists.

Several authors, notably Steven Cox and colleagues, and Richard Will and colleagues, have attempted quantified predictive models for prehistoric sites by assigning numeric values to variables. These work to a certain degree.

But we have found that two non-quantified predictive models can locate more than 99% of the prehistoric habitation sites in Maine. There are, of course, different predictive models for lithic outcrops based on geology, for petroglyphs, for Archaic cemetery sites, and other specialized site types.

**One model accounts for most of the Paleoindian sites in Maine.** Most basically, it is “well drained sandy soil + small water bodies, usually not accessible by canoe.” Small bodies of water can be first or second order streams, or kettlehole ponds, or marshes. The well-drained sandy soil is most often glacial outwash, or glacial outwash reworked into dunes. The Paleoindian sites are usually less than 100 m from, or on an elevated land form overlooking the water body.

Curiously, this predictive model also applies to a handful of large, Atlantic phase, Susquehanna tradition sites in southern and central Maine. To put it another way, if one digs large numbers of testpits across landforms that satisfy this model, rarely one finds a Paleoindian site and even more rarely one finds a Susquehanna site. The sandy outwash soils were in place for at least 1000 years before Paleoindian occupation. So there must have been some surface clue, perhaps an association of plants such as fire-maintained open conifer parkland and blueberries, that were a tip-off. Perhaps the sandy soils supported some other plant association, maybe nut trees, during the Susquehanna tradition.

**The other model, one that accounts for 90 of prehistoric habitation sites, is the “level land form adjacent to canoe-navigable water” model.** To restate – the most level, most well-drained landform along a certain length of shoreline will be where the site is located. I believe that this predictive model works because just about everyone in Maine from the Early Archaic onward traveled by canoe, either dugout canoe or (later) birchbark canoe.

This general “adjacent to canoe-navigable water” model needs some explanation. A subset of this model applies along the Maine coast. David Sanger and Doug Kellogg did a lot of work on the central Maine coast to find that specific attributes of the shoreline, such as the presence of a cobble, gravel or sand beach adjacent to a level landform above the storm tide was a key site location attribute. Sites are not found in areas with mudflats that exclude boat access to the shore for much of a tidal cycle. Nor are they found where the coast is exposed and erosion has pounded the soft sediment from the bedrock.

Along the coast, aspect – southeastern, southerly, or southwesterly – is important for site location from Penobscot Bay west. Based on recent work by Karen Mack around Acadia National Park, southerly aspect is not so important downeast. Nor is fresh water all that important – because small sources of fresh water are common along the coast.

The “adjacent to canoe-navigable water” model also applies along upper estuaries, rivers, streams, ponds and lakes across Maine. Again, with the nearest, most level, best drained land form along a particular stretch of water shore being the highest probability. Along many rivers, of course, the shoreline is comprised of an alluvial levee, with archaeological sites buried meters deep, even if the river bank has not changed lateral location much.

But here we have to be aware that the shoreline is not a constant. The modern shoreline may not be the shoreline of the distant past, and we have to be aware of “fossil” or abandoned shorelines and look there too.

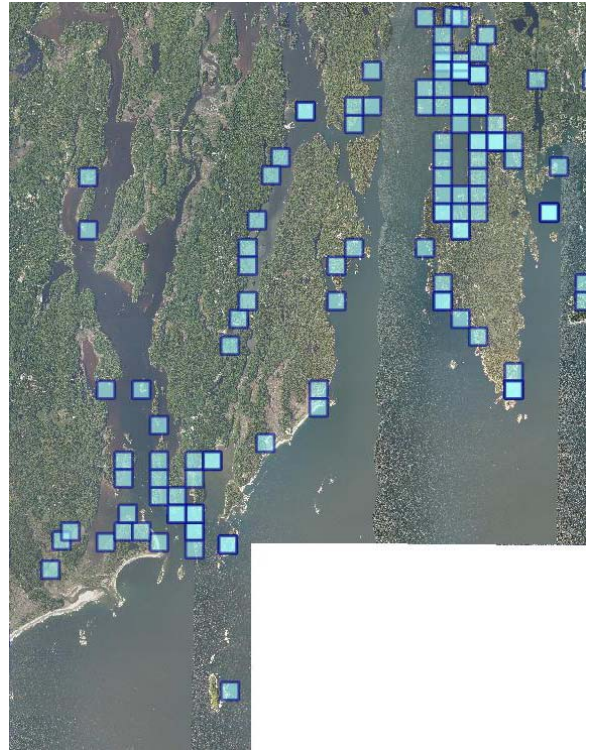
The most obvious situation is where a lake level has been raised by a dam, or a river impoundment has flooded the most recent shoreline, leaving sites now underwater. A lot of Maine’s smaller lakes and ponds were dammed up for lumber drives. Many of those dams are now gone, leaving a bathtub ring of erosion around the former shoreline, and a false, raised shoreline back in what is now woods. Mid-Holocene dry and warm climate lowered lake levels, again creating lake shorelines that are now underwater even compared to “natural” recent lake levels.

Similarly, when a river had meandered since the early Holocene across a flood plain, finding those fossil meanders and testing the remnant banks is critical.

For some of Maine’s rivers, there are remnant erosional terraces from higher flood flows of the early to mid-Holocene. Sometime around 9000 to 10,000 years ago, it seems, the Moosehead Lake drainage switched its outflow from the Penobscot drainage to the Kennebec. The Kennebec was endowed with erosional river terraces perched up on the sides of the valley walls. These terraces have Archaic sites on them.

For a final example, the Moosehead Lake case is instructive. Differential post-glacial rebound raised the northern end of the lake higher than did the rebound at the southern end of the lake, 30 miles away. Because of post-glacial rebound, there are early Holocene shorelines around many of our larger lakes that are “back in the woods.” The elevation of those shorelines might not be the same all the way around the lake, if the lake is large. And, yes, we have found sites on these raised lake shorelines that are no longer near water.

*In summary, these predictive models are simple in basic form.* Sandy soil plus small water bodies, and shorelines plus large water bodies. The details of applications sometimes get complicated. One had better be aware of Quaternary geology to make them work. But the basic models work.



Maine coastal zone sites, lower Kennebec area.