## PERMIT

**PERMIT MUST BE POSTED AT PROJECT SITE, VISIBLE FROM ROAD**

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Permit Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-47</td>
<td>09/18/19</td>
</tr>
</tbody>
</table>

**Permit Granted To:**

Becker County

**Project Address**: 915 Lake Avenue

**City, State, ZIP**: Detroit Lakes, MN 56501

**Project Type**: Remove existing concrete water control structure and replace with a rock weir rapids, stabilize streambank and install vegetation.

### Permit Granted with the Following Conditions to be Satisfied by the Permit Holder:

Project will be constructed per "Dunton Locks County Park: Dry Dock Lake Outlet Channel Restoration, prepared by Becker County, Dunton Shoreland Estimate2 Vegetation Plan, prepared by Becker SWCD, Weir Overlay Cross Section, prepared by Jeff Tillman, MN DNR.

Erosion and Sediment Control Best Management Practices will be installed to contain disturbed soils.

**All measures must conform to other applicable Zoning and Shoreland Ordinance regulations (Becker County, City of Detroit Lakes, Minnesota Pollution Control Agency, MN Department of Natural Resources)**

This permit is valid for 18 months.

Permit may be revoked at any time upon violation of Pelican River Water Management Rules. Any changes to this site permit results in nullification of this permit and a new permit will have to be obtained.

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Signature of Tera Guetter, District Administrator
# PERMIT APPLICATION FORM

**Property Owner(s):** Becker County  
**Mailing Address:** 915 Lake Ave  
**Detroit Lakes, MN 56501**  
**Phone:** 218-246-7201  
**Cell:**  
**Email:** mni-biouthsyst.r.ca.becker.mn.us  
**Project Address:** D元宝tun Regional County Park  
**Parcel ID Number(s):** 18700400 190127101  

**Permit should be sent to:** ☑ Mailing Address ☑ Contractor ☑ Call to pick up ☑ Phone:**  

## PERMIT APPLICATION PURPOSE (indicate all which apply)

- ☑ Shore Impact Zone Alterations (including land, impervious surface, and vegetation alterations including Sand Blanket, Rip-Rap, Sidewalk, buildings, tree removal, shoreline plantings or changes, Ice Ridge Repair)  
- ☑ Bluff Impact Zone/Steep Slope Alteration within Shoreland District (including land, impervious surface, and vegetation)  
- ☑ Retaining Walls within Shore/Bluff Impact Zone  
- ☑ Residential Stormwater Management - greater than 10,000 ft² Impervious within Shoreland District  
- ☑ Commercial Stormwater Management (> 25% Impervious lot coverage or > 10,000 ft²)  
- ☑ Stormwater management - Greater than 1 acre Impervious surface  
- ☑ Stormwater management - Subdivision, Planned Unit Developments (PUD's), Plots, Storage Condos, Developments based upon certified surveys  
- ☑ Stormwater management - Changes to, including construction or re-construction, of stormwater infrastructure, private or public highways, roads, streets, parking lots, Public Water Access, bridges, culverts, and Inlets to Waters of the State  
- ☑ Public Drainage - Becker County Ditch 11-12; 13, 14 - Dredging, filling, diking; culvert, bridge crossings; bank stabilization; channelization; lateral construction or repair; grass, shrub or tree removal within 15.5 feet; snow storage within 50 ft of ditch or lateral

## Project Purpose/Description: (Please be specific)

**Lake Name (if applicable):** Mijnknat & Sallie  
**Remove water control structure and restore stream channel with rock weir rapids. Restore streambank vegetation. (See attached narrative)**

<table>
<thead>
<tr>
<th>Proposed start date:</th>
<th>Proposed completion date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 21, 2019</td>
<td>November 4, 2019</td>
</tr>
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</table>

## ADDITIONAL PERMITS

- **City of Detroit Lakes**  
  - Permit REQ'D ☑ RECD ☑  
  - Variance REQ'D ☑ RECD ☑  
  - Mitigation REQ'D ☑ RECD ☑

- **Becker County**  
  - Permit REQ'D ☑ RECD ☑  
  - Variance REQ'D ☑ RECD ☑  
  - Mitigation REQ'D ☑ RECD ☑

- **MN DNR; MN PCA; Becker SWCD**  
  - Permit REQ'D ☑ RECD ☑  
  - NPDES REQ'D ☑ RECD ☑

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If variances are required, the approved conditions need to be included for permit approval.

*Additional permits may be required in addition to Pelican River Watershed District Permit. Please attach copies of all permits and variances received.

*Continue to page 2 for signature and permit application checklist

**May 2019**
PERMIT APPLICATION SUBMISSION CHECKLIST

☐ Completed permit application, signed by the Property Owner, or notarized Authorized Agent

☐ Site plan, erosion prevention and sediment control plan, maintenance plans, and other information and calculations (soil borings, percolation test results, etc.) as per the District Engineer Technical Memo revised November 7, 2013

☐ Application and Field Inspection fees according to the most recent schedule

TERMS OF THE PERMIT

Applying for a permit issued through the Pelican River Watershed District (PRWD) in no way precludes obligation for permit application that may be required through OTHER governmental agencies. Any work performed prior to obtaining all required authorizations may be subject to Federal, State and/or administrative, civil, and/or criminal penalties. No liability shall be imposed on the District or any of its officers, agents or employees on official or personal grounds, on account of the granting of this permit, or account of any damage to any person or property resulting from any act or omission of the Permittee or any of its agents, employees or contractors relating to any matter hereunder. This permit shall not be construed as limiting any legal claim or right of action of the District against the Permittee, its agents, employees or contractors for the violation of, or failure to comply with the provisions of the permit or applicable provisions of law.

When all items have been satisfactorily completed and the District determines the project meets the District’s Rule requirements, this permit will be issued. The permit may be picked up at the District office, or it will be mailed to the designated address. A copy of the approved permit will be sent to the applicable local governmental entity (Becker or Ottertail County, City of Detroit Lakes Zoning departments).

The permit will be valid for eighteen (18) months from the date of issuance, unless otherwise suspended or revoked. A permit may be extended at no charge, provided the property owner notifies the District in writing stating the reasons for extension. Any plan changes, and related project documents must also be included in the extension application. The District must receive the extension application at least thirty (30) day prior to the permit’s expiration date as issued.

If changes are made to the permitted plans for this project, changes must be submitted to the District (in duplicate form) for review prior to installation or completion occurs. If changes to the original (permitted) plans are approved, an amended permit will then be issued.

This permit may be terminated by the Board of Managers without notice at any time deemed necessary for the management of the water resources of the District, or in the interest of public health and welfare, or for violation of any of the provision of this permit.

A permit surety may be required of the permit holder or applicant. A surety is a monetary sum (an amount set by the Board of Managers, District staff and/or the District engineer after review of the project application or approved permit) provided by the applicant/permittee to the District to ensure the project is completed as designed and in compliance with District Rules. The District returns the money to the applicant/permittee after all permit conditions are met and the project is complete. If the District requires a surety, the applicant/permittee must provide the District the surety amount in the form of a check made out to the Pelican River Watershed District, or a Performance Bond, or Letter of Credit.

PERMIT APPLICATION AGREEMENT

“I understand that, as a Permittee, I am legally accountable to ensure compliance with the terms and conditions of the permit. I understand that I am not authorized to begin the project until I received the permit and the permit is posted as directed on the project site. If the project is modified, I will obtain approval by the District before I continue with the project. I authorize the District, and its agents, employees, officers, and contractors to enter the project site to perform any inspection or work authorized by the permit or any applicable law.”

“I certify that I have thoroughly read and understand the information on this permit application, including submittal requirements.”

Signature: ___________________________ Date: 9-9-19
(Property owner, or Authorized Agent signature ) Permit Number 19-19

ACTION BY THE PELICAN RIVER WATERSHED DISTRICT

The above application is APPROVED / DISAPPROVED this 18 day of September 2019, by the Pelican River Watershed District.

By: ___________________________
Its: ___________________________
Dunton Locks County Park: Dry Dock Lake Outlet Channel Reconstruction

Introduction

Becker County administers a county park on the shorelines of Muskrat and Sallie Lakes south of the City of Detroit Lakes. The park was once the site of a lock and dam system that allowed boats to move from Sallie through Muskrat Lakes to Detroit Lake. The main lock and dam was removed and modified into a rock arch rapids providing fish passage between the lakes in the early 2000's by the Minnesota DNR. The county park includes a remnant of the original lock and dam system which has a small drainable basin (Dry Dock) and an outlet channel with control structure. The shoreline around the basin is a popular shore fishing site and the outlet stream attracts migrating fish in the spring (Figures 1, 2 & 3). The stream banks on the outlet channel have eroded and the channel has become wider since the lock and dam structure was converted to a rock arch rapids. It may be that, since the main lock and dam was modified, the dry dock channel is receiving more water than it was constructed to handle. In addition to the erosion concerns, fish cannot pass through the outlet structure. The purpose of the project is to remove the concrete control structure and construct a series of rock weirs to allow fish passage and reduce stream bank erosion.

Existing Conditions

The control structure is a cast in place culvert that is 2 ft. wide by 4 ft. tall with removable stop logs and grate. The water level drop through the culvert is 2.8 ft. at the time of the survey and would be difficult for fish to swim through the high velocities in the culvert or over the stop logs (Figure 4). Rip rap was added below the culvert in recent years to reduce stream bank erosion. The culvert is ageing and cracks are visible in the headwalls. The county would like to maintain pedestrian and small equipment access across the channel.
Figure 2. Dry Dock control structure inlet.

Figure 3. Dry Dock control structure outlet.
Figure 4. Dry Dock outlet longitudinal profile showing location of stone weirs (white diamonds).

Proposed Condition – Concept Design.

The drop from the top of the stop log to the stream bed is approximately 2.8 ft. This represents a fairly steep drop over a short distance. Ideally a fish passage design has a shallow slope of 3% or less and drop over each weir of 0.5 ft. or less. The Dry Dock channel is approximately 100 ft. in length from the top of the stop log to the wetland fringe of Lake Sallie. Due to the short length of the channel the proposed design has five weirs each with a height of 0.6 ft. and a slope of 2.5%. To accommodate the shorter weir heights, the first weir will be built upstream of the existing control structure (i.e., in the pond) retaining the stop log elevation of 1,334.09 ft. (Figures 5 & 6). Weirs will be constructed using large diameter boulders and smaller fill materials (Table 1) and will be designed to match the existing channel width (Figure 7). An example of contrasted weirs is in Figure 8.
Figure 5. Overhead view of Dry Dock channel fish passage stone weirs.

Figure 6. Profile of Dry Dock outlet fish passage showing existing stream bed and proposed weirs.
Figure 7. Typical weir cross section that will be used during construction.

Figure 8. Example of constructed stone weirs in Coffee Creek. It is anticipated that the dry dock stream will look similar after completion of the project.
It is important to maintain pedestrian and small equipment access across the Dry Dock channel. A culvert was considered, however the culvert would have to be set at the same slope as the design channel (2.5%) and would result in high stream velocities, especially at higher lake levels making fish passage difficult. Setting the culvert at shallower slope creates a perched outlet or increases the step height of downstream weirs which also makes fish passage more difficult. A small bridge designed for pedestrian and small equipment such as mowers or ATV’s is the most suitable crossing. Large 3 to 4 ft. boulders could be stacked vertically as abutments and repurposing a fishing pier or constructing a deck made of heavy lumber are potential design options. The bridge would need to span approximately 15 ft.

Construction Sequence

The Dry Dock basin can be dewatered by adding stop logs to the upstream control structure which will allow construction in relatively dry conditions. It is advisable to dewater the basin two weeks in advance to allow sediments to dry out. The concrete control structure would need to be removed and approximately 10 yds$^3$ of material will be hauled off site for disposal. The weirs should be constructed in an upstream to downstream direction. It is important that boulders be fitted together in the arch shape and be tied into the stream bank. Commonly, projects such as this take a few days to construct and should be completed in late fall when public use of the site is at a minimum.

Materials and Project Cost

Table 1. Material volume and costs for Dry Dock outlet project

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume</th>
<th>Price/ycd$^3$</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft. boulders</td>
<td>18</td>
<td>$200/each</td>
<td>$3,600</td>
</tr>
<tr>
<td>2 ft. boulders</td>
<td>32</td>
<td>$150/each</td>
<td>$4,800</td>
</tr>
<tr>
<td>Class II</td>
<td>5 yds$^3$</td>
<td>$65</td>
<td>$325</td>
</tr>
<tr>
<td>Class I</td>
<td>5 yds$^3$</td>
<td>$65</td>
<td>$325</td>
</tr>
<tr>
<td>1.5 inch minus</td>
<td>2 yds$^3$</td>
<td>$55</td>
<td>$110</td>
</tr>
<tr>
<td>Coarse sand</td>
<td>2 yds$^3$</td>
<td>$20</td>
<td>$40</td>
</tr>
<tr>
<td>Pea rock</td>
<td>2 yds$^3$</td>
<td>$45</td>
<td>$90</td>
</tr>
<tr>
<td>Curlex ECB</td>
<td>3 rolls</td>
<td>$40</td>
<td>$120</td>
</tr>
<tr>
<td>Total volume of materials</td>
<td>55 yds$^3$</td>
<td></td>
<td>$9,410</td>
</tr>
</tbody>
</table>

Notes – Classes I and II will follow MNDOT table 3601-1 specifications. Coarse aggregate will follow MNDOT table 3149-8 specifications. Class I and II can be mixed and delivered as a single product. Coarse sand, 1.5 inch minus and pea rock can also be mixed and delivered as a single product.

Table 2. Revegetation costs for Dry Dock outlet project

<table>
<thead>
<tr>
<th>Material</th>
<th>Coverage</th>
<th>Quantity/Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coir Log 16”</td>
<td>10 feet</td>
<td>16/$207.376</td>
<td>$3,318.02</td>
</tr>
<tr>
<td>Mat=Cl25BN 6.67' x 108’</td>
<td>720 Sq. ft.</td>
<td>2/$194.714</td>
<td>$389.43</td>
</tr>
<tr>
<td>Mat=ECS1S8BD Straw 8’x112.5’ Single Net</td>
<td>780.5 Sq. ft.</td>
<td>5/$97.5</td>
<td>$487.50</td>
</tr>
<tr>
<td>Stake=1”x1” x 24” 9/BDL BrockW</td>
<td>9 Each</td>
<td>8/$9.893</td>
<td>$79.14</td>
</tr>
<tr>
<td>Stake=Wood Wedge 1x4x36, 18 BDL</td>
<td>Each</td>
<td>160/$2.275</td>
<td>$364</td>
</tr>
<tr>
<td>Stake=Eco Stakes 12 ESW12</td>
<td>500/Box</td>
<td>4/$204.984</td>
<td>$819.84</td>
</tr>
<tr>
<td>SWCD Labor</td>
<td>54/$50</td>
<td></td>
<td>$2,700.00</td>
</tr>
<tr>
<td>Native Plants/Grasses/Forbs/Shrubs</td>
<td></td>
<td></td>
<td>$672.00</td>
</tr>
<tr>
<td>Native Seed</td>
<td></td>
<td></td>
<td>$553.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>$9,383.00</td>
</tr>
</tbody>
</table>
Table 3. Excavation and Concrete Removal

| Mobilization/Excavation/Concrete Removal Total | $26,000.00 |

TOTAL Project Costs and Contingency

| Table 1. Material costs total | 9,410.00 |
| Table 2. Revegetation costs total | 9,383.00 |
| Table 3. Mobilization Excavation/Concrete Removal | $26,000.00 |
| Sub total | $44,793.00 |
| 2.5% Administration | $1,120.00 |
| Project/Request Total | $45,913.00 |

The project could be completed by the county or contractor providing they have an excavator with thumb attachment and capable of lifting large boulders. A skid loader will also be needed to move materials. A DNR representative will be available to direct construction.

This estimate does not include the bridge deck materials or installation.

The dry dock basin and the dry dock stream are not designated public waters. This does not mean they are not open to the public, it just suggests a DNR public waters permit will not be needed. Nonetheless, hydraulic modeling may be requested.

The Pelican River Watershed is providing $5,000.00 in matching funds for the project.