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*Conservation That Works!*

# Chequamegon Waters, Taylor County
# Point Intercept Aquatic Plant Survey
# June 25-27, July 3, August 6, 2019

**To whom it may concern,**

Golden Sands Resource Conservation & Development Council, Inc (RC&D) staff Chris Hamerla, Anna Cisar and Madeline Abbatacola along with WDNR staff Alex Selle and Kristen Rathbun completed a Point Intercept Aquatic Plant Survey (PI Survey) on Chequamegon Waters over the course of five days between June 25th and August 6th, 2019. The survey was completed at the request of WDNR Jodi Lepsch due to discussions revolving around wild rice populations as well as AIS follow up.

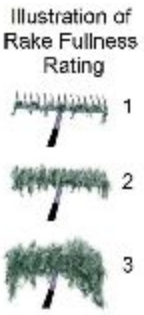
**Benefits of Aquatic Plants**

Aquatic plants are an important part of the state's wet ecosystems. They produce oxygen and help protect water quality. They help clarify water in wetlands, lakes and rivers by using nutrients like phosphorus and nitrogen that might otherwise be used to produce algal blooms. Aquatic plants help reduce wave action and current flow which reduces shoreland erosion and helps stabilize sediments in the waterbody. Perhaps most apparent, plants provide food, shelter and habitat for fish, invertebrates and all sorts of wildlife. Finally, diverse, healthy plant communities can help prevent invasive species from establishing. Invasive species are more likely to become established in disturbed areas.

**Aquatic Invasive Species**

Aquatic invasive species (AIS) are plants or animals that are not native to a particular area and dominate an area where they are introduced. They can be very successful because they fill a niche that isn't occupied, are able to tolerate a wider range of living conditions, they don't have any natural predators or diseases or perhaps they begin growing earlier. EWM, curly leaf pondweed and purple loosestrife are common examples of AIS. AIS can threaten an area both ecologically and economically. They can disrupt food chains and degrade habitat which negatively impacts fish, invertebrates and wildlife. Nuisance levels of AIS can reduce or even prevent recreational opportunities like fishing, boating, wildlife watching, etc... These reduced recreational opportunities have negative impacts to the local and statewide economy. AIS such as zebra mussels can negatively impact water quality, food chains, aquatic habitat, recreation and industry. Unfortunately the effects of AIS are difficult to foresee since the degree of impact can vary greatly from one place to another. One system may be completely taken over by AIS while AIS in another nearby system may become a part of the community and have little to no negative effects.

**Point Intercept Aquatic Plant Surveys**




Point intercept (PI) surveys are completed by traveling to predetermined GPS points across the lake. Each PI lake map is based on the area and depth specific to that lake. The maps with GPS coordinates are obtained through the WDNR. Chequamegon Waters contains 1020 sample points. Using a GPS, staff traveled by kayak and boat to each of the GPS points. At each point a two-sided rake was used to sample roughly a one foot area of the lake bottom. Sediment type (sand, rock or muck), water depth in half foot increments and the aquatic plant community was recorded. Once the rake is brought to the surface the amount of plant material on the rake is assessed and recorded. The overall fullness of plants on the rake is rated a one, two or three (see illustration to the left). Then the individual species are ranked using one, two or three. All data is recorded on the PI worksheet. Plants seen within six feet of the sample point are recorded as a "visual". (Figures 1-5 show maps with survey points.) Other plants seen on the lake are recorded as a "boat survey". To learn more about PI sampling methods and how data is collected please visit: http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology/Aquatic%20Plants/PL-Protocol-2010.pdf

*Frequency of occurrence* is the percentage of time a species is found out of the total number of points sampled. Not all sample points are capable of supporting plant growth. *Littoral frequency of occurrence* is how often a species is found out of the total number of points that support plant growth. (Shown in Table 1) The deepest depth where plant growth is found is called *maximum depth of plant growth*. *Species richness* is the total number of different species found on the rake while sampling points. *Floristic Quality Index (FQI)* is the ranking of the plants in the lake that compares to an undisturbed lake. The higher the FQI the closer the plant community is to that of an undisturbed system. Approximately 250 lakes across Wisconsin are used to calculate the statewide and ecoregion averages for comparison. Table 2 summarizes the lake's littoral frequency of occurrence, maximum depth of plant growth, species richness and FQI.

It should be noted that plant species may differ from year to year on the following Table 1. GPS coordinates are accurate only within twenty feet and plant communities can shift. Table 1 represents only those species which were detected on the rake during the survey.

Table 1: **Species Present**

% Littoral frequency of occurrence: This is calculated by taking the total number of times a species is recorded divided by the total number of points in the lake where plant growth is possible.

***** means a non-native species, potentially invasive. ****** This number may be incorrect due to incorrect ID of bur-reed vs wild rice.

| Common Name | Scientific Name | Plant type: floating leaf, free floating, submergent, emergent | % Littoral Frequency of Occurrence |
|---|---|---|---|
| Eurasian watermilfoil | *Myriophyllum spicatum** | submergent | 12.39 |
| Curly-leaf pondweed | *Potamogeton crispus* | sumbergent | 1.22 |
| Water marigold | *Bidens beckii* | submergent | .17 |
| Watershield | *Brasenia schreberi* | floating leaf | .35 |
| Coontail | *Ceratophyllum demersum* | submergent | 18.50 |
| Spiny hornwort | *Ceratophyllum echinatum* | submergent | .17 |
| Muskgrass Sp | *Chara sp* | submergent | .7 |

| | | | |
|---|---|---|---|
| Needle spikerush | *Eleocharis acicularis* | submergent/emergent | .25 |
| Creeping spikerush | *Eleocharis palustris* | emergent | Visual |
| Common waterweed | *Elodea canadensis* | submergent | 10.82 |
| Water star-grass | *Heteranthera dubia* | submergent | 1.4 |
| Small duckweed | *Lemna minor* | free floating | .17 |
| Least duckweed | *Lemna perpusilla* | free floating | Visual |
| Forked duckweed | *Lemna trisulca* | free floating | 7.85 |
| Slender naiad | *Najas flexilis* | submergent | .35 |
| Stonewort Sp | *Nitella sp* | submergent | 7.68 |
| Intermediate pond lily | *Nuphar X rubrodisca* | floating leaf | .7 |
| Spatterdock | *Nuphar variegata* | floating leaf | 1.57 |
| White water lily | *Nymphaea odorata* | floating leaf | .87 |
| Water smartweed | *Polygonum amphibium* | floating leaf | Visual |
| Large leaf pondweed | *Potamogeton amplifolius* | submergent | 3.49 |
| Fries' pondweed | *Potamogeton friesii* | submergent | .35 |
| Variable pondweed | *Potamogeton gramineus* | submergent | .17 |
| Illinois pondweed | *Potamogeton illinoensis* | submergent | 1.22 |
| Long-leaf pondweed | *Potamogeton nodosus* | submergent | .17 |
| Whitestem pondweed | *Potamogeton praelongus* | submergent | .17 |
| Small pondweed | *Potamogeton pusillus* | submergent | .52 |
| Clasping-leaf pondweed | *Potamogeton richardsonii* | submergent | 1.22 |
| Fern pondweed | *Potamogeton robbinsii* | submergent | Visual |
| Flat-stem pondweed | *Potamogeton zosteriformis* | submergent | 5.06 |
| Arrowhead sp | *Sagittaria sp* | emergent | .17 |
| Crested arrowhead | *Sagittaria cristata* | emergent | .17 |
| Soft-stem bulrush | *Schoenoplectus tabernaemontani* | emergent | Visual |
| Narrow-leaved bur-reed | *Sparganium angustifolium* | emergent | 1.22 |
| Short-stemmed bur-reed | *Sparganium emersum* | emergent | .17 |
| Large duckweed | *Spirodela polyrhiza* | free floating | .17 |

| | | | |
|---|---|---|---|
| Cattail sp | *Typha sp* | emergent | Visual |
| Common bladderwort | *Utricularia vulgaris* | free floating | 2.27 |
| Wild celery | *Vallisneria americana* | submergent | 6.46 |
| Wild rice | *Zizania sp* | emergent | 8.9** |
| Aquatic moss | ---------- | submergent | 4.36 |
| Filamentous algae | ---------- | submergent | .17 |
| Slender riccia | *Riccia fluitans* | free floating | Visual |
| Sedges | *Carex sp* | emergent | Visual |

Table 2: **Lake Survey Summary** (Species Richness does not include visuals)

| | **Lake** | **Statewide Average** | **North Central Hardwoods Forests Ecoregion Average** |
|---|---|---|---|
| Littoral Frequency of Occurrence (%) | **46.6** | **74.3** | **76.0** |
| Maximum Depth of Plant Growth | **7** | **15.3** | **15.9** |
| Species Richness | **35** | **16.8** | **16.2** |
| Floristic Quality Index (FQI) | **36.6** | **24.1** | **23.3** |

Figure 1: Chequamegon Waters total area map with PI points.

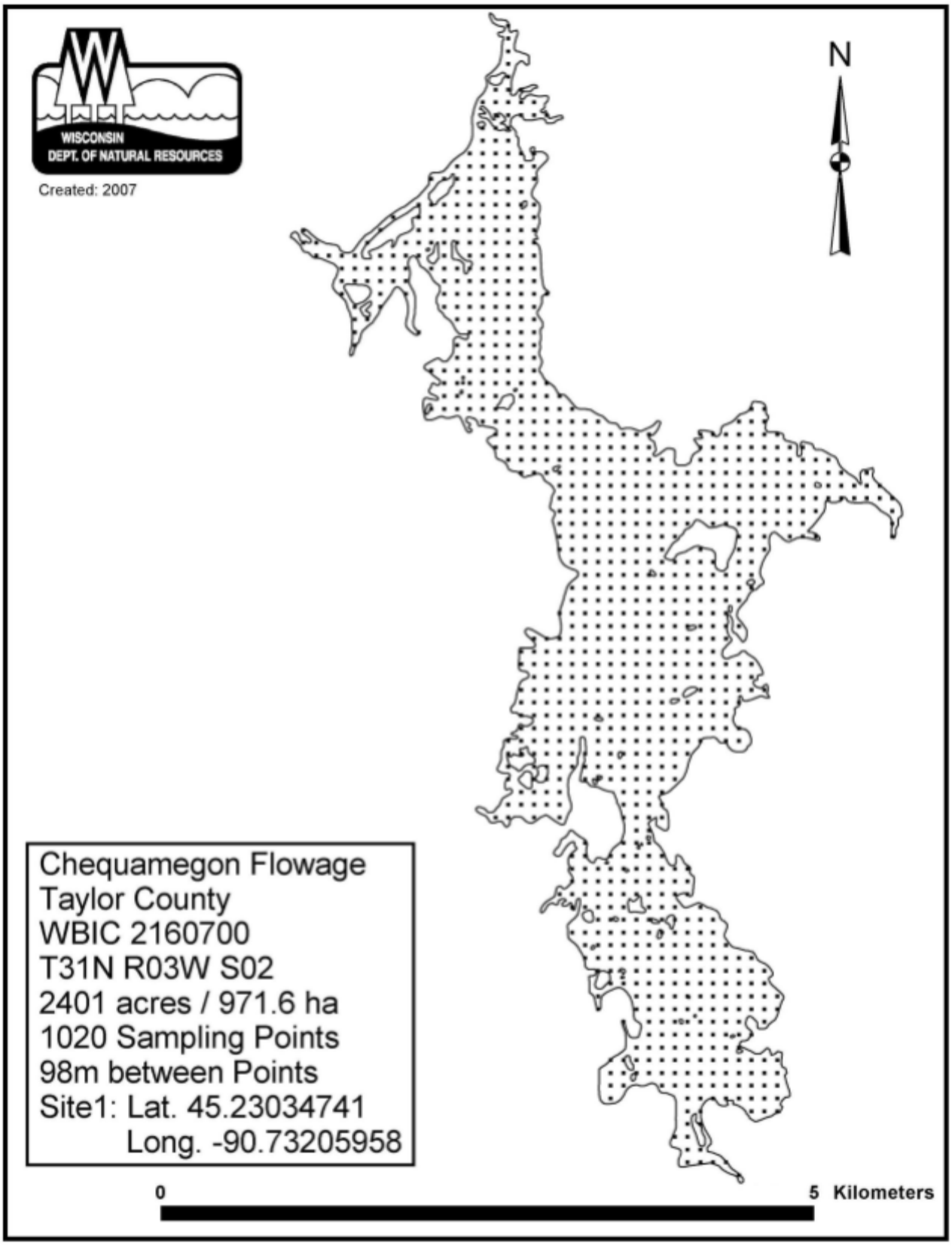


Figure 2: Page 1 of 4 maps showing specific PI points.

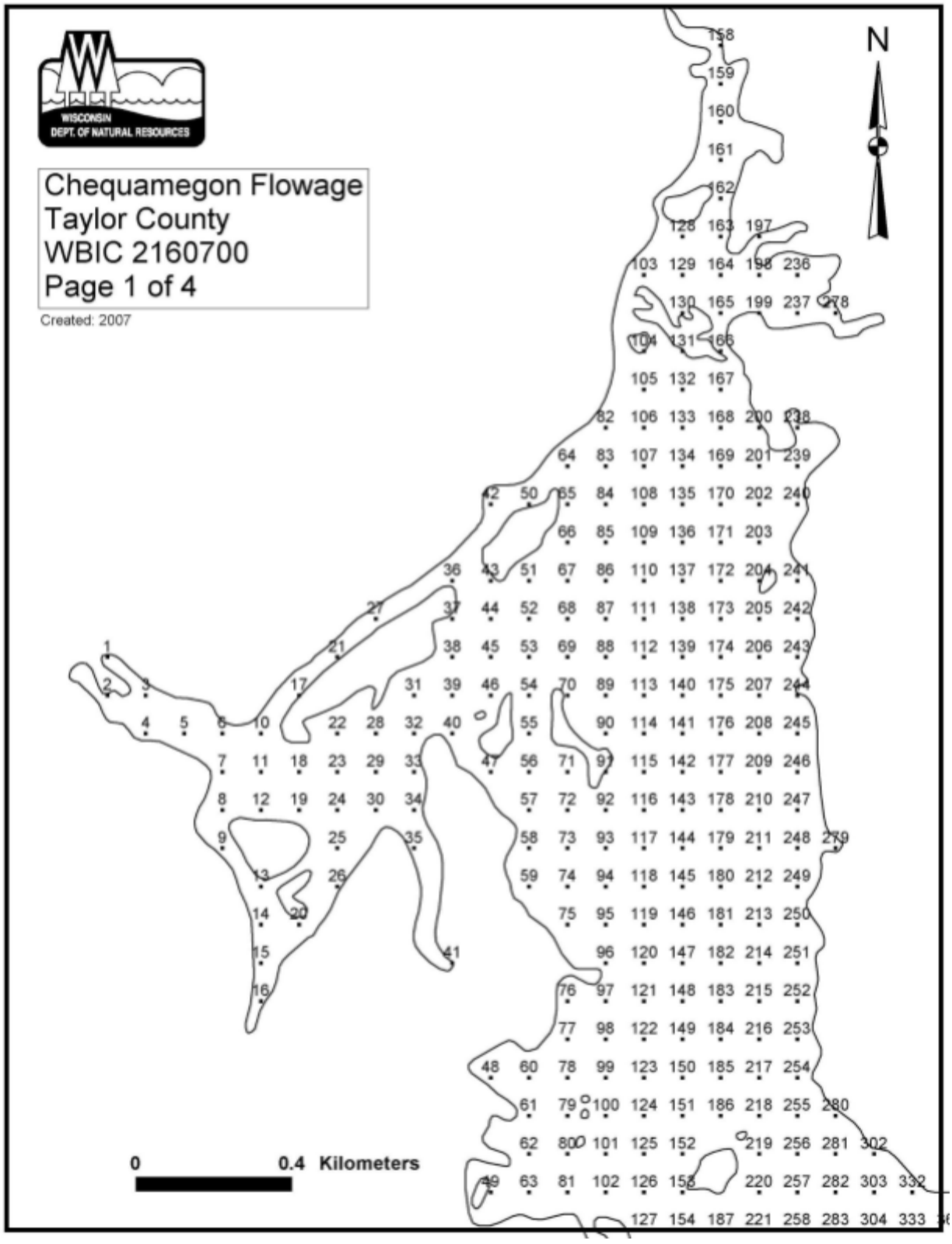


Figure 3: Page 2 of 4 maps showing specific PI points.

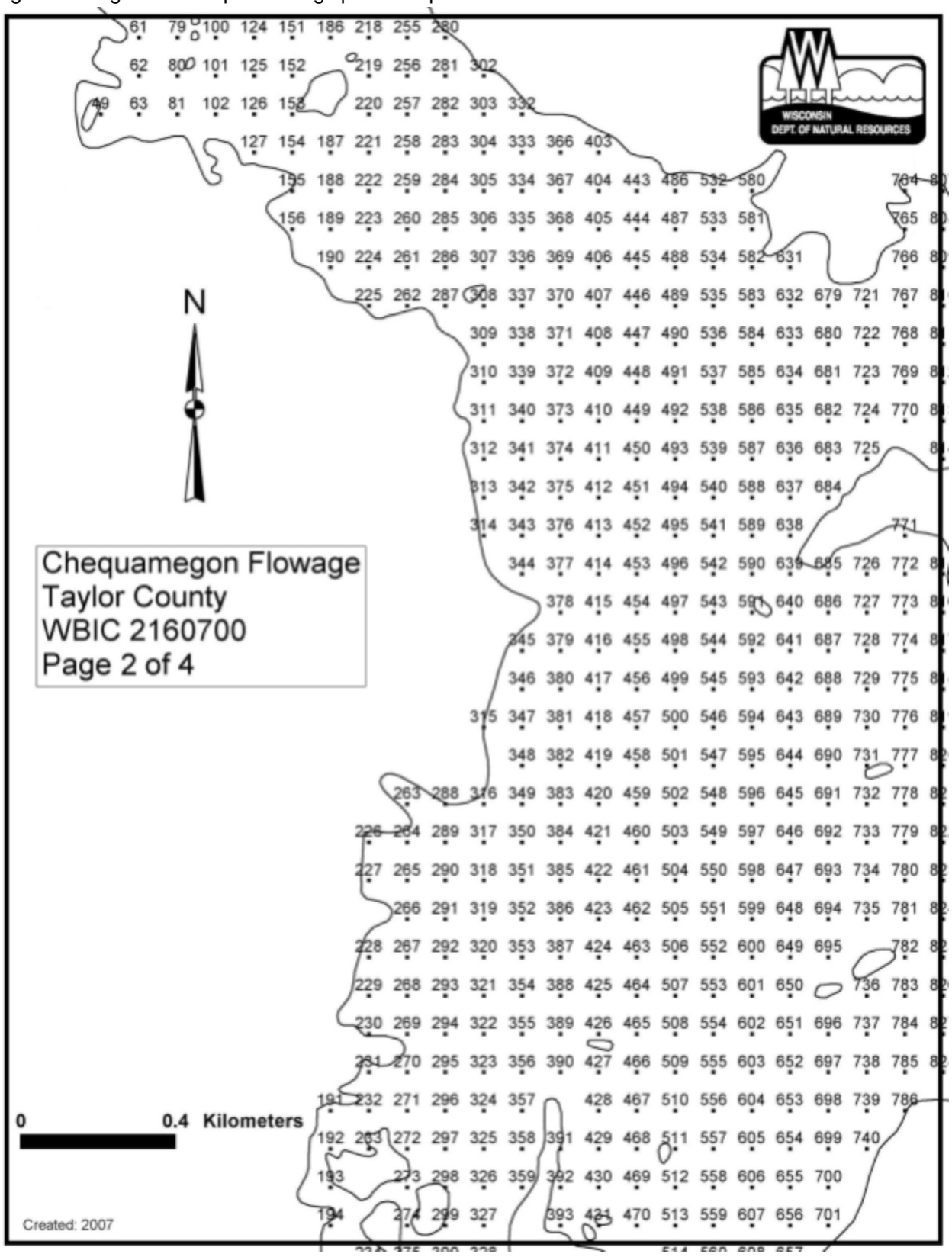


Figure 4: Page 3 of 4 maps showing specific PI points.

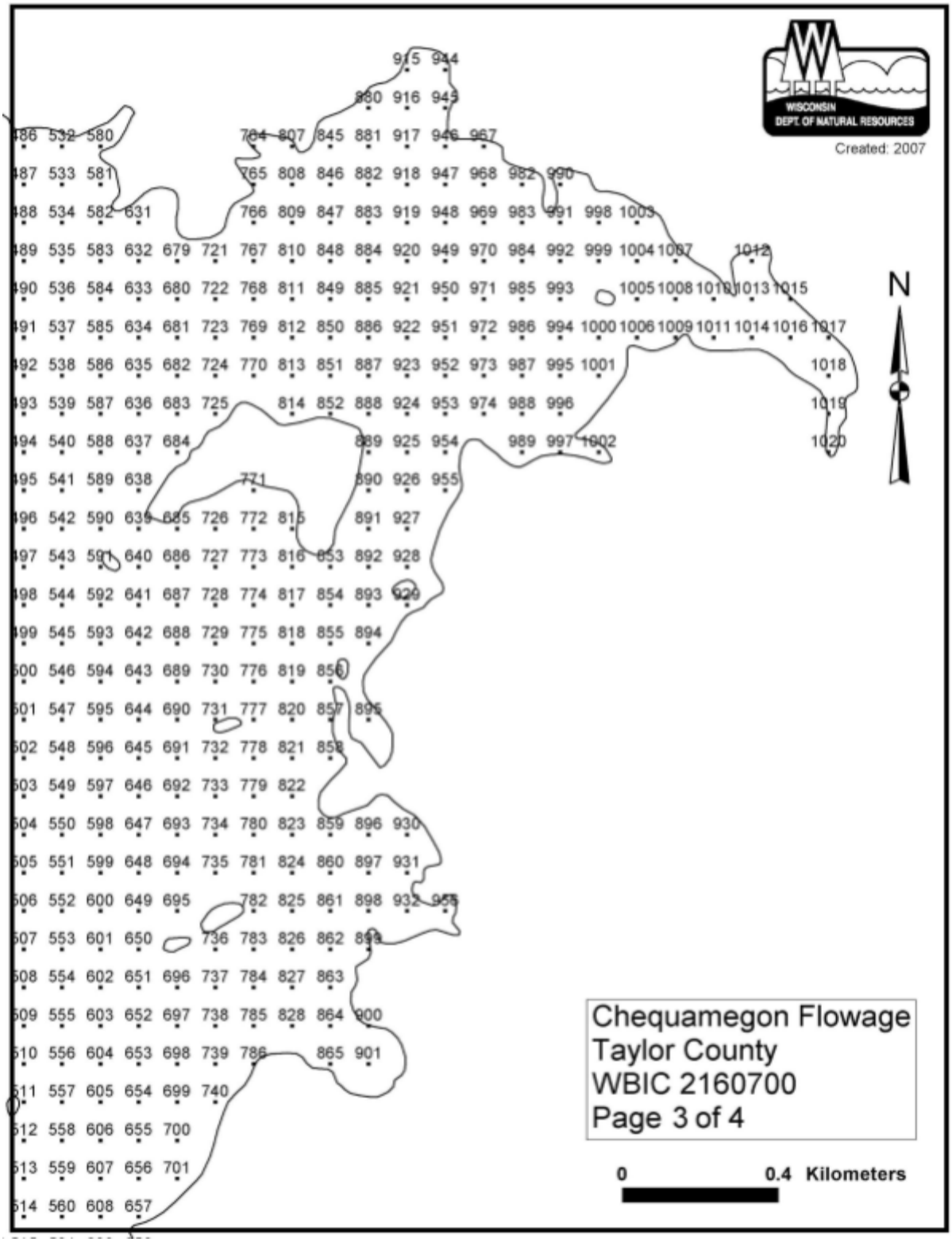
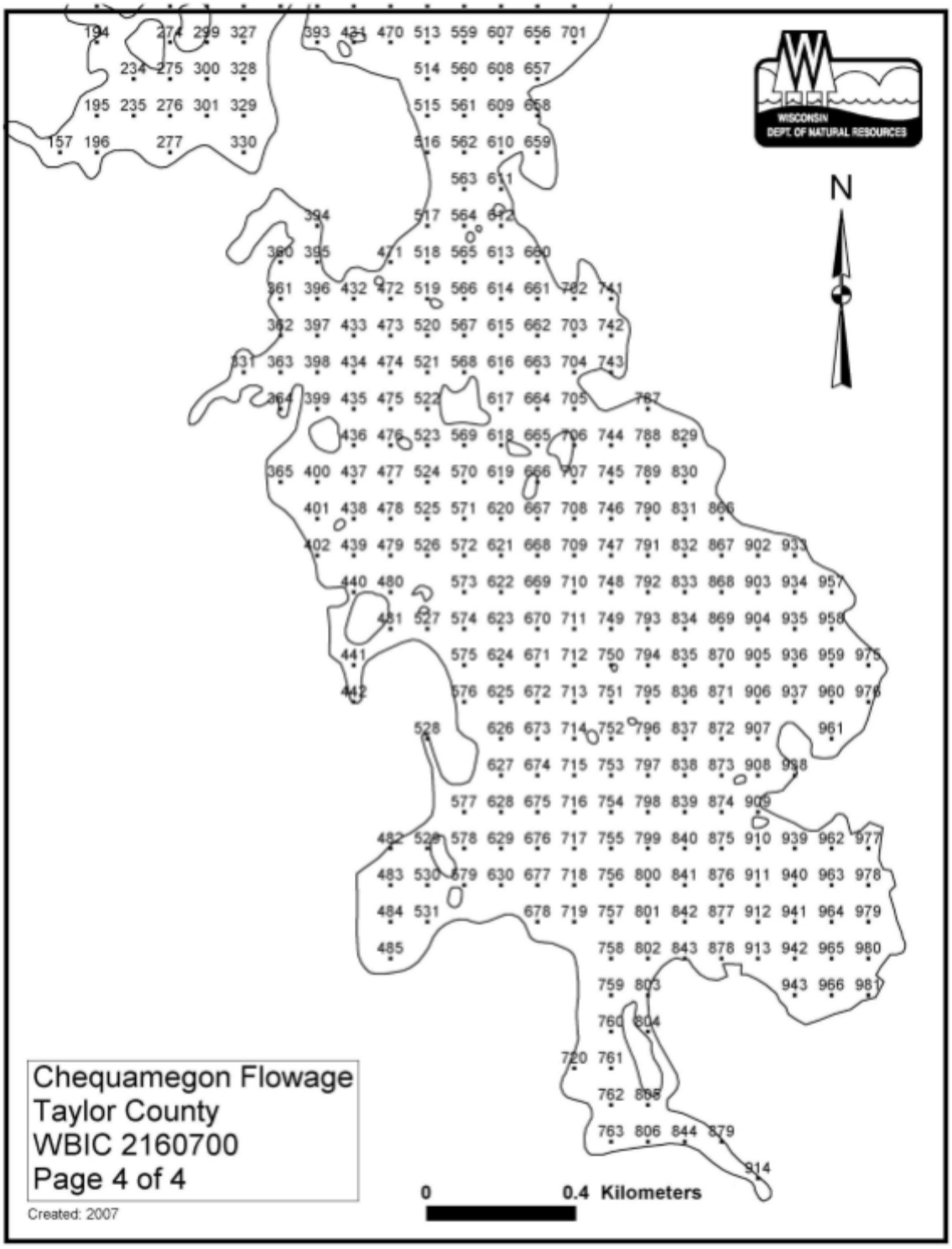


Figure 5: Page 4 of 4 maps showing specific PI points.




If there are any questions regarding the PI survey or results please contact Golden Sands RC&D, Chris Hamerla, chris.hamerla@goldensandsrcd.org (715) 343-6215