Kimley»Horn

Operations and Maintenance Manual

Project Franklin Industrial

Jim black Road and McClain Drive
Franklin, IN 46131

Prepared for:
The Peterson Company, LLC
7132 Zionsville Road
Indianapolis, IN 46268

Prepared by:
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Storm Sewers, Storm Structures, Wet Detention Basins, and vegetated land coverage.

The proposed project site will include storm sewers, storm structures, wet and dry detention basins, swales, and vegetated land coverage.

Water Quality BMPs

Water Quality Best Management Practices (BMPs) are vegetative, structural, and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff off the site. Potential pollutant sources include exposed soil and sediments, litter from workers/visitors and automobile fluids on the pavement including heavy metals, oil, grease, and alcohols. Runoff from the project site will be routed through wet detention ponds that outfall to into existing storm infrastructure.

BMP Owner Contact Information

Name: The Peterson Company, LLC
Address: 7132 Zionsville Road, Indianapolis, IN 46268
Business Phone Number: 317-805-1200

Party Responsible

Routine inspections are the responsibility of the BMP owner. The BMP owner shall be financially responsible for any maintenance or repairs required by the County or its representatives during the County's inspections. The approved maintenance plan and inspection forms provided with this manual should be used as guidance for performing maintenance activities. Project owner shall abide by all Hancock County Stormwater Technical Manual and maintenance requirements. The County will require yearly inspection reports of the water quality BMPs. The first will be due one year after the Notice of Termination is submitted.

Right of Entry

City of Franklin and Johnson County has the right to enter the subject property in order to inspect the wet basins, storm structures, and storm sewer.

Water Quality BMPs Description

Stormwater runoff from the site and offsite runoff will be piped to the wet basin that runs along the north side of the site. The wet basin will discharge through storm sewer to the site outfall in the northeast corner of the property into a legal drain where it eventually discharges into Amity Ditch. The proposed storm sewers, storm structures, wet basin, and vegetated land coverage will need to be inspected and maintained per the requirements below. See Appendix A for the O&M Exhibit, depicting the location of all water quality structures.

Storm Structure Maintenance and Inspection

Storm structures on site are identified in an exhibit in Appendix A. Storm structures are set at storm sewer pipe connections. Unless you have OSHA approved training and equipment, never enter a manhole. Inspection and maintenance of all storm structures is required per the table below. See Appendix B for inspection and maintenance guidelines.

Storm Structure Maintenance and Inspection	
Inspection	All inlet castings should be inspected every 6 months and after each major rainfall event. More frequent inspections should be performed in areas where there is higher potential for trash or litter and during the fall when leaves are present on the ground. Check the frame and lid for cracks and wear, such as rocking lids or lids moved by traffic. Storm structures and the surrounding areas should be inspected annually for pollutants such as leaks from dumpsters, minor spills, and oil dumping. Take action to have the pollutant source removed.
Cleaning	Clean structures when there is a blockage of a water flow path or when sediment depth reaches 10% of the pipe diameter. Cleaning should be performed in a way that ensures removed sediment and water is not discharged back into the storm sewer.
Materials Handling	Disposal of waste from maintenance of drainage facilities shall be conducted in accordance with federal, state, and local regulations. Removed sediment must be disposed in the garbage as solid waste. Water should be disposed of in a sanitary sewer after oils are removed using oil absorbent materials or other mechanical means. Used oil absorbents should be recycled or disposed according to the manufacturer's instructions.
Repairs	Repair all security and access features so they are fully functional. This includes locking lids, covers, and ladder rungs. Replace broken parts or lids that rock or are moved by traffic.

Storm Sewer Maintenance and Inspection

Storm sewer pipes convey stormwater. Pipes are built from many materials and are sometimes perforated to allow stormwater to infiltrate into the ground. Storm pipes are cleaned to remove sediment or blockages when problems are identified. Storm pipes must be clear of obstructions and breaks to prevent localized flooding. Storm sewer maintenance and inspection required per the table below. See Appendix B for inspection and maintenance guidelines.

Storm Sewer Maintenance and Inspection	
Inspection	Pipes are difficult to inspect requiring special equipment and training. Usually, if a problem occurs the owner needs to call a sewer or plumbing contractor to inspect, repair or clean pipelines.
Cleaning	Clean pipes when sediment depth is greater than 10% of the pipe diameter. When cleaning a pipe, minimize sediment and debris discharges from pipes to the storm sewer. Install downstream debris traps (where applicable) before cleaning and then remove material. Generally, use mechanical methods to remove root obstructions from inside storm sewer pipes. Do not put root-dissolving chemicals in storm sewer pipes. If there is a problem, remove the vegetation over the line.
Materials Handling	Sediment and debris from pipes should be disposed in the garbage as solid waste. Pick out any rocks first.
Repairs	Repair or replace pipes when a dent or break closes more than 20 percent of the pipe diameter. Repair or replace pipes damaged by deterioration.

Dry & Wet Detention Basin Maintenance and Inspection

The dry & wet detention basins detain runoff prior to discharging offsite. The wet detention pond allows sediment from incoming runoff to settle and remain within the pond while the runoff is slowly released at a designed limited rate. Maintenance is necessary for both the wet detention pond to operate as designed on a long-term basis. The pollutant and sediment removal capabilities of the ponds will decrease if the ponds are not properly monitored and maintained. The edges of the wet pond should be regularly mowed, checked to ensure the outlet structure is clear of debris and cleaned if excessive sediment accumulation occurs. It is important to ensure that the edges of the wet pond is heavily vegetated with grass to prevent erosion.

The pond should be inspected and maintained per the table below. An inspection checklist can be found in the Appendix.

Dry/Wet Basin Maintenance and Inspection	
Maintenance Activity	Frequency
Clean and remove debris from inlet and outlet structure and mow side slopes	Monthly and after large rainfall events As needed afterwards during dry periods.
Treat invasive vegetation, diseased trees and shrubs	As needed. All should be inspected twice per year for evaluation.
Inspect rip rap area and repair eroded areas	Monthly (initially). Semiannually.
Planting soils, wetland plant management and harvesting	Annually
Inspect for damage especially at control structure, sediment accumulation	Annual inspection
Remove litter and debris	Monthly. As needed.
Monitor sediment accumulations and remove sediment when the pool volume has become reduced significantly, or the pond becomes eutrophic	10 to 20 years or after 25% of the permanent pool volume has been lost

At a minimum, the basin should be inspected and maintained once per year and after every large rain event. An inspection checklist can be found in the Appendix B.

Swale Maintenance and Inspection

Swales are manmade open channels that carry only stormwater. Ditches are often maintained for drainage to prevent localized flooding by draining stormwater. Inspection and maintenance include removing sediment, debris and overgrown vegetation per the table below.

Swale/Bioretention Maintenance and Inspection	
Maintenance Activity	Frequency
Treat diseased trees and shrubs	As needed. All should be inspected twice per year for evaluation.
Pruning and weeding to maintain appearance	As needed
Inspect rip rap area and repair eroded areas	Monthly (initially). Semiannually.
Planting soils	Annually test soil pH. If pH is < 5.2, apply an alkaline product (e.g., limestone) one to two times per year to counteract soil acidity. If pH is 7.0-8.0, apply iron sulfate and sulfur to reduce pH.
Inspect for sediment accumulation	Semiannually inspect inflow points for deposition and possible clogging. Remove sediment. Clogged systems may be exhibited by excessive ponding. Core aeration or cultivating unvegetated areas may alleviate this issue.
Remove litter and debris	Monthly. As needed.
Soil replacement	When levels of pollutants reach toxic levels that decrease effectiveness of the system.

Often swales have problems due to flooding or erosion. Where possible, correct the underlying problem before trying to repair the symptom. If there is a problem with grass dying due to the swale being flooded during the wet season, there are two options: convert the swale to plant varieties that can stand being flooded or find a way to fix the swale, so it drains. Constructing an underdrain system under swales are strongly recommended.

Turf Vegetative Coverage

All non-paved areas that are not landscaped shall be vegetated to prevent erosion and sediment buildup in storm sewer facilities onsite or downstream of the project site. Seed shall be reapplied as required to establish healthy, dense coverage.

List of Attachments

Attachment A:	O&M Exhibit
Attachment B:	Inspection and Maintenance Checklist

Appendix A – O&M Exhibit

EDDB POND

STORM SEWER

SWALE

STORM SEWER

WET POND

STORM SEWER

STORM SEWER

STORM SEWER

SWALE

SITE DISCHARGE

MCCLAIN DRIVE

PUBLIC RIGHT-OF-WAY

COUNTY ROAD N 500 E (JIM BLACK ROAD)

FOUND WITH CKW CAP 0.6' ABOVE GRADE

REBAR FOUND WITH BLEDSOE CAP 0.4' EAST OF CORNER 0.5' ABOVE GRADE

REBAR FOUND WITH S0407 CAP 0.1' ABOVE GRADE

REBAR FOUND WITH S0407 CAP 0.2' BELOW GRADE

REBAR FOUND WITH S0407 CAP 0.1' BELOW GRADE

MONUMENT FOUND 0.1' BELOW GRADE

EAST LINE, NE 1/4 SEC. 18-T12N-R5E

NE COR SEC. 18 RAIL ROAD SPIKE 0.2' BE

15' ELECTRIC LINE EASEMENT

10" PVC INV(S)=717.49

SANITARY MH TC=732.14

CURB INLET TC=731.89

MITSUBISHI HEAVY INDUSTRIES AMERICA INC INSTRUMENT NO. 2021-015339

Kimley»Horn

FRANKLIN INDUSTRIAL

SITE EXHIBIT

September 9, 2021

0' 60' 120'

NORTH

Appendix B – Inspection and Maintenance Checklist

Detention Pond Operation, Maintenance, and Management Inspection Checklist

Project: _____
Location: _____
Date: _____ **Time:** _____
Inspector: _____
Title: _____ **Signature:** _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway		
Healthy vegetation with at least 85% ground cover.		
No signs of erosion on embankment.		
No animal burrows.		
Embankment is free of cracking, bulging, or sliding.		
Embankment is free of woody vegetation.		
Embankment is free of leaks or seeps		
Emergency spillway is clear of obstructions.		
Vertical/horizontal alignment of top of dam "As-Built"		
2. Riser and principal spillway		
Low flow outlet free of obstruction.		
Trash rack is not blocked or damaged.		
Riser is free of excessive sediment buildup		
Outlet pipe is in good condition.		
Control valve is operational		
Outfall channels are stable and free of scouring.		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds)		
No Evidence of undesirable vegetation		
No accumulation of floating or floatable debris		
No evidence of shoreline scour or erosion		
4. Sediment Forebays		
Sediment is being collected by forebay(s)		
Forebay is not in need of cleanout (less than 50% full)		
5. Dry Pond Areas		
Healthy vegetation with at least 85% ground cover.		
No undesirable woody vegetation		
Low flow channels clear of obstructions		
No evidence of sediment and/or trash accumulation		
6. Condition of Outfall into Ponds		
No riprap failures		
No evidence of slope erosion or scouring		
Storm drain pipes are in good condition, with no evidence of non-stormwater discharges		
Endwalls/Headwalls are in good condition		

Storm Sewer Structure Operation, Maintenance, and Management Inspection Checklist

Project: _____
Location: _____
Date: _____ **Time:** _____
Inspector: _____
Title: _____ **Signature:** _____

□ Annual Inspection □ Rain Event (>3")

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Structure Frame/Casting (Inspect bi-annually and after major storms)		
Silt/Sediment Accumulation <2" (Maintenance required if greater)		
Trash/Debris Obstructing Flow		
Other (describe)		
2. Headwall/End Section Structures (Inspect bi-annually and after major storms)		
Erosion		
Animal Burrows		
Clear of Obstruction		
Sediment Accumulation <2" (Maintenance required if greater)		
Vegetation around Structure		
Other (describe)		
3. Storm Sewers (Inspect bi-annually and after major storms)		
Silt/Sediment Accumulation <2" (Maintenance required if greater)		
Dent or break closing more than 20% of the pipe diameter (Repair/Replace if more than 20%)		

Additional

Actions to be taken:	**Timeframe:**

Swale Operation, Maintenance, and Management Inspection Checklist

Project: _____
Location: _____
Date: _____ **Time:** _____
Inspector: _____
Title: _____ **Signature:** _____

□ Annual Inspection □ Rain Event (>3")

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment		
Healthy vegetation with at least 85% ground cover.		
No signs of erosion on embankment.		
No animal burrows.		
Embankment is free of cracking, bulging, or sliding.		
Embankment is free of woody vegetation.		
Embankment is free of leaks or seeps.		
2. Swale Bottom Area		
Healthy vegetation with at least 85% ground cover.		
No undesirable woody vegetation		
Low flow channels clear of obstructions		
No evidence of sediment and/or trash accumulation		
Sediment Accumulation <1' (Maintenance required if greater)		
Length of time for standing water <48 hrs (Maintenance required if longer)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Condition of Storm Sewer Outfall into Swale and Swale Exit into Retention Basin		
No riprap failures		
No evidence of slope erosion or scouring		
Storm drain pipes are in good condition, with no evidence of non-stormwater discharges		
Endwalls/Headwalls are in good condition		