

**Stormwater / BMP Facility Maintenance Plan**

**Stoney Creek Development to include all phases of development**

**Lee's Summit, MO**

**PREPARED BY:**



**PREPARED FOR:**

**Clayton Properties Group, d.b.a. Summit Homes**



Matthew J. Schlicht, PE

Revision

Date	Comment	By

**Accepted  
Study/Report**

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## **PURPOSE**

Stormwater Best Management Practices (BMPs) are implemented in this development to meet stormwater discharge water-quality standards of the City of Lee's Summit, Missouri. Permanent BMPs are provided via this development. In order for physical stormwater BMPs to be effective, proper maintenance is essential. Maintenance includes both routinely scheduled activities, as well as non-routine repairs that may be required after large storms, or because of other unforeseen conditions. Maintenance of site specific BMPs is the responsibility of the property owner and a requirement of approval for these developments. The property owner, heirs and assigns shall maintain appropriate funds to provide all maintenance required up to and including replacement of said facilities at end of their useful life. The property owners shall require implementation of this manual for all BMPs with land ownership transfer to subsequent property owners, heirs and assigns.

### **1. General Site Overview**

The sites are generally located south of MO-150 Highway, west of Ward Road, east of Pryor Road and north of County Line Road. The projects have been developed in numerous phases starting around 2001 with phases recorded as Parkwood at Stoney Creek and Stoney Creek Estates. The "green" shaded areas below are areas within the development that contain a detention facility, BMP facility, Stream Buffer Area or Floodplain. These areas require a certain amount of maintenance to ensure the design or protection of these areas is maintained.

The sites drain primarily to the east into an unnamed tributary of Raintree Lake and ultimately into Middle Big Creek, with the exception of The Manor at Stoney Creek 2<sup>nd</sup> Plat, which drains to south.

## **1.1 Location of Stormwater BMP's**

Stormwater detention basins are located within

- Tract J, The Reserve at Stoney Creek 1<sup>st</sup> Plat
  - Tract K, The Reserve at Stoney Creek 2<sup>nd</sup> Plat
  - Tract L, The Reserve at Stoney Creek 3<sup>rd</sup> Plat
  - Tract P, Manor at Stoney Creek 2<sup>nd</sup> Plat

Appendix A contains the Final Plats for each of the plats listed above.



## **1.2 Types of Stormwater Best Management Practices**

There are many different measures which can provide stormwater BMPs. The below list are the ones utilized within these developments.

- Stormwater dry detention basin
  - Basins were designed to control release rates from various storm frequency storm events, which was accomplished by various orifice sizes located within the outlet structure
  - Basin bottom is design with a minimum 2% slope to direct water toward the outlet structure.
- Native Vegetation

## **2. MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES**

Stormwater management facilities need to be maintained to function properly. This section will discuss how to properly maintain the facilities within this development.

### **2.1 Floodplain and Stream Buffer Areas**

The Reserve at Stoney Creek 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Plat have areas that are designated on the plat as stream buffer and floodplain areas. These areas are based on the storm water runoff from the upper watershed portions draining into these areas. The stream buffer is a specific width on both sides of the current stream channel and is intended for the protection of the natural stream areas. The floodplain is updated by the County Flood Manager on a regular basis and within this section of the development portions of these tracts have been identified as areas subject to flooding during the 1% flood chance or the typically referred to 100 year storm event.

The basic intent of both of these identified areas is to keep the areas clear of debris, construction and any potential obstruction that can impede storm water drainage.

### **2.2 Extended Dry Detention Basin**

Extended dry detention basins provide detention for the water quality volume with a 40-hour release rate, along with detention for up to the 100-year storm event. These basins are typically simple in design, which helps make them relatively easy and inexpensive to maintain.

Generally, the basin is design to be completely drained within 40 hours following a storm event equal to or greater than the 2 year event.

The basins within this development are planted with standard grass and have a minimum 2% slope, which maintenance requirements were discussed as shown in Table 1, focusing on the maintenance for the overall detention basin and not focused on the vegetation.

**Table 1. Maintenance of Extended Dry Detention Basin**

Required Action	Maintenance Objective	Frequency of Action
Debris and Litter Removal	Removal of debris and litter from the basin area to minimize outlet clogging and improve aesthetics	Periodically and after large rain events
Repairing Erosion	If erosional channels occur due to lack of vegetation and large rainfall events, the area shall be re-graded to fill in the channels and new vegetation shall be established per Section 2.3.	Periodically, as occurs after large rain events
Inspection of Outlet	To ensure the outlet box for the basin is function properly	Yearly in the springtime and periodically until winter
Inspection of the Spillway	To ensure spillway is stable and functioning correctly	Yearly in the springtime and periodically until winter
Removal of Sediment	To ensure the basin has enough volume to handle rainfall events and function as designed	Rare once the area draining to the basin is fully developed and vegetation established. Should occur if owner notices large amounts of silt in the bottom that is preventing the basin from draining/functioning.

Maintenance for the basin shall be minimal to the owner, however if unforeseen events happen, the owner shall restore the basin, per the detention basin As-built sheets, Appendix B.

## 2.3 Native Vegetation

Native vegetation provides many benefits for stormwater management. Per the APWA/MARC BMP manual, dated October 2012, the below are some of these benefits:

- Containing species of plants indigenous to the area, vegetation will be able to thrive in the local climate with less maintenance.
- Deep roots enhance stormwater infiltration into the soil.
- With deep-rooted nature, native vegetation is able to withstand flooding events as well as extended dry periods.
- Reduces flow velocity of stormwater runoff.
- Attracts wildlife and improved biological diversity.
- Requires little to no fertilizer or chemical maintenance, as well as reduced amounts of water to survive.

With these benefits, the bottom of a stormwater basin is an ideal place for native vegetation to be planted. The basins are intended to be vegetated by natives. Some of the typical plants one may see are below:

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"><li>• Prairie Cordgrass</li><li>• Dark Green Bulrush</li><li>• Dudley's Rush</li><li>• Milkweed</li><li>• Fox Sedge</li><li>• Water Plantain</li></ul> | <ul style="list-style-type: none"><li>• Aster</li><li>• Iris</li><li>• Sedge</li><li>• Coneflower</li><li>• Goldenrod</li><li>• Blazingstar</li></ul> | <ul style="list-style-type: none"><li>• Fescue</li><li>• Cattail*</li><li>• Switchgrass</li><li>• Indian Grass</li><li>• Little Bluestem</li><li>• Big Bluestem</li></ul> |
|--|---|---|

\*Cattail growth shall be monitored to limit spread and not crowd out other species.

The maintenance requirements for native vegetation will vary depending on the climate, thus the maintenance of such should be flexible and allowed to change over time to allow responses to nature. The plan laid out in the below table are recommendations, the formal maintenance shall be adoptive based on the recommendations in Table 2.

**Table 2. Maintenance of Native Vegetation**

Required Action	Maintenance Objective	Frequency of Action
Debris and Litter Removal	Removal of debris and litter from the basin area to minimize outlet clogging and improve aesthetics	Periodically and after large rain events
1 <sup>st</sup> year of establishment-mowing*	To maintain a healthy level of vegetation	Mow no more than monthly to a minimum height of 5"
2 <sup>nd</sup> year of establishment-mowing*	To maintain a healthy level of vegetation	Mow once in June to a minimum height of 8", spot treat weeds as necessary
3 <sup>rd</sup> year and beyond of establishment-mowing*	To maintain a healthy level of vegetation	Mow once in the off-season (Late October to Early March) to a minimum height of 8"
Removal of invasive species	To encourage a healthy native plant environment, growth of species invasive to the area shall not occur	Periodically
Seeding (recommend to use a mix with the above plantings)	To establish plantings in bare areas	Shall occur if areas are bare soil for extend period of time

\*Native vegetation shall never be mowed in wet or muddy conditions.

#### **2.4 Inspection of Facilities**

The above sections mentioned maintenance and frequency for each action. When an inspection of the facilities is performed, the form found in Appendix C, shall be filled out and included in this report for record keeping. It is recommended that owner walks around the facility areas yearly to check conditions and make sure no major concerns are occurring. If they see something of concern, they should reach out to a licensed professional for a deeper inspection of the issues and guidance on repairs required.

#### **2.5 Repair of Facilities**

Many maintenance items can be done by the owner, however if larger repairs are needed the owner shall seek out a qualified contractor. Items that may require a contractor to perform are:

- Removal of sediment build up.
  - If there is undeveloped land, in proximity of the basin, sediment may be placed there with proper erosion control measure and seeding shall occur.
  - If the surrounding area is fully developed, then sediment shall be hauled off site to a proper disposal location.
- Repairs to the concrete outlet structure, spillway, or outlet pipe.
- Major erosional channels occurring on the sides slopes of the basin.

### **3.CHANGES TO THE CURRENT PLAN**

This section will discuss the process if changes are desired to the current Stormwater/ B M P Facility Maintenance Plan.

#### ***3.1 Ownership Change***

In the event of ownership change of the land which BMPs are located on, the following steps should be performed.

1. Current owner shall have all BMPs inspected and reviewed to be fully functioning, per this plan. If deficiencies are found both parties shall discuss and agree upon a plan to address deficiencies.
2. City shall be notified via writing of the ownership change within 30 days.
3. Appendix D shall be updated with the new owner information.

#### ***3.2 Additional Land Added to the Development***

If additional land is added into the development, this document shall be updated to include any stormwater management facilities located within the additional area. A revision date shall be provided for the document along with a copy provided to the City of Lee's Summit, Missouri for review.

#### ***3.3 Changes to How Maintenance is Performed***

If the owner has desire to change the recommended maintenance mentioned in this document, they shall prepare an update to this document and present it to Development Services Department with the City of Lee's Summit, Missouri to review. The City may require a licensed professional to update the recommendations.

# **Appendix A**

## **Final Plots of Sites**

**The Reserve at Stoney Creek, 1<sup>st</sup> Plat**

**The Reserve at Stoney Creek, 2<sup>nd</sup> Plat**

**The Reserve at Stoney Creek, 3<sup>rd</sup> Plat**

**The Manor at Stoney Creek, 2<sup>nd</sup> Plat**



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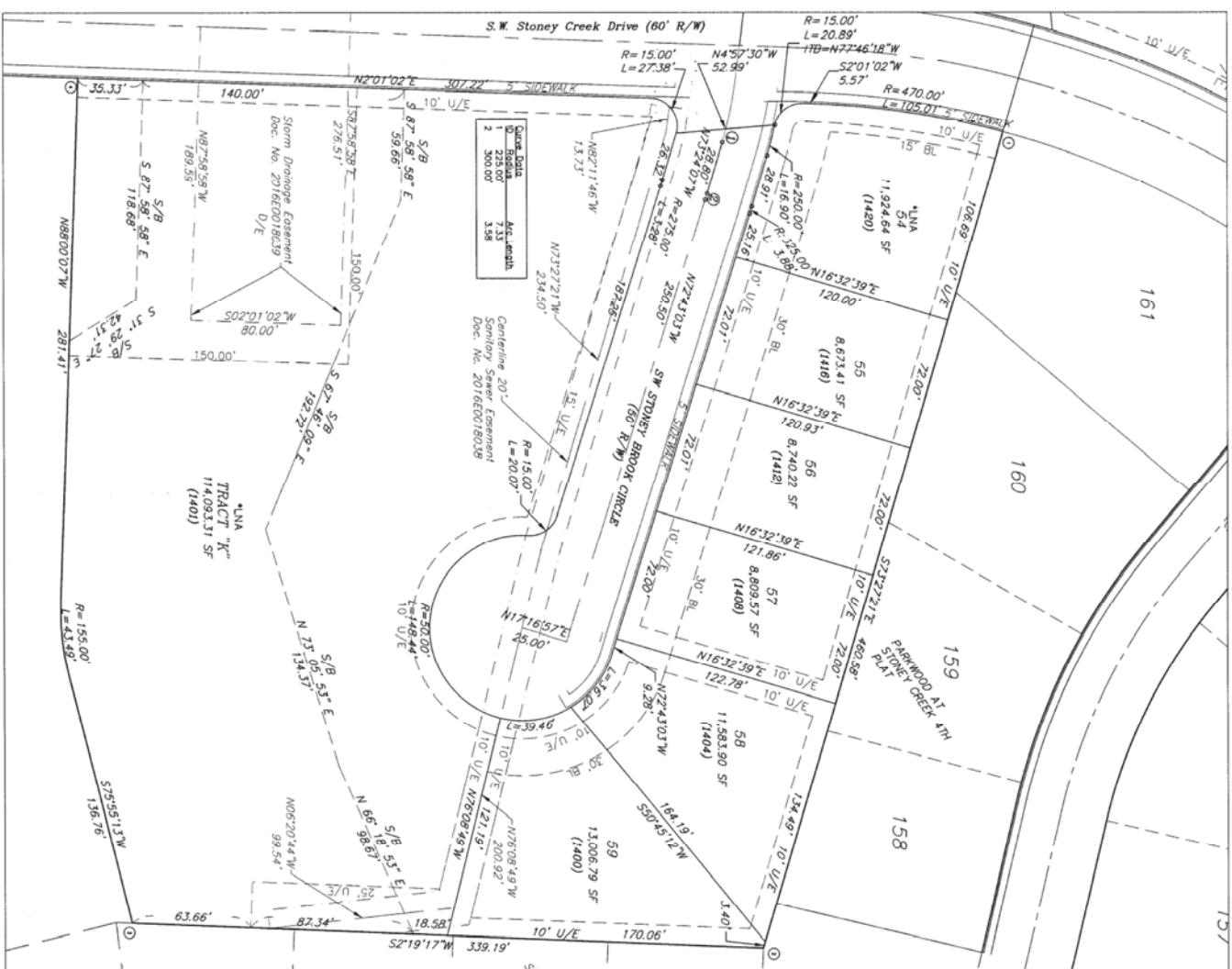
# Final Plat

## The Reserve at Stoney Creek 2nd Plat Lots 54 - 59 & Tract K Section 36, Township 47, Range 32 Lee's Summit, Jackson County, Missouri



### The Reserve at Stoney Creek 2nd Plat Lots 54 - 59 & Tract K Section 36, Township 47, Range 32 Lee's Summit, Jackson County, Missouri

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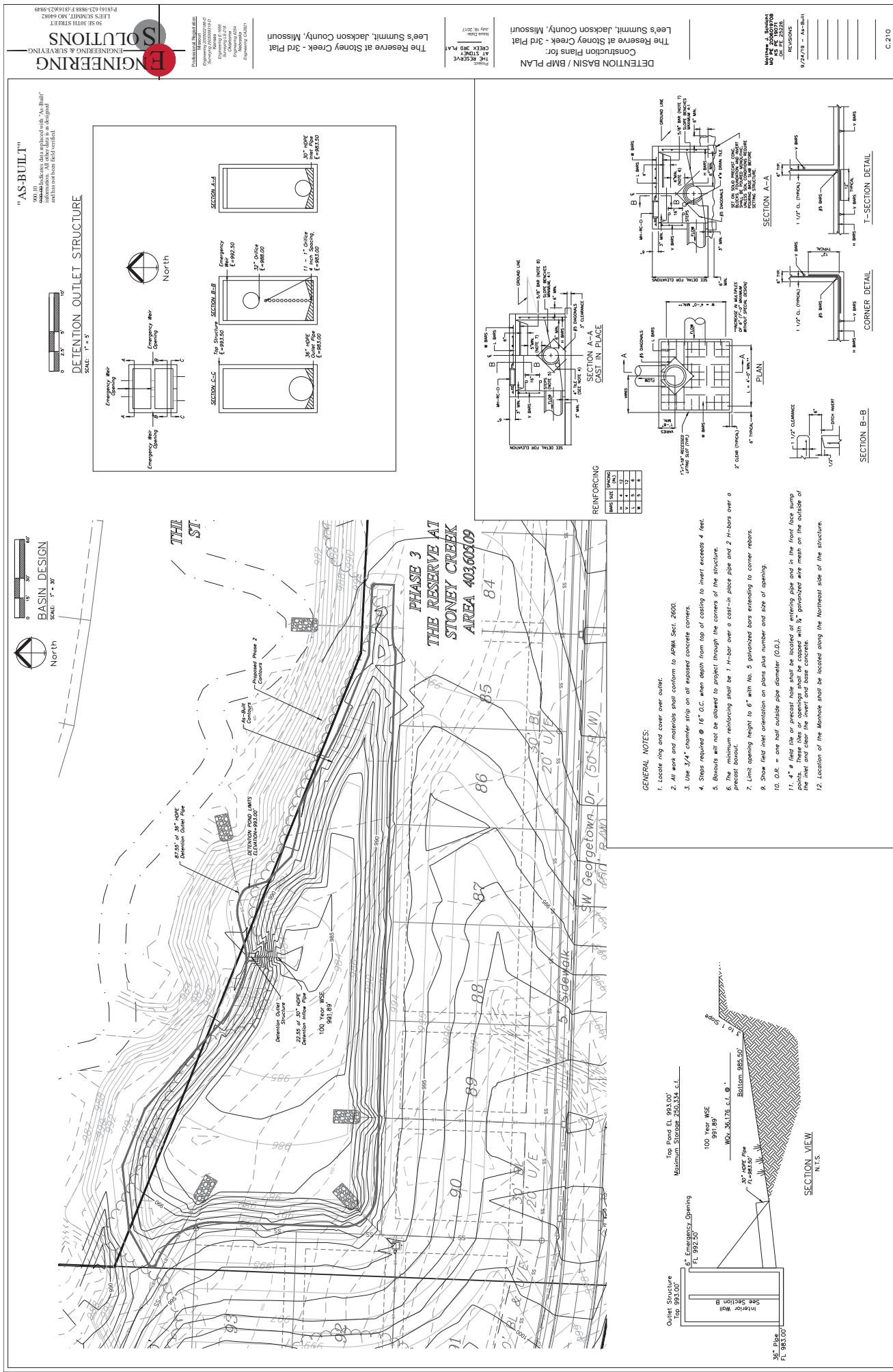
# Appendix B

## As-built of Constructed BMP / Basin Facilities

- Tract J, The Reserve at Stoney Creek, 1<sup>st</sup> Plat
- Tract K, The Reserve at Stoney Creek, 2<sup>nd</sup> Plat
- Tract L, The Reserve at Stoney Creek, 3<sup>rd</sup> Plat
- Tract P, The Manor at Stoney Creek, 2<sup>nd</sup> Plat









# **Appendix C**

## **Stormwater BMP Basin Inspection Form**

## STORMWATER BMP INSPECTION REPORT FORM

Location of BMP: \_\_\_\_\_  
Date of Inspection: \_\_\_\_\_

BMP Type: \_\_\_\_\_  
Inspected by: \_\_\_\_\_

Maintenance Item	Yes	No	N/A	Comments
Functioning to avoid complaints				
Aesthetically maintained				
Free of trash and debris				
Good vegetation cover				
Free of invasive species				
Evidence of erosion				
Bottom of basin clear of excess sediment				
Outlet structure in working condition				
Spillway in working condition				

Action to be taken: \_\_\_\_\_  
\_\_\_\_\_

# **Appendix D**

## **Ownership Forms**

## OWNERSHIP INFORMATION

Ownership information shall be updated in the event the property owner where the stormwater BMP's are located changes. Below is contact information for the property owner, shall they need to be contacted regarding the stormwater BMPs.

Stormwater BMP Property Ownership	
Property Owner	Clayton Properties Group, dba Summit Homes
Contact Person	Travis Ruf
Address	120 SE 30 <sup>th</sup> Street, Lee's Summit, MO 64082
Phone Number	816.246.6700
Email Address	development@summithomeskc.com

Stormwater BMP Property Change of Ownership	
Property Owner	
Contact Person	
Address	
Phone Number	
Email Address	

Stormwater BMP Property Change of Ownership	
Property Owner	
Contact Person	
Address	
Phone Number	
Email Address	

Stormwater BMP Property Change of Ownership	
Property Owner	
Contact Person	
Address	
Phone Number	
Email Address	