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ere is something about the power

of water. It has the innate ability to

tranquilize and soothe an anxious

soul. It has the authority to move mountains,

knock down bridges and wash away whole
towns. Water provides sustenance in copious,
innumerable ways.

Because of its pure nature, people are

attracted to water.

In today's technology driven world, we tend
to grasp every moment we can to recreate,
recharge and live our lives. The following
flow of words was spurred by an email from
someone who found the Pond Boss Forum.

This gentleman, from Fergus Falls, Minnesota,
lived on a 68 acre lake, but always dreamed of
attracted to water.

I had any advice for him, either about buying
land with an existing pond or building his own
waterhole from scratch.

As I scratched my head on this one, I
told myself the obvious. On one hand, I'm
a biologist, and not someone who should be
giving advice on pond construction! Maybe
we should leave that to people like Lusk and Otto.
But, on the other hand, I've worked quite a few
northern ponds in my career.

I can do this...

So, let me share some important tidbits for
the newer northern pondmeisters. After all,
there can never be too many of us!

In the North Country, winter is a darn tough
time for fish. It is stressful for our finned friends.
Long periods of ice cover, and especially snow
topped, are tough on dissolved oxygen levels
under the ice water. We covered that topic pretty
thoroughly last fall (see Winter Oxygen and
Your Fish in the September/October of 2006
issue of Pond Boss). Because of this long-term
oxygen demand over winter, the only northern
ponds likely to support a fish community
through frigid winter months are deep, less
fertile, or waters managed to maintain oxygen.

Around my home in eastern South Dakota,
some of the best options for fishing ponds are
excavated sand and gravel pits. These holes are
dug into the water table, usually with a dragline.
They can be far shallower than a "hill" pond
constructed dam), and still not have winterkill
problems. So, if I were looking for land, I'd
start off quietly seeking and visiting with people
who had an excavated sand or gravel pit. These
good people may not see value in the property
for recreation, especially in the North Country.
Historically, this type of land is overlooked as a
resource beyond the obvious purposes.

Let's stay with this example. Once you've
acquired your new gravel pit, or...pond in the
rough, evaluate the existing fishery and decide
what to do. You may choose to keep what you
have and manage them, or eliminate existing
fish, if necessary, and restock with your desired
pond fish combination.

Before buying land to build a "hill" pond by
constructing a dam, I really believe that your
local Natural Resource Conservation Service
(NRCS; U.S. Department of Agriculture) office
is the best place to start. The private pond
industry is not nearly as well developed in the
north country as in the south, and you may not
be able to find a pond consultant in your area.
The NRCS folks can provide information
on dam construction, sealing, and the size of
watershed needed for ponds of various sizes at
various geographic locations. The big question
is water volume, (more water volume means
more overall dissolved oxygen in the pond and
a greater likelihood of fish surviving the winter)
which is partly dependent on water depth. If I
were building a northern pond, I'd sure like to
have an honest 20 feet for maximum depth.

Even then, it would be safest to consider a
winter aeration system to keep an open area
in the ice in shallow water to allow sunlight
penetration and oxygen production by algae
and plants as well as contact with air.

In eastern South Dakota, I often say we only
need 8 feet of water depth in a sand/gravel pit
to make it through the winter! Why so low, you
might ask, especially in comparison with the
20 feet for the hill pond? Well, I suspect it is
because shallow ground water slowly percolates
and moves through the ponds. While ground
water typically has no dissolved oxygen, these
shallow aquifers seem to support life.

Those loyal Pond Boss Forum participants
may remember my interaction with Dwight
Bremer, another Minnesota pondmeister.
Dwight has an excavated pit type pond, lots
of energy, and good knowledge. Dwight's pond
only has a maximum depth of 6 feet and yet
his fish community survives harsh Minnesota
winters! I may have to revise my original
estimate of 8 feet depth needed for sand/gravel
pits to 6-8 feet, based on his experience. In his
case, 6 feet is deep enough.

While I lean toward sand and gravel pits, I do
need to report on the primary negative aspect
of them. The shallow ground water movement
that gets us through the winter also creates a
less fertile environment than hill ponds. Water
movement actually pushes and dilutes some
nutrients through the system before plants and
algae can take advantage of them.

So, what are practical aspects of reduced
fertility? Here's a couple of actual examples.
In one South Dakota study, we looked at
largemouth bass abundance in 10 hill ponds
that ranged less than an acre to more than 20
acres. Largemouth bass averaged 70 pounds/acre in those 10 ponds. South Dakota has
Top: Shallow sand/gravel pits that are excavated into the ground water table can provide suitable habitat for fish communities at northern locations. Photograph courtesy of Dr. Dave Willis. Middle: Hill ponds, those created with a dam across a watershed, need to be much deeper for the fish community to survive the winter in the north country. Photograph courtesy of Dr. Dave Willis. Bottom: Winter aeration systems can increase the likelihood that a shallow pond can support a fish community through the winter. Photograph courtesy of Ted Lea.

relatively fertile soil, and these bass populations were typical for our geographic location. In contrast, we also did a population estimate on largemouth bass in a 13-acre sand/gravel pit. The largemouth bass population was crowded, as evidenced by the high abundance of bass with most of them being only 10-12 inches long. That pond held only 33 pounds/acre of largemouth bass. Less fertility means fewer pounds/acre of fish are supported in ponds with shallow ground water movement.

On the plus side, lower fertility sure makes for attractive, esthetically appealing ponds. These sand/gravel pits tend to be clear and water looks good to the inexperienced eye. Aquatic plant growth can be high, but as most pits tend to be steep-sided, few truly have overabundant vegetation.

Finally, sand and gravel has value. I really don’t have much knowledge on just how likely it would be for someone to pay for your sand and gravel. However, I certainly would suggest asking around to see if you could find the right person who would be willing to pay to mine the sand/gravel and create a pond for you. Plus, you might even get them to dig the pit in an irregular shape that is better for fish than the usual square or rectangular pit that you so commonly see.

Well, that’s about the extent of my thoughts and knowledge on this topic. I just ran all this information past my wife. After I told her about the clear water in these excavated sand/gravel pits, she suggested that we start looking! I guess she shouldn’t have to tell me twice!