# Kampeska Gravel Pits

## Site Description

***Location***

| | |
|---|---|
| Water designation number (WDN) | 05-0001-00, 05-0023-00 |
| Legal description | T117N R53W Sec. 10, 15<br>T118N R52 W Sec. 4 |
| County (ies) | Codington |
| Location from nearest town | three miles northwest of Watertown |

***Survey Dates and Sampling Information***

| | |
|---|---|
| Dates of current survey | June 14, 2006 |
| Dates of last survey | n/a |
| Spring electrofishing (min) | 61 |

***Morphometry (Figure 1)***

| | |
|---|---|
| Watershed area (acres) | unknown |
| Surface area (acres) | ≈30 |
| Maximum depth (ft) | ≈21 |
| Mean depth (ft) | ≈11 |

***Ownership and Public Access***

The Kampeska pit area is owned by the South Dakota Game, Fish, and Parks (Meester 1983). Good shoreline access is available to anglers utilizing the Kampeska pit area.

***Watershed and Land Use***

Lands adjacent to the Kampeska pit area are mainly comprised of grassland. Meester (1987) reported that the pit site was isolated from any direct watershed and maintained the water level through interception of ground water from the Big Sioux Aquifer, except during infrequent flood events.

***Aquatic Vegetation and Exotics***

Submergent vegetation and emergent vegetation is present within the Kampeska pit area; however, the type and extent has not been documented. No exotic vegetation or wildlife was reported during this survey.

***Fish Management Information***

| | |
|---|---|
| Primary species | black crappie, largemouth bass, yellow perch |
| Other species | black bullhead, common carp, green sunfish, orange-spotted sunfish, white sucker |
| Management classification | warm-water semi-permanent |
| Fish Consumption Advisories | none |

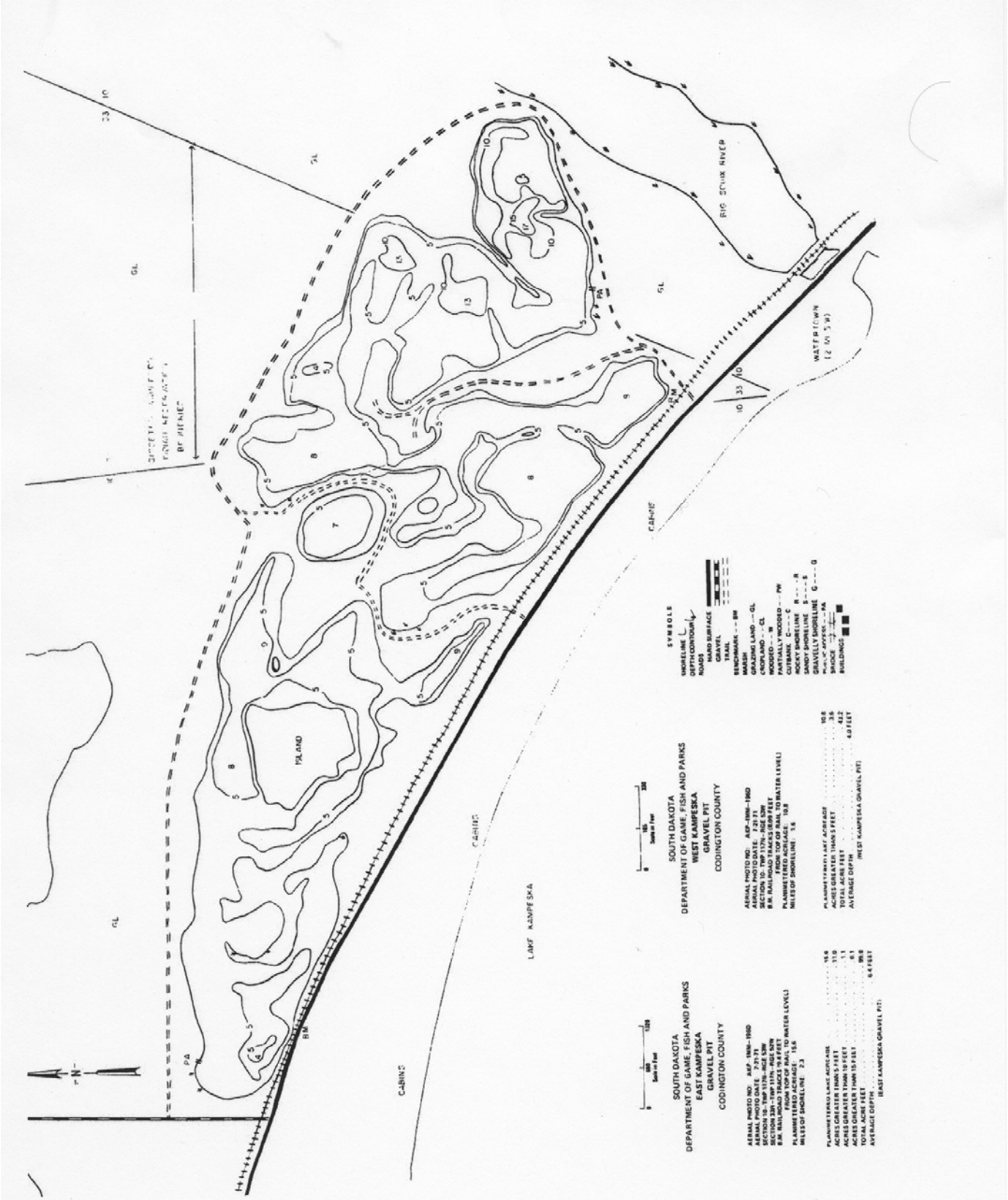


Figure 1. Map of Kampeska pit area, Codington County., South Dakota.

## Management Objective

1) Determine species composition and determine what further management action should be taken.

2) Provide shore fishing opportunities for anglers in close proximity to Watertown.

## Results and Discussion

The Kampeska pit area was created by the American Sand and Gravel Company in the 1950's. The Kampeska pit area is isolated from any direct watershed, except in heavy flood conditions when Lake Kampeska and the Big Sioux River connect to the pit area. The Kampeska pit area has primarily been managed as a warm water fishery; however, several relatively unsuccessful attempts were made to chemically rehabilitate and establish put and take trout fisheries in the past (Meester 1987). Apparent attempts have been made to create a largemouth bass and black crappie fishery as both species have been stocked in the past. The last recorded stockings in the Kampeska pits occurred in 1988, when largemouth bass fingerlings were stocked.

*Primary Species*

Note: Spring night electrofishing in 2006 was confined to the Western half of the Kampeska pit area.

Largemouth bass: The mean spring night electrofishing CPUE of stock-length largemouth bass during 2006 was 10.7, indicating relatively low abundance (Table 1). Length-frequency analysis and age structure information of largemouth bass captured by spring night electrofishing indicates successful recruitment in 2004 and 2005 (Table 3; Figure 2). The 2005 (age-1) year-class comprised roughly 85% of largemouth bass captured during the 2006 spring night electrofishing survey (Table 3).

Largemouth bass sampled by spring night electrofishing in 2006 ranged in total length from 110 mm to 420 mm, had a PSD and an RSD-P of 9 (Table 1; Figure 2). Growth was similar to that reported by Willis et al. (2001) for largemouth bass in small lakes/impoundments, with the weighted back-calculated length at age-1 and age-2 being 99 and 204 mm, respectively (Table 3). Condition was good with mean Wr values exceeding 100 for all length groups sampled. Small sample size limits the ability to identify any potential length-related trends in Wr .

Black Crappie: Spring night electrofishing in 2006, resulted in the capture of 95 black crappies ranging in total length from 70 to 200 mm, with the majority being between 80 and 120 mm (Figure 4). The mean spring night electrofishing CPUE of stock-length black crappie was 5.8 (Table 1; Figure 4); however the mean CPUE of all sizes of black crappie was 86.0 indicating successful reproduction recently. No growth

information was collected in 2006; however, the condition of sampled black crappies was good with mean Wr of stock-length fish being 104 (Table 1). Sub-stock fish were also in good condition.

Yellow Perch: Yellow perch populations are generally not assessed using spring night electrofishing in NE South Dakota; therefore few inferences will be made. In all 69 yellow perch were sampled by spring night electrofishing in 2006; however all were sub-stock. Sampled yellow perch ranged in total length from 90 to 130 mm (Figure 3). No growth information was available; but the condition of yellow perch was excellent with the mean Wr for sub-stock yellow perch being 125. Given the condition of yellow perch, growth should be good; therefore yellow perch present are likely from a newly produced year-class.

*Other Species*

Black bullheads, common carp, green sunfish, orange-spotted sunfish and white sucker were also captured during the 2006 survey, however the impact of these species on the fishery is likely minimal at this time (Table1).

## Management Recommendations

1) Conduct further fish community assessment surveys to assess fish abundance, fish population size structures, fish growth, and stocking success.

2) Consider the possibility of introducing alternative species (i.e., smallmouth bass and channel catfish) to the Kampeska pit area.

Table 1. Mean catch rate (CPUE; catch/hour) of stock-length fish, mean relative weight (Wr) of stock-length fish, proportional stock density (PSD) and relative stock density of preferred-length fish (RSD-P) of various fish species captured by spring night electrofishing in the West Kampeska pit area, 2006. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BLB= black bullhead; BLC= black crappie; COC= common carp; GSF= green sunfish; LMB= largemouth bass; OSF= orange-spotted sunfish; WHS= white sucker; YEP= yellow perch

| | Abundance | | Stock Density Indices | | | | Condition | |
|---|---|---|---|---|---|---|---|---|
| Species | CPUE | CI-80 | PSD | CI-90 | RSD-P | CI-90 | Wr | CI-90 |
| *Spring electrofishing* | | | | | | | | |
| BLB | 4.9 | 4.2 | 0 | --- | 0 | --- | 88 | 12 |
| BLC | 5.8 | 4.3 | 17 | 33 | 0 | --- | 105 | 3 |
| COC | 8.8 | 4.9 | 0 | --- | 0 | --- | --- | --- |
| GSF | 1.0 | 1.4 | 0 | --- | 0 | --- | 122 | --- |
| LMB | 10.7 | 2.6 | 9 | 17 | 9 | 17 | 108 | 8 |
| OSF | 38.8 | 30.0 | --- | --- | --- | --- | --- | --- |
| WHS | 3.0 | 1.9 | 100 | 0 | 100 | 0 | 100 | 13 |
| YEP | 2.0 | 1.8 | 0 | --- | 0 | --- | --- | --- |

Table 2. Historic mean catch rate (CPUE; catch/hour) of stock-length fish for various fish species captured by spring night electrofishing in the West Kampeska pit area, 1999 - 2006. BLB= black bullhead; BLC= black crappie; COC= common carp; GSF= green sunfish; LMB= largemouth bass; OSF= orange-spotted sunfish; WHS= white sucker; YEP= yellow perch

| | CPUE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Mean |
| *Spring electrofishing* | | | | | | | | | |
| BLB | --- | --- | --- | --- | --- | --- | --- | 4.9 | 4.9 |
| BLC | --- | --- | --- | --- | --- | --- | --- | 5.8 | 5.8 |
| COC | --- | --- | --- | --- | --- | --- | --- | 8.8 | 8.8 |
| GSF | --- | --- | --- | --- | --- | --- | --- | 1.0 | 1.0 |
| LMB | --- | --- | --- | --- | --- | --- | --- | 10.7 | 10.7 |
| OSF | | | | | | | | 38.8 | 38.8 |
| WHS | --- | --- | --- | --- | --- | --- | --- | 3.0 | 3.0 |
| YEP | --- | --- | --- | --- | --- | --- | --- | 2.0 | 2.0 |

Table 3. Mean back-calculated length (mm) at age and standard error (SE) for largemouth bass captured during spring night electrofishing in West Kampeska pit, 2006.

| | | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 2005 | 1 | 75 | 126 | | | | | | | |
| 2004 | 2 | 10 | 82 | 239 | | | | | | |
| 1998 | 8 | 1 | 90 | 170 | 268 | 329 | 352 | 374 | 396 | 415 |
| Sample size (n) | | 86 | | | | | | | | |
| Mean | | | 99 | 204 | 268 | 329 | 352 | 374 | 396 | 415 |
| SE | | | 13 | 34 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mean Comparison* [1] | | | | | | | | | | |
| Small lakes/impoundments | | | 99 | 183 | 246 | 299 | 332 | --- | --- | --- |
| Large lakes/impoundments | | | 89 | 178 | 256 | 316 | 359 | --- | --- | --- |
| Region IV | | | 80 | 180 | 266 | 325 | 356 | --- | --- | --- |
| Statewide | | | 96 | 182 | 250 | 305 | 342 | --- | --- | --- |

[1] Willis et al. 2001.

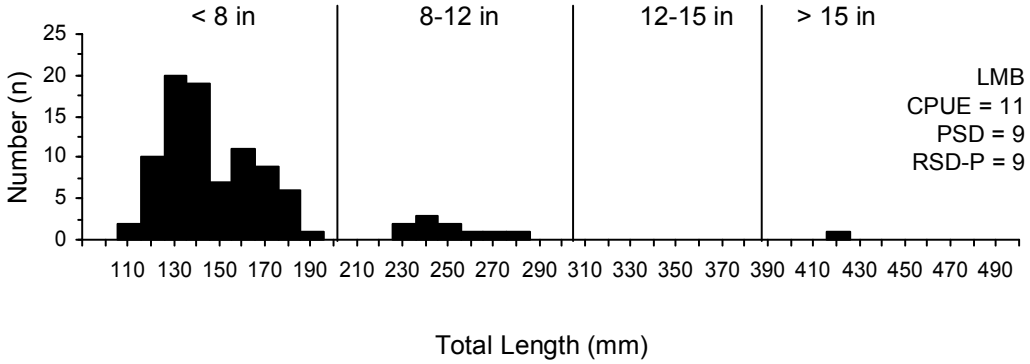


Figure 2. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for largemouth bass captured by spring night electrofishing in the West Kampeska pit area, 2006.

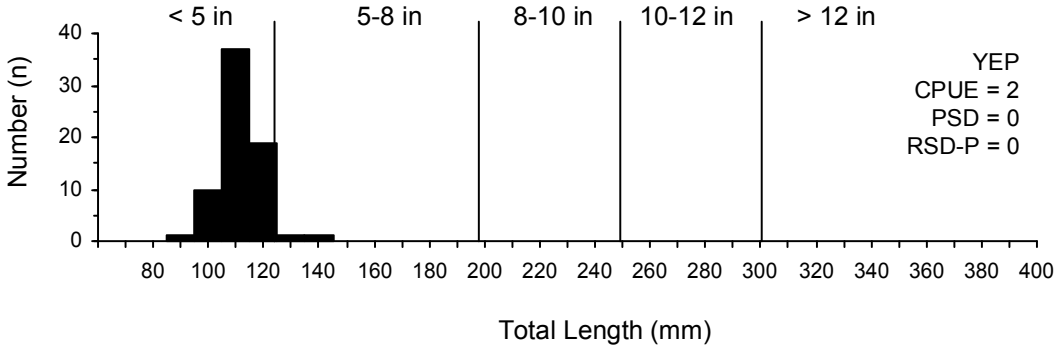


Figure 3. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for yellow perch captured by spring night electrofishing in the West Kampeska pit area, 2006.

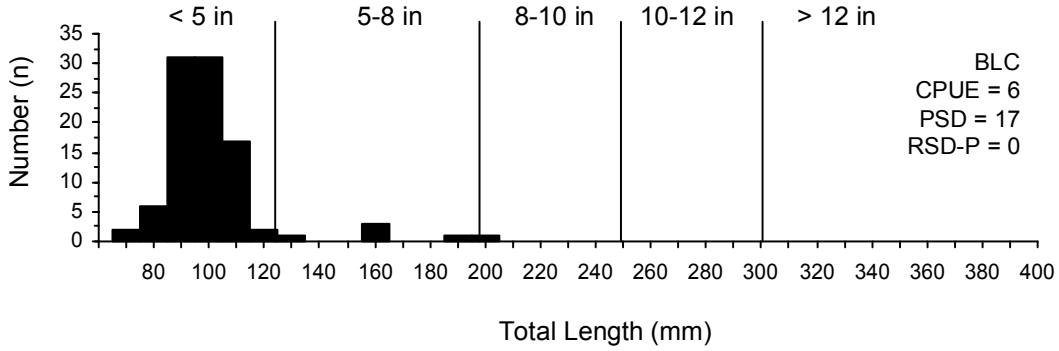


Figure 4. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for black crappie captured by spring night electrofishing in the West Kampeska pit area, 2006.