



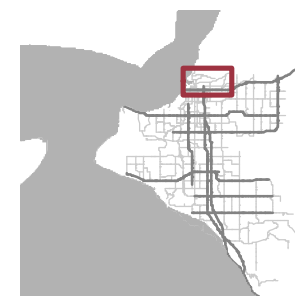
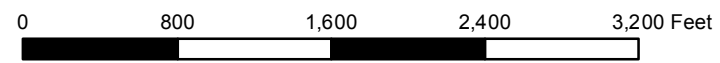




LEGEND

 2016 Investigated Outfall
 Stream

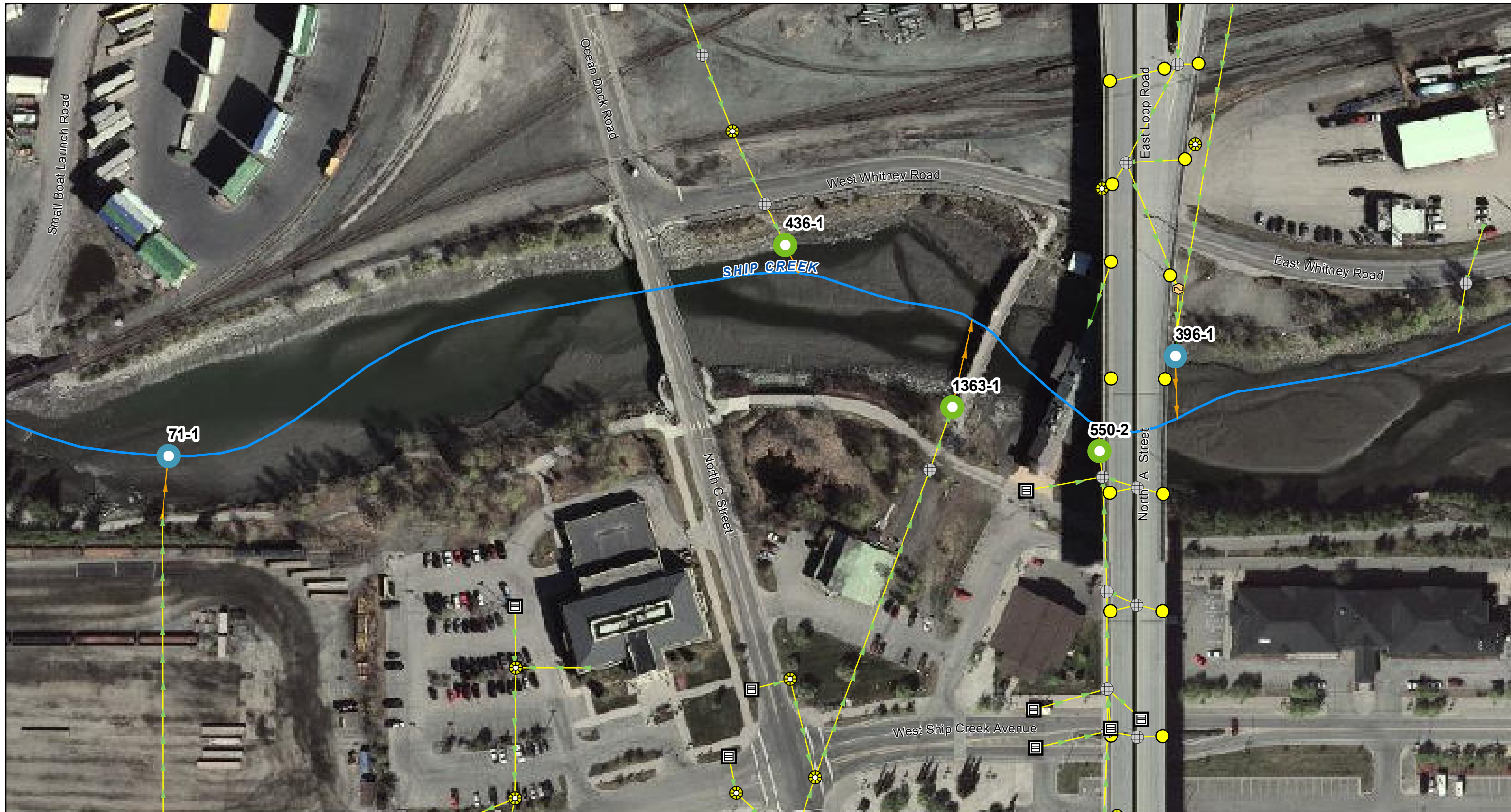
 Map Page Index
 Watershed Boundary






Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Map Index




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016













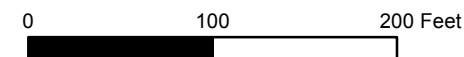
LEGEND

-  Stream
-  2016 Sampled Outfall
-  2016 Examined Outfall, Alternate

- Drainage Ways**
-  Pipe
 -  Routing
 -  Open Channel

- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  OGS
 -  Outfall

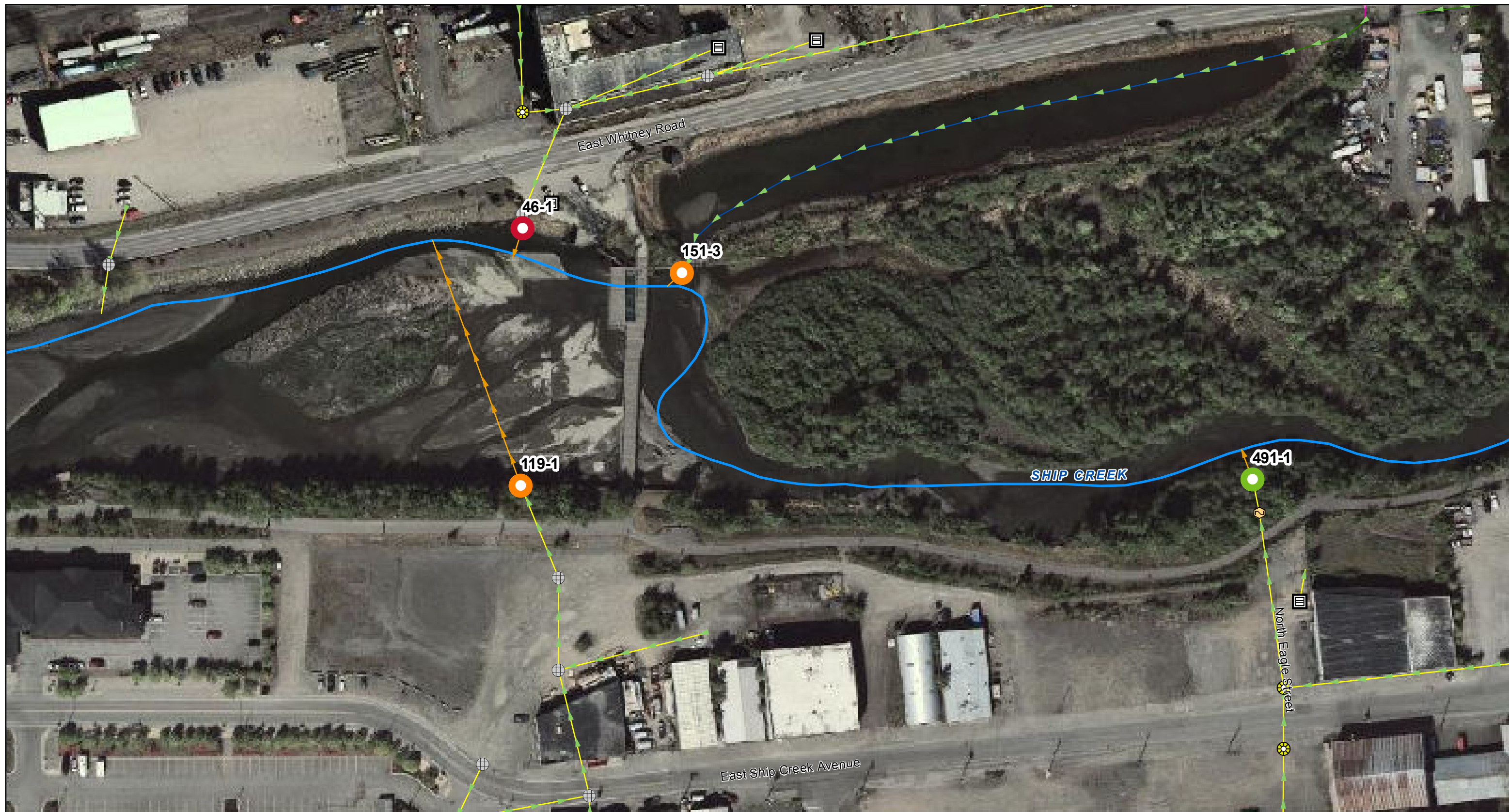
-  Outfall Major
-  Outfall Minor
-  Outlet







Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 1

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016

















LEGEND

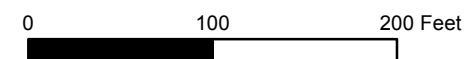
-  Stream
-  2016 Sampled Outfall
-  2016 Examined Outfall, Not Suitable
-  2016 Could Not Locate Outfall

Drainage Ways

-  Continuity
-  Pipe
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

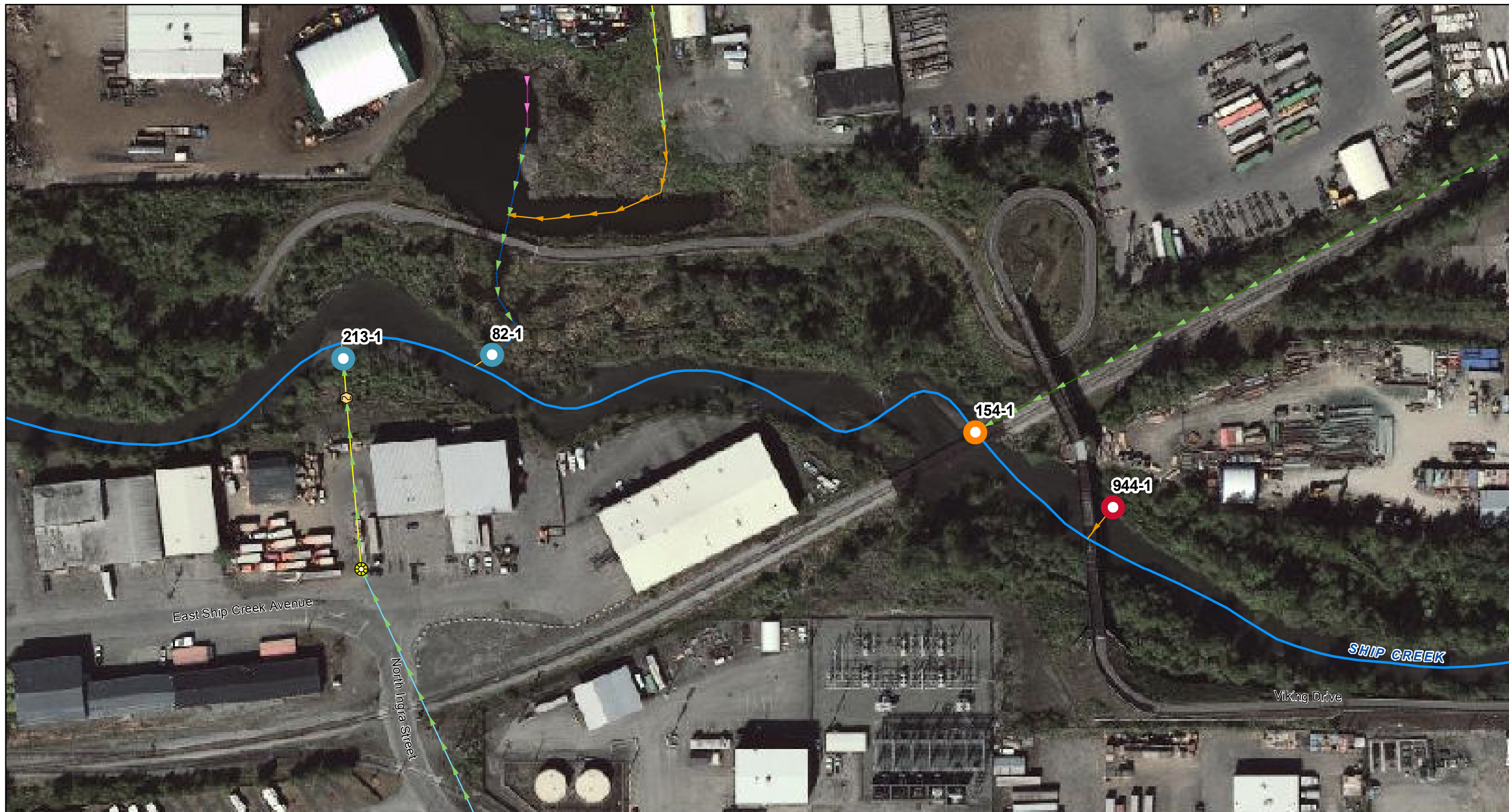
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outfall Minor







Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 2

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016















LEGEND

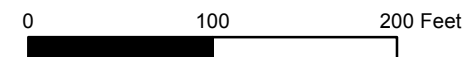
-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable
-  2016 Could Not Locate Outfall

Drainage Ways

-  Continuity
-  Pipe
-  Inlet
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

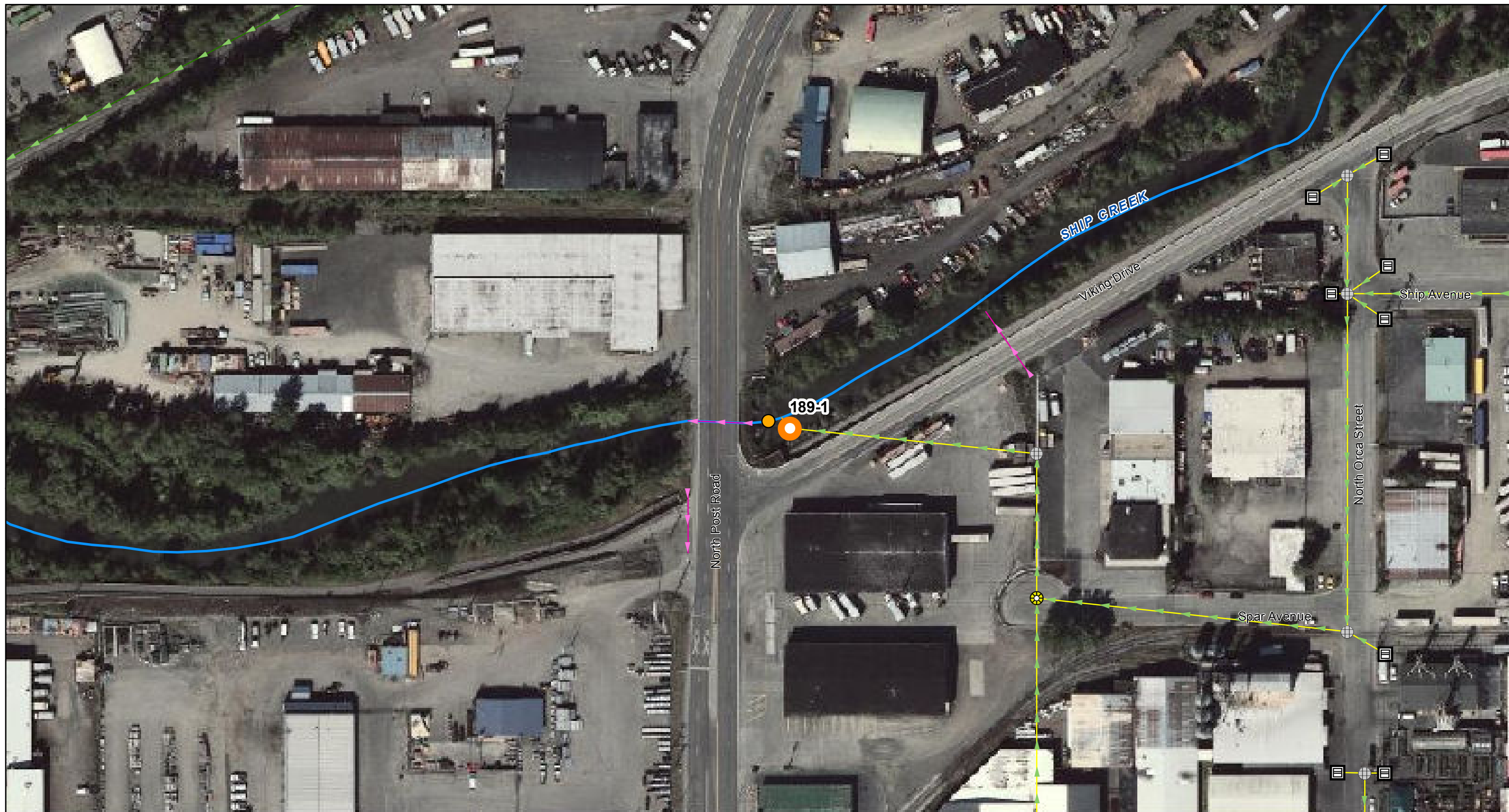
-  Catchbasin Manhole
-  OGS
-  Outfall
-  Outfall Major





Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 3

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016














LEGEND

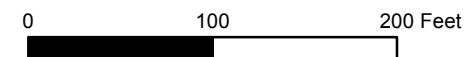
-  Stream
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

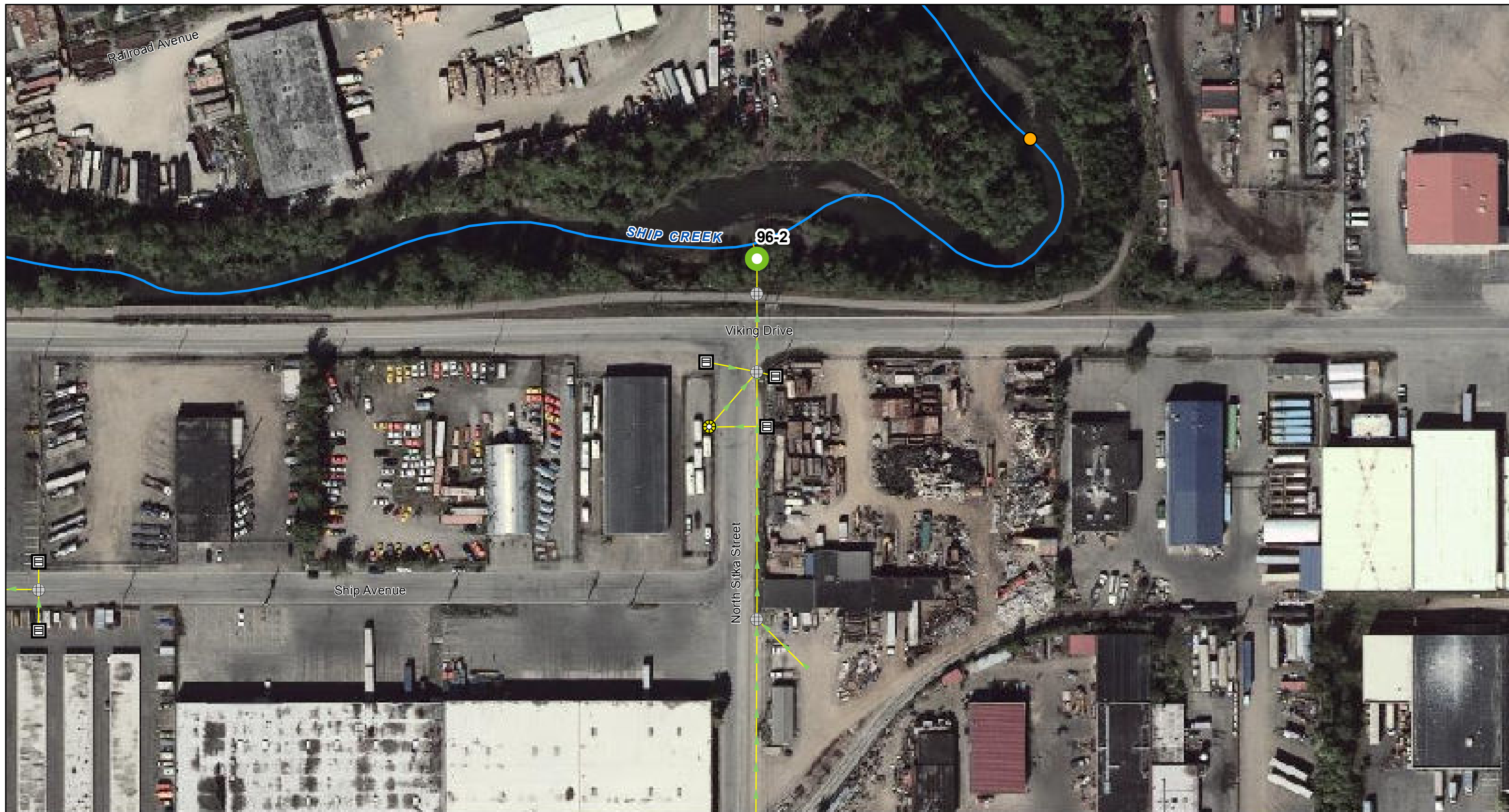
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  Outfall
-  Outfall Major





Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 4



Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016








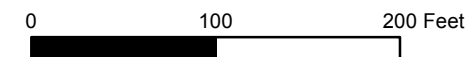


LEGEND

-  Stream
-  2016 Sampled Outfall

- Drainage Ways**
-  Pipe
 -  Routing

- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  Outfall
 -  Outfall Major






Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 5

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





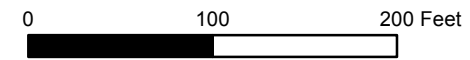


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Could Not Locate Outfall

- Drainage Ways**
-  Routing
 -  Xing Culvert

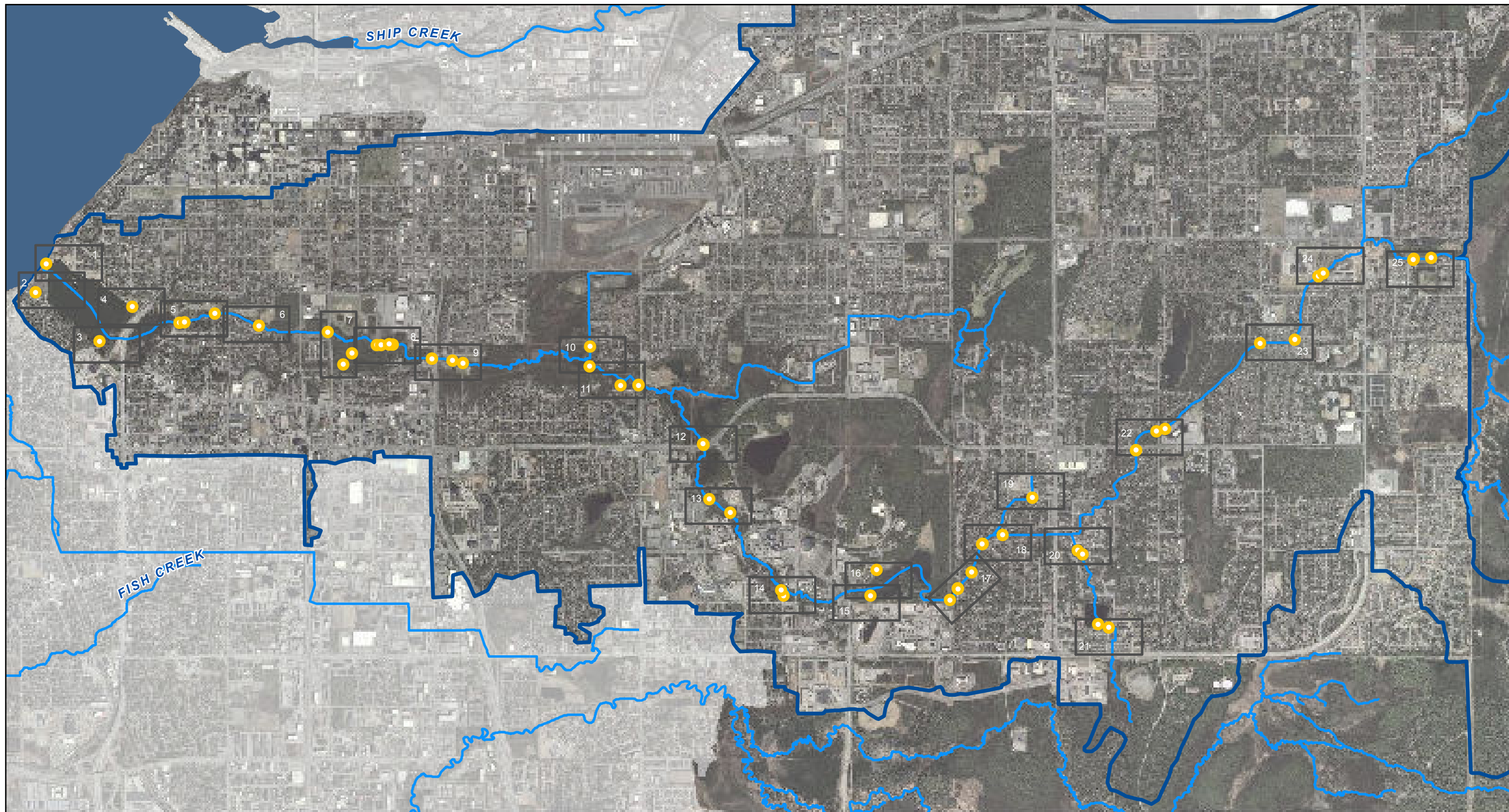
- Drainage Way Nodes**
-  Outfall
 -  Outfall Major



Dry Weather Screening 2016
Ship Creek
 Examined and Sampled Outfalls
Page 6

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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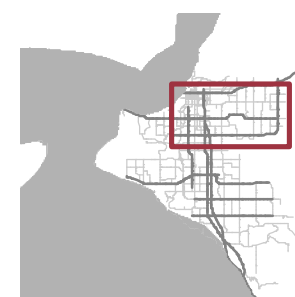
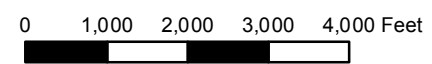




LEGEND

- 2016 Investigated Outfall
- ~ Stream

- Map Page Index
- + Watershed Boundary





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Map Index



Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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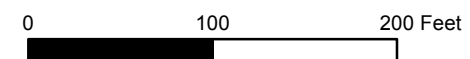


LEGEND

-  Stream
-  2016 Could Not Locate Outfall

- Drainage Ways**
-  Pipe
 -  Ephemeral Channel

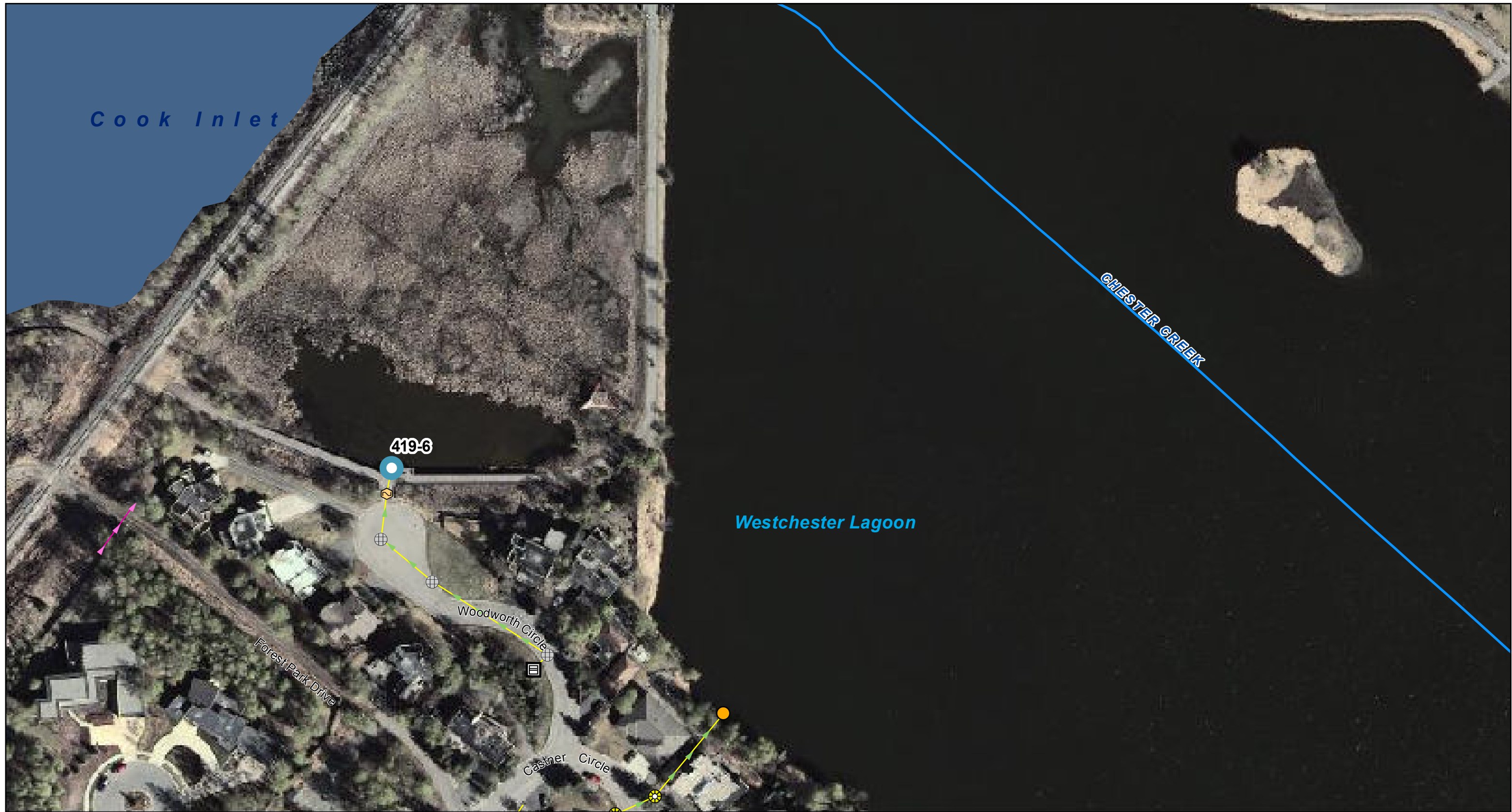
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  Outfall





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 1

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
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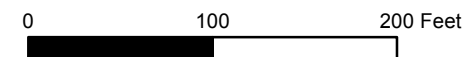


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate

- Drainage Ways**
-  Pipe
 -  Xing Culvert

- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  OGS
 -  Outfall





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 2

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
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LEGEND

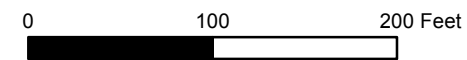
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe
-  Routing

Drainage Way Nodes

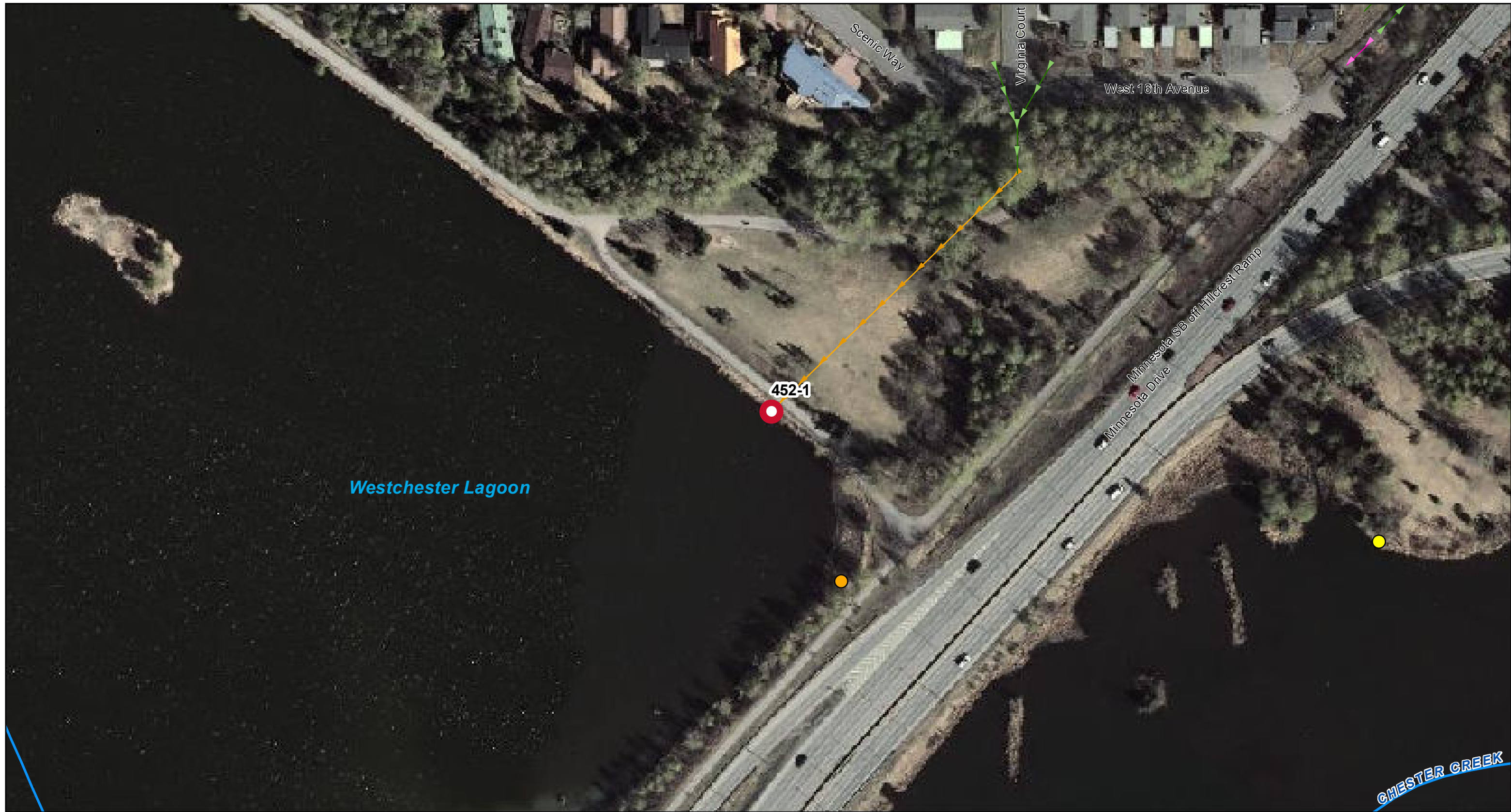
-  Catch Basin
-  Catchbasin Manhole
-  Curb Inlet
-  Manhole
-  OGS
-  Outfall
-  Outfall Major





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 3

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016











LEGEND

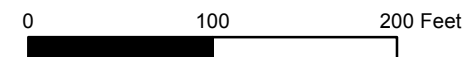
-  Stream
-  2016 Could Not Locate Outfall

Drainage Ways

-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

-  Outfall
-  Outfall Minor
-  Outlet






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 4

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016








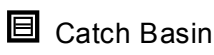

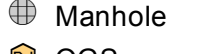

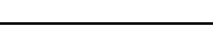
LEGEND




-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Could Not Locate Outfall

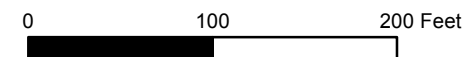
Drainage Ways

-  Pipe
-  Routing
-  Open Channel

Drainage Way Nodes

-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall

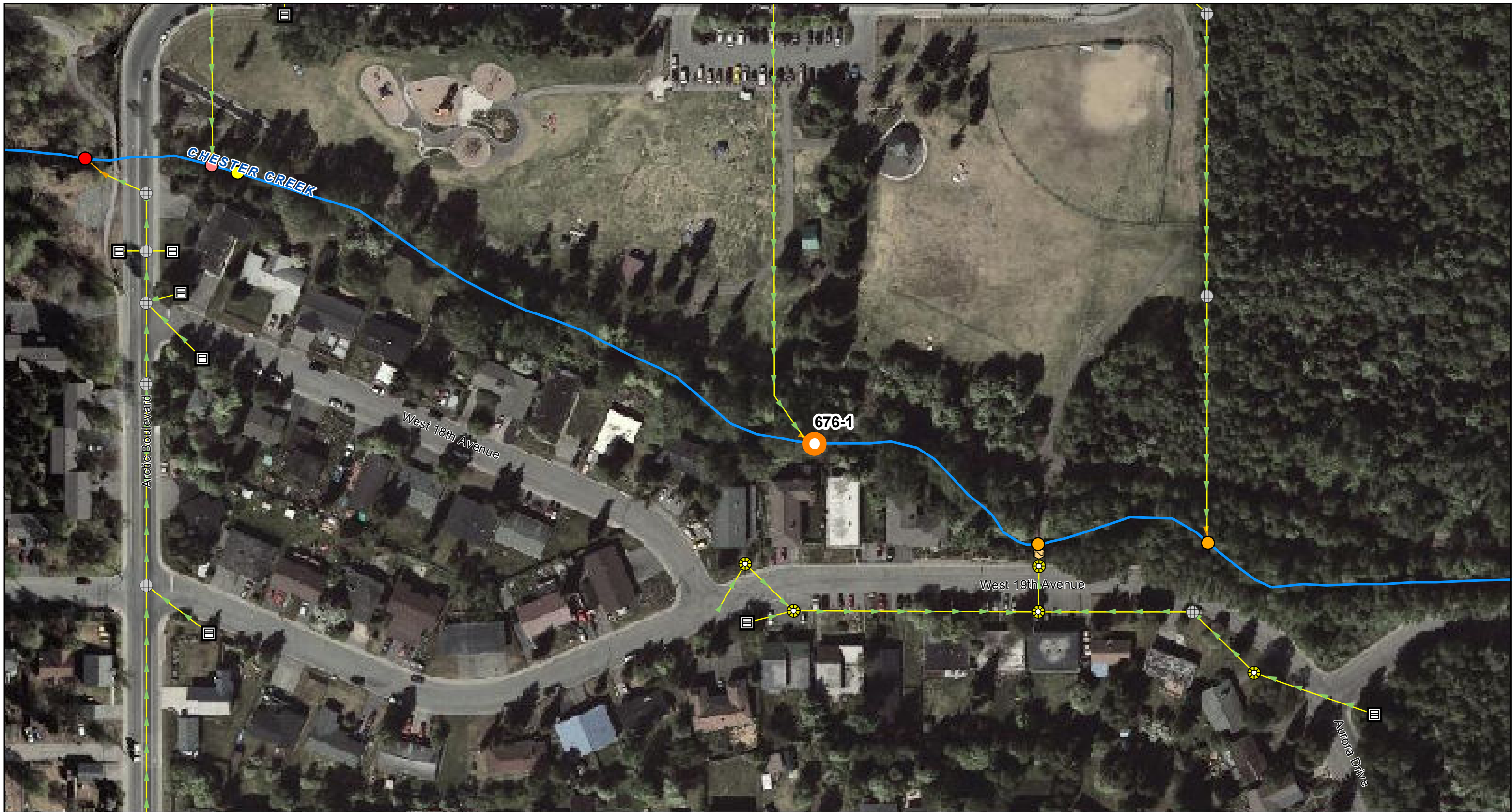
-  Outfall Major
-  Outfall Minor
-  Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 5

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

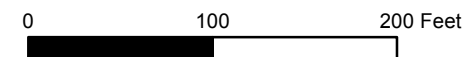
-  Stream
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Routing

Drainage Way Nodes

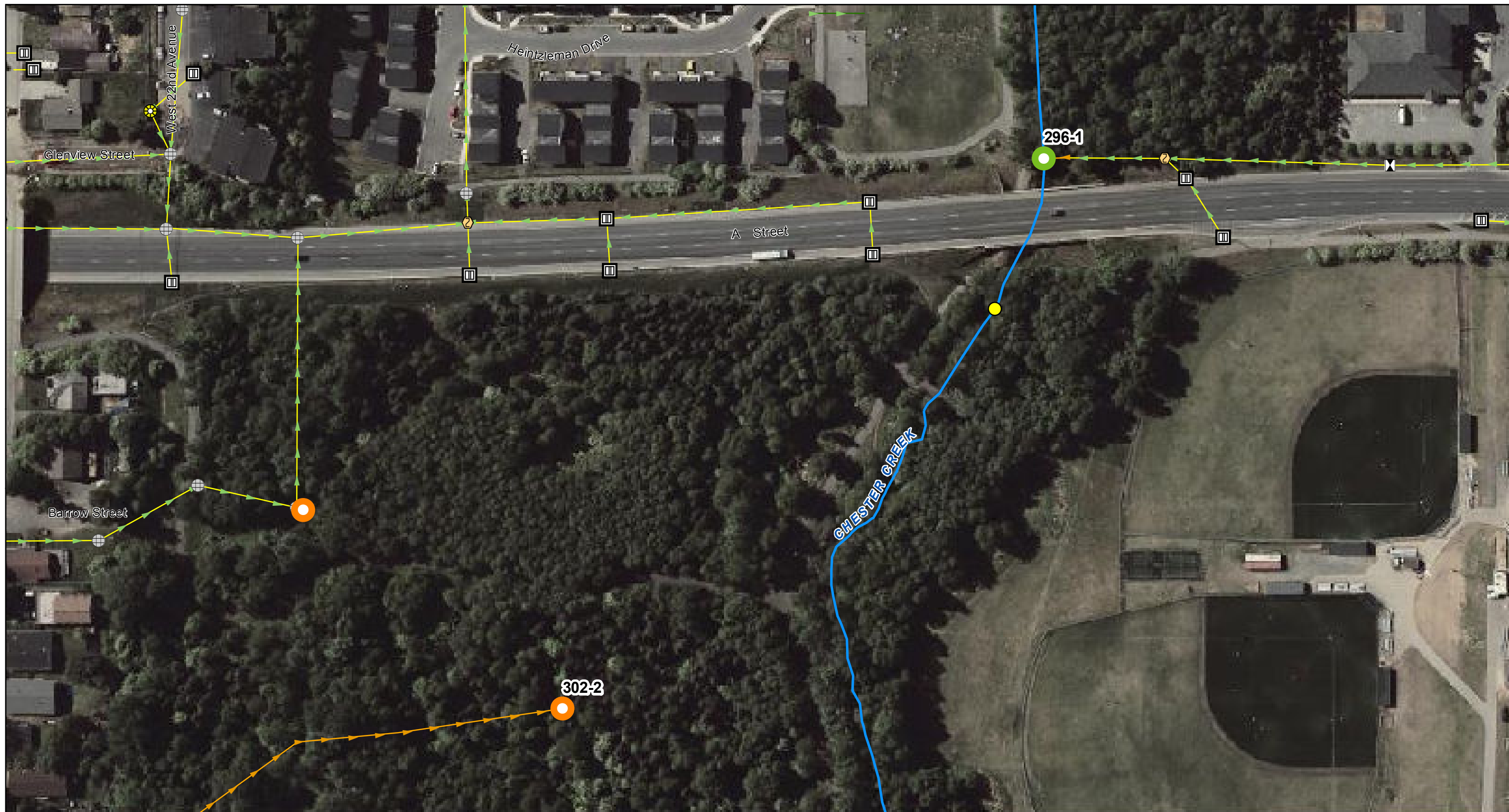
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outfall Minor
-  Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 6

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

Stream

2016 Sampled Outfall

2016 Examined Outfall, Not Suitable

Drainage Ways

Pipe

Routing

Open Channel

Drainage Way Nodes

Blind Connect

Catch Basin

Catchbasin Manhole

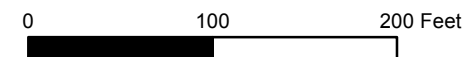
Manhole

OGS

Outfall Major

Outfall Minor

Outlet



Dry Weather Screening 2016

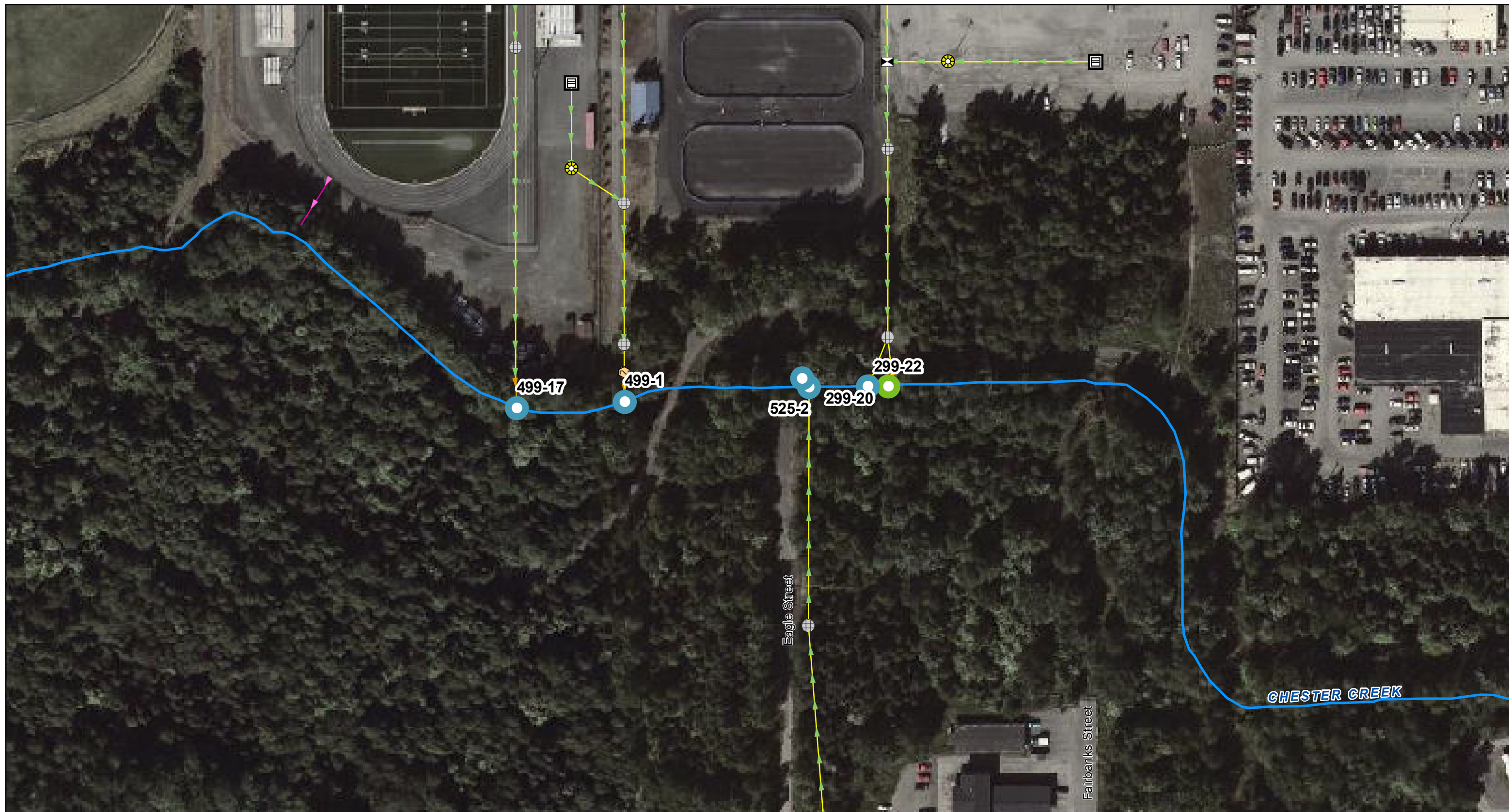
Chester Creek

Examined and Sampled Outfalls

Page 7

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016



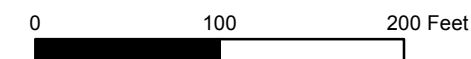


LEGEND

- Stream
- 2016 Sampled Outfall
- 2016 Examined Outfall, Alternate

- Drainage Ways**
- Pipe
 - Routing
 - Xing Culvert

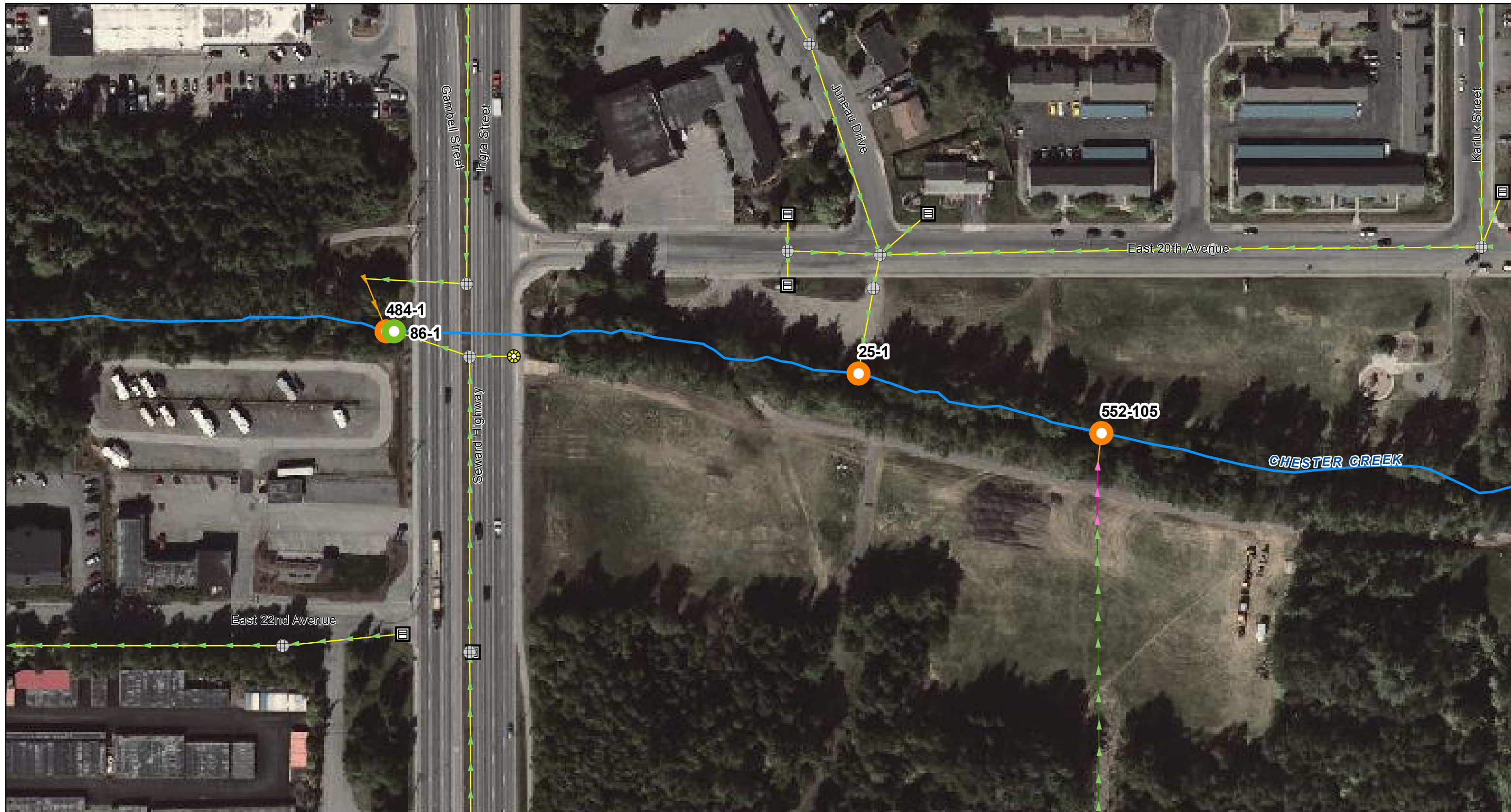
- Drainage Way Nodes**
- Blind Connect
 - Bypass Outlet
 - Catch Basin
 - Catchbasin Manhole
 - Manhole
 - OGS
 - Outfall
 - Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 8

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

Stream

2016 Sampled Outfall

2016 Examined Outfall, Not Suitable

Drainage Ways

Pipe

Routing

Open Channel

Xing Culvert

Drainage Way Nodes

Catch Basin

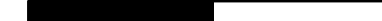
Catchbasin Manhole

Manhole

OGS

Outfall Major

0 100 200 Feet



Dry Weather Screening 2016

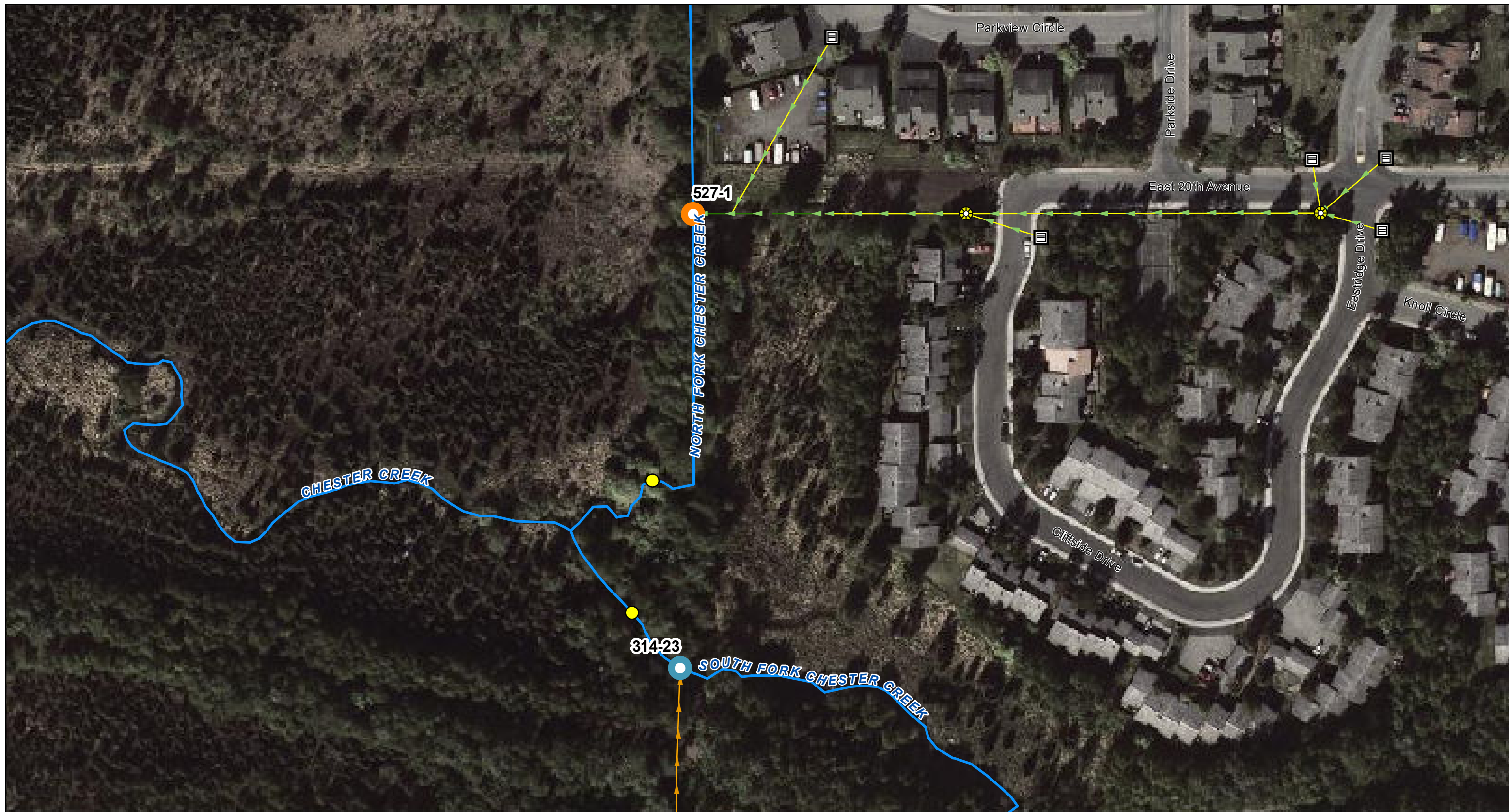
Chester Creek

Examined and Sampled Outfalls




Page 9




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016







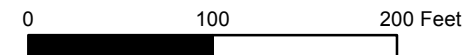


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Routing
 -  Open Channel

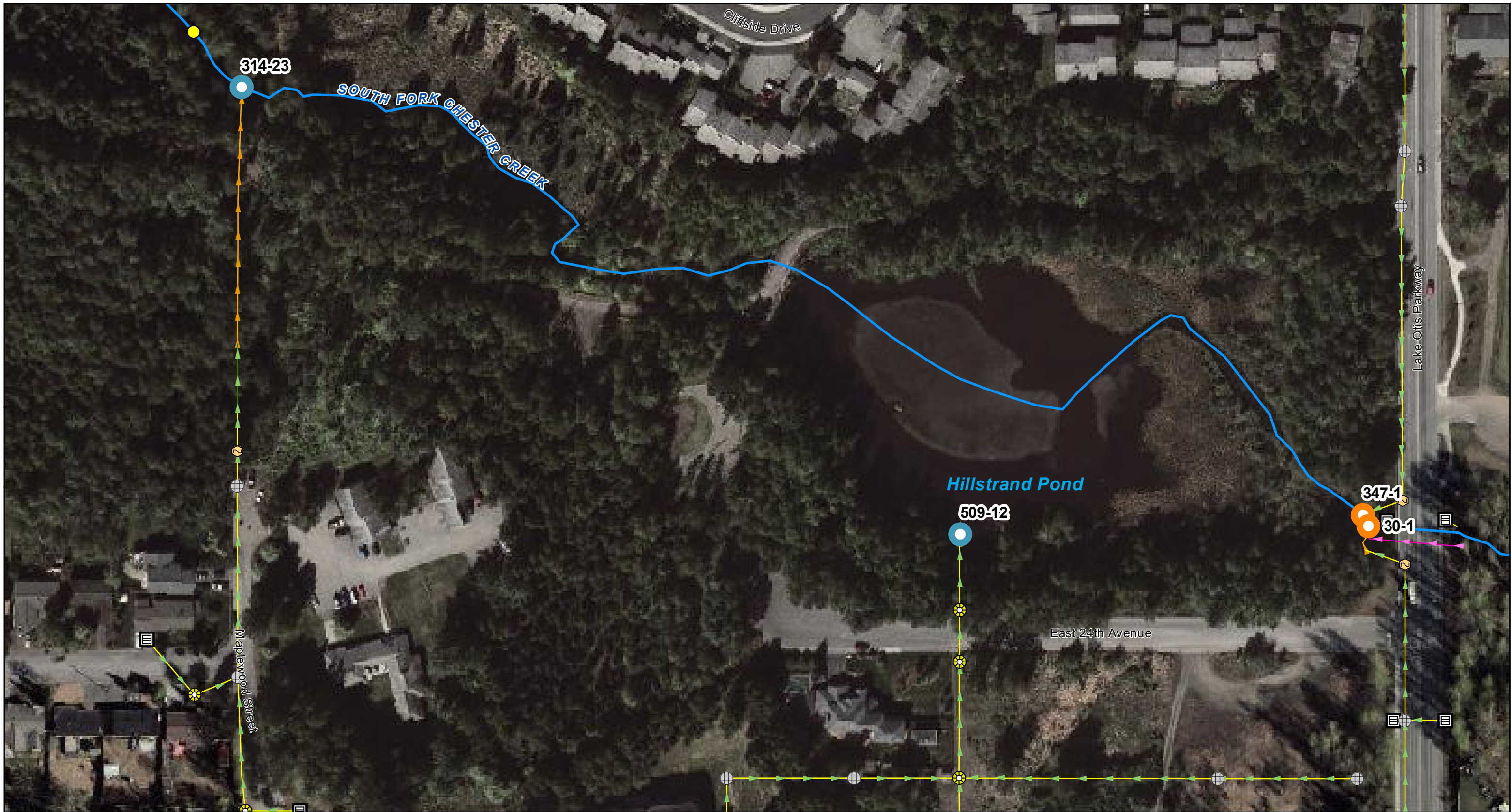
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Outfall
 -  Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 10

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

Stream

2016 Examined Outfall, Alternate

2016 Examined Outfall, Not Suitable

Drainage Ways

Pipe

Routing

Open Channel

Xing Culvert

Drainage Way Nodes

Catch Basin

Catchbasin Manhole

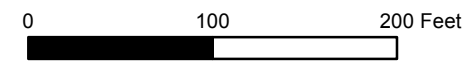
Manhole

OGS

Outfall

Outfall Major

Outlet



Dry Weather Screening 2016

Chester Creek

Examined and Sampled Outfalls




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Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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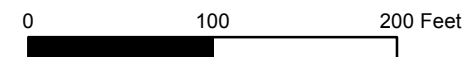


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Open Channel

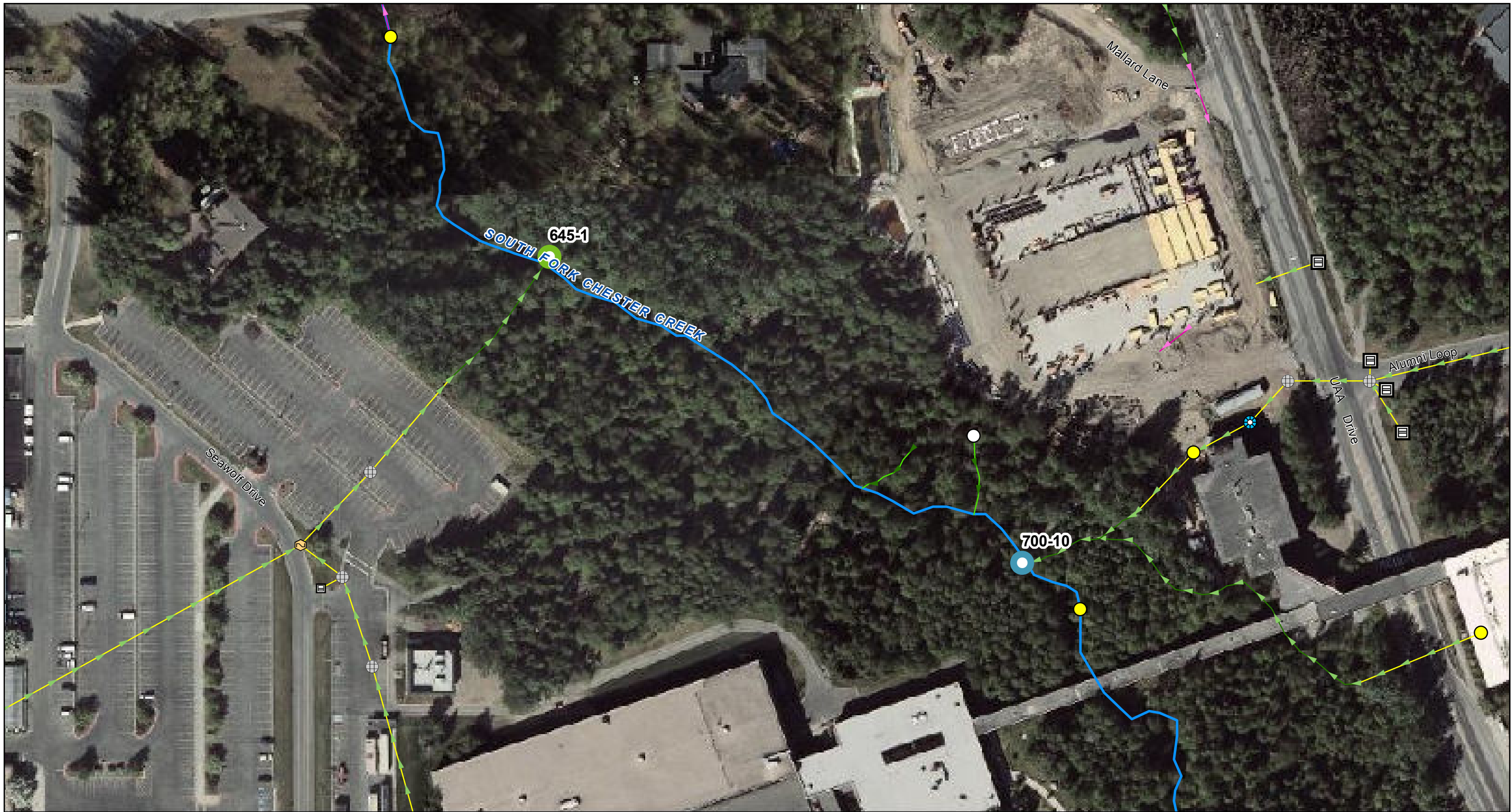
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  OGS
 -  Outfall






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 12

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





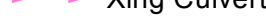




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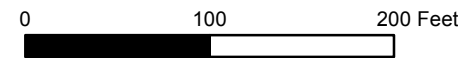
-  Stream
-  2016 Sampled Outfall
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe
-  Routing
-  Open Channel
-  Vegetated Drainage Way
-  Xing Culvert

Drainage Way Nodes

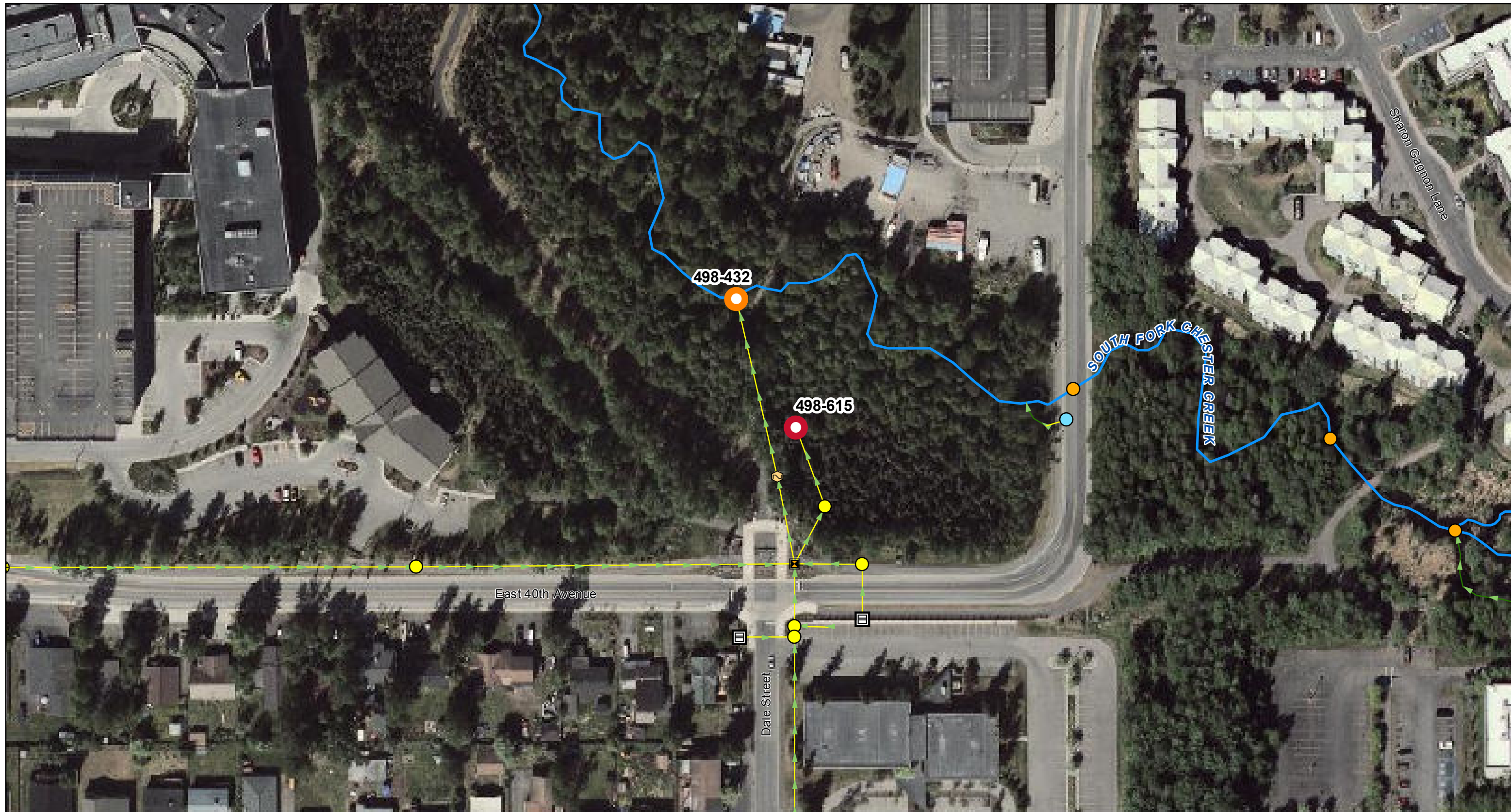
-  Catch Basin
-  Curb Inlet
-  Feature Start
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outlet
-  Top Intake Manhole






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 13



Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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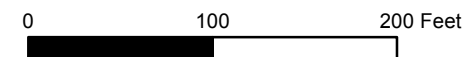


LEGEND

-  Stream
-  2016 Examined Outfall, Not Suitable
-  2016 Could Not Locate Outfall

- Drainage Ways**
-  Pipe
 -  Open Channel

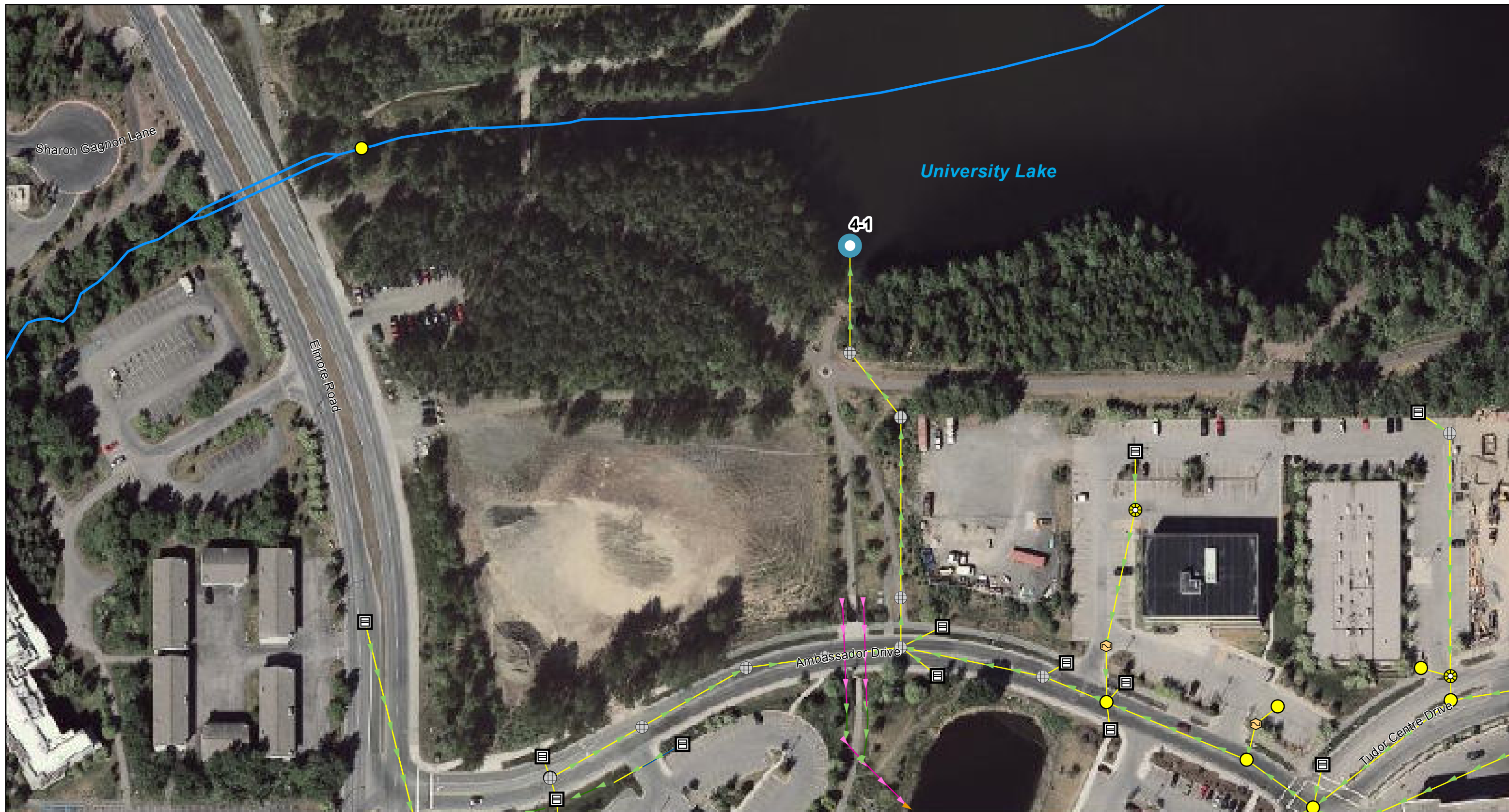
- Drainage Way Nodes**
-  Bypass Outlet
 -  Catch Basin
 -  Catchbasin Manhole
 -  Inlet
 -  OGS
 -  Outfall
 -  Outfall Major
 -  Outlet
 -  Weir





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
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Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

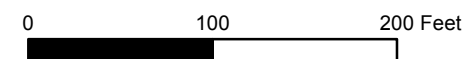
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Continuity
-  Pipe
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

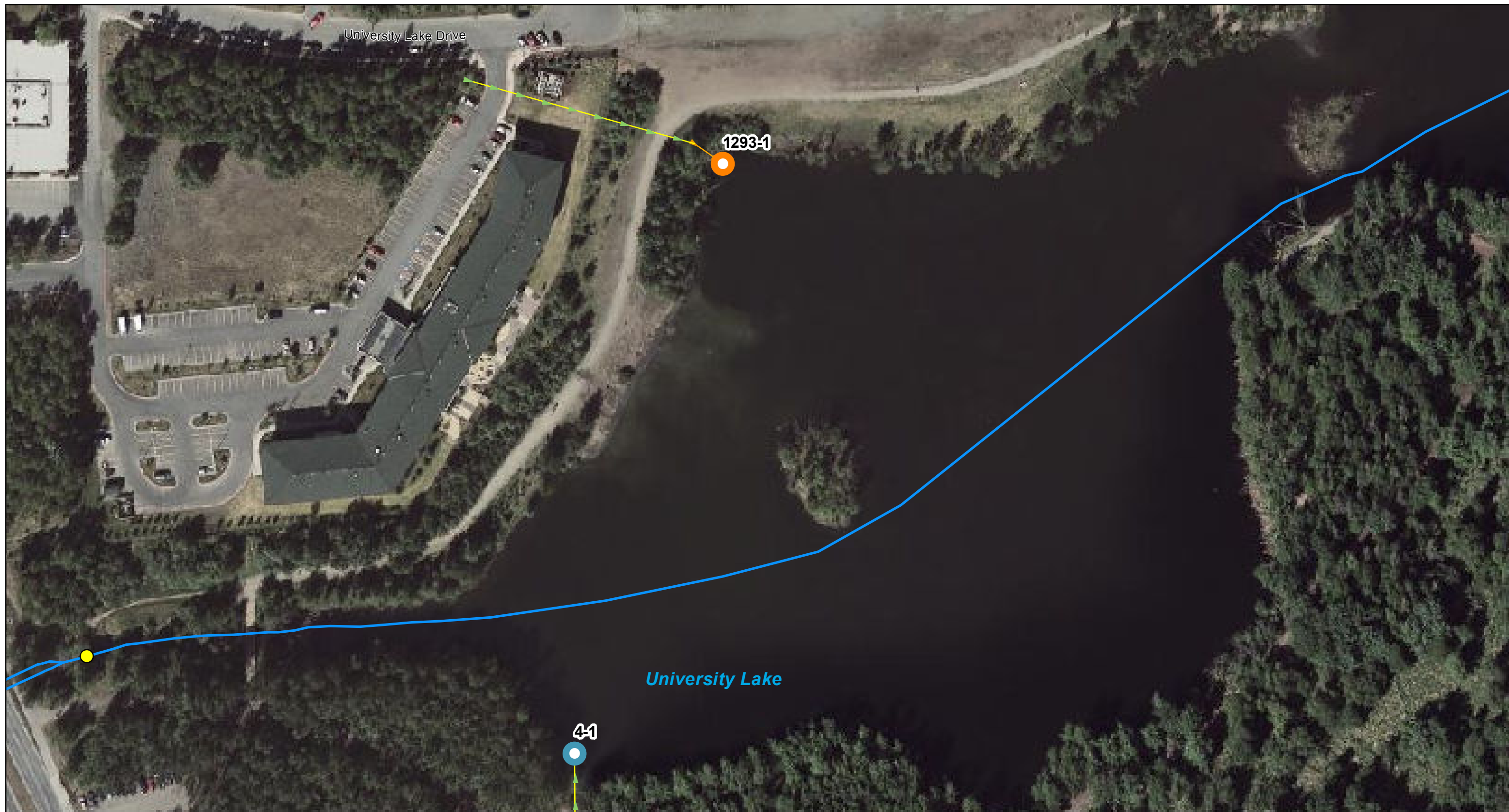
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall Major
-  Outlet






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 15



Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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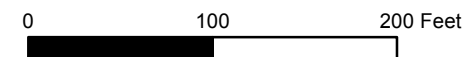


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Routing

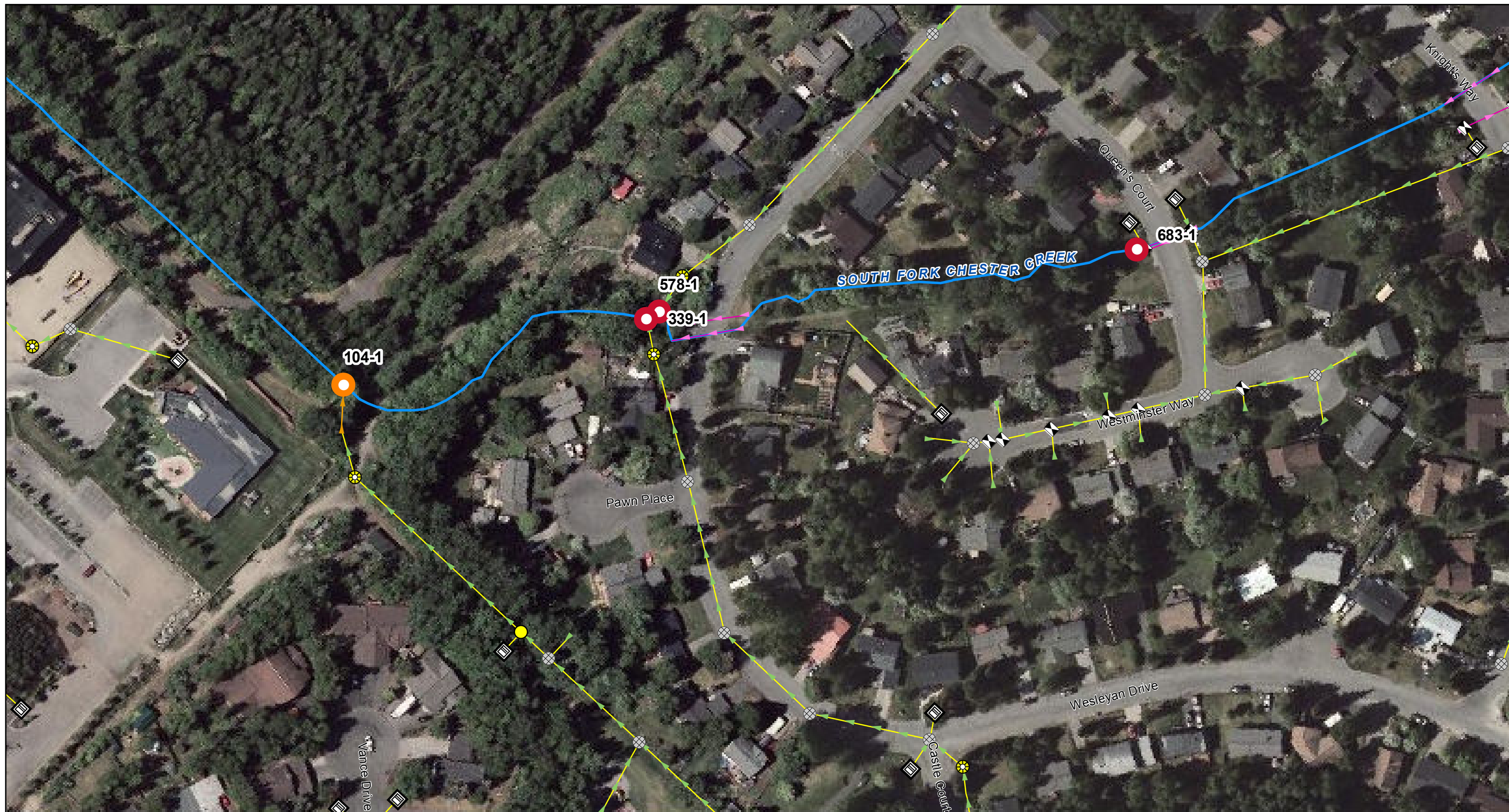
- Drainage Way Nodes**
-  Outfall Major
 -  Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 16

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

Stream

2016 Examined Outfall, Not Suitable

2016 Could Not Locate Outfall

Drainage Ways

Pipe

Routing

Xing Culvert

Drainage Way Nodes

Blind Connect

Catch Basin

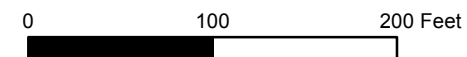
Catchbasin Manhole

Manhole

Outfall

Outfall Major

Outlet



Dry Weather Screening 2016

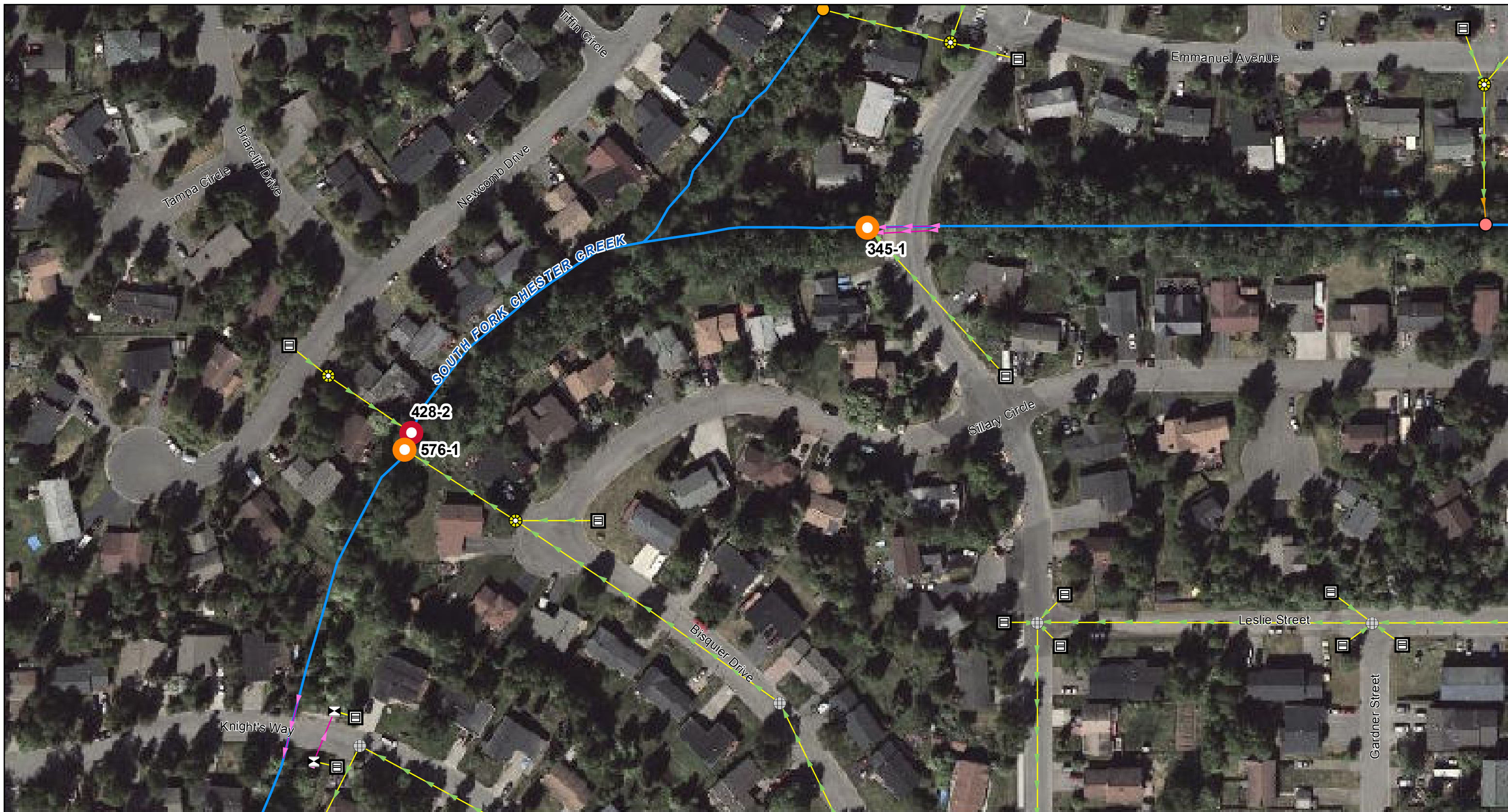
Chester Creek

Examined and Sampled Outfalls

Page 17

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

Stream

2016 Examined Outfall, Not Suitable

2016 Could Not Locate Outfall

Drainage Ways

Pipe

Routing

Xing Culvert

Drainage Way Nodes

Blind Connect

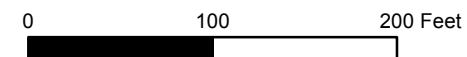
Catch Basin

Catchbasin Manhole

Manhole

Outfall

Outfall Minor



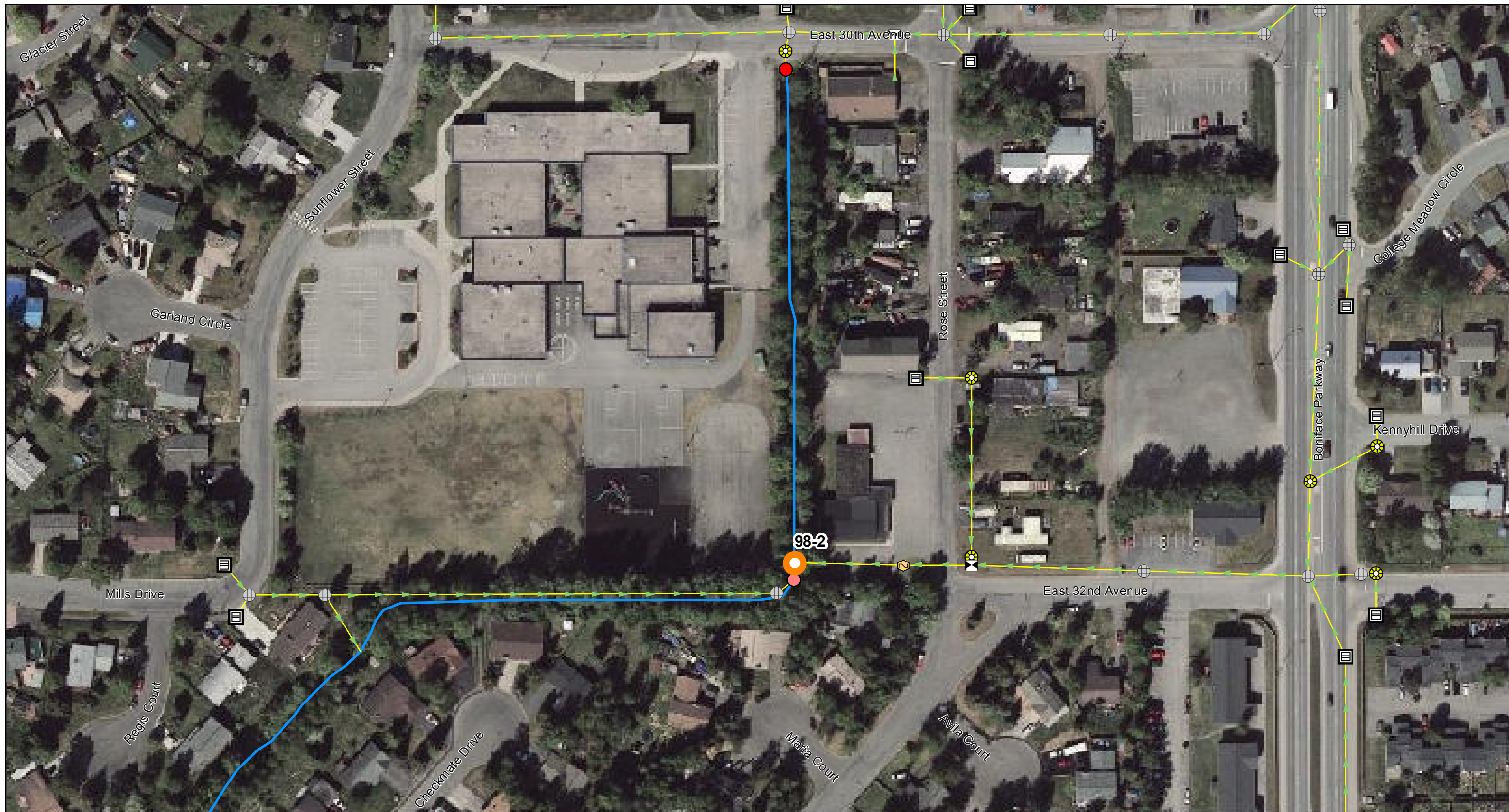
Dry Weather Screening 2016
Chester Creek

Examined and Sampled Outfalls

Page 18

Source: MOA HGDB 2016
Imagery: MOA Pictometry 2015
HDR Alaska, Inc.
12/28/2016












LEGEND

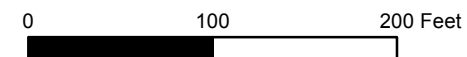
-  Stream
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe

Drainage Way Nodes

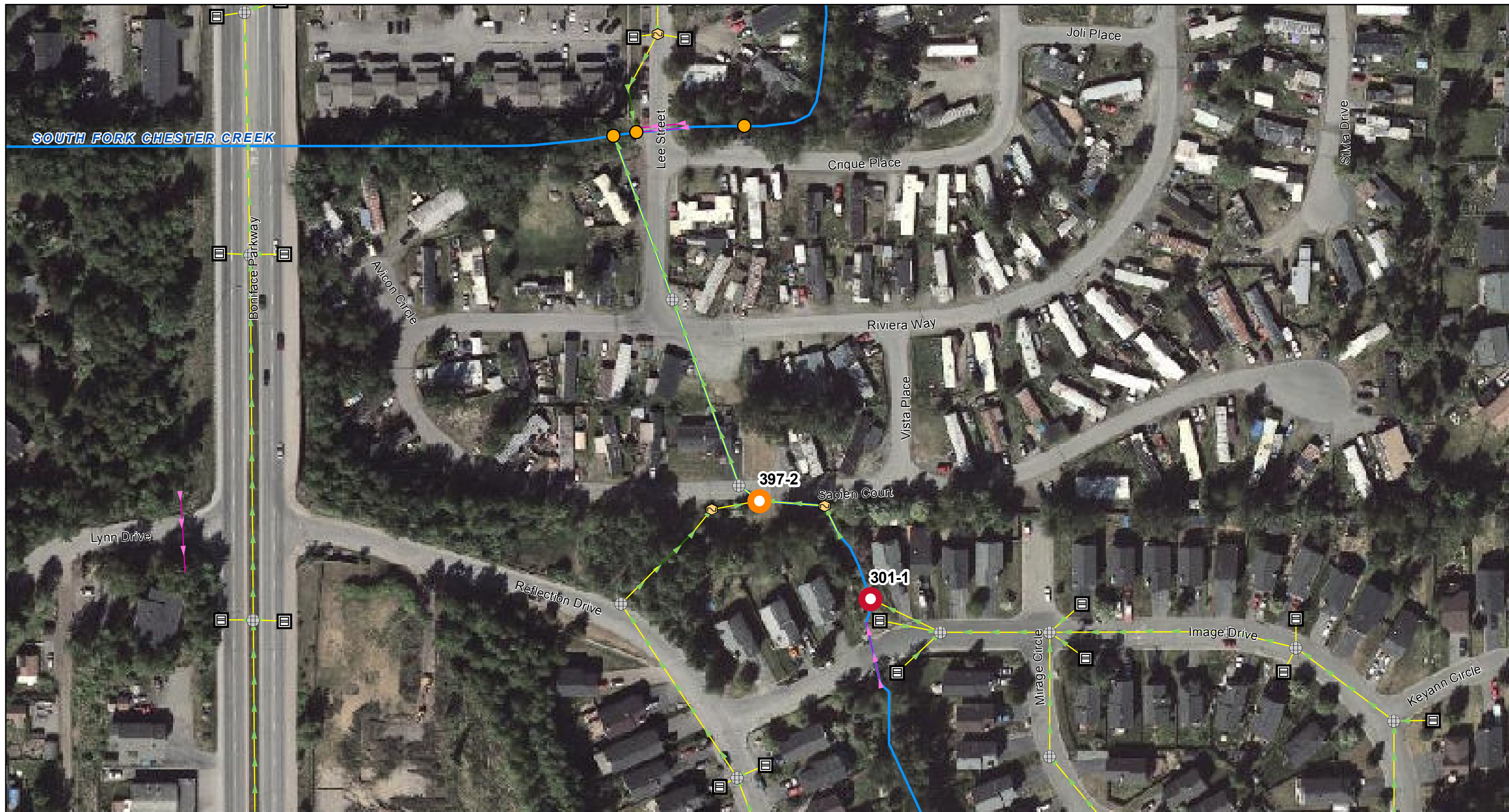
-  Blind Connect
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outfall Minor






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 19




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016







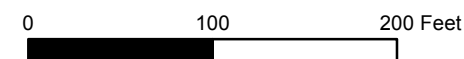


LEGEND

-  Stream
-  2016 Examined Outfall, Not Suitable
-  2016 Could Not Locate Outfall

- Drainage Ways**
-  Pipe
 -  Open Channel
 -  Xing Culvert

- Drainage Way Nodes**
-  Catch Basin
 -  Manhole
 -  OGS
 -  Outfall






Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 20

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016
















LEGEND

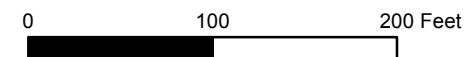
-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Inlet
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

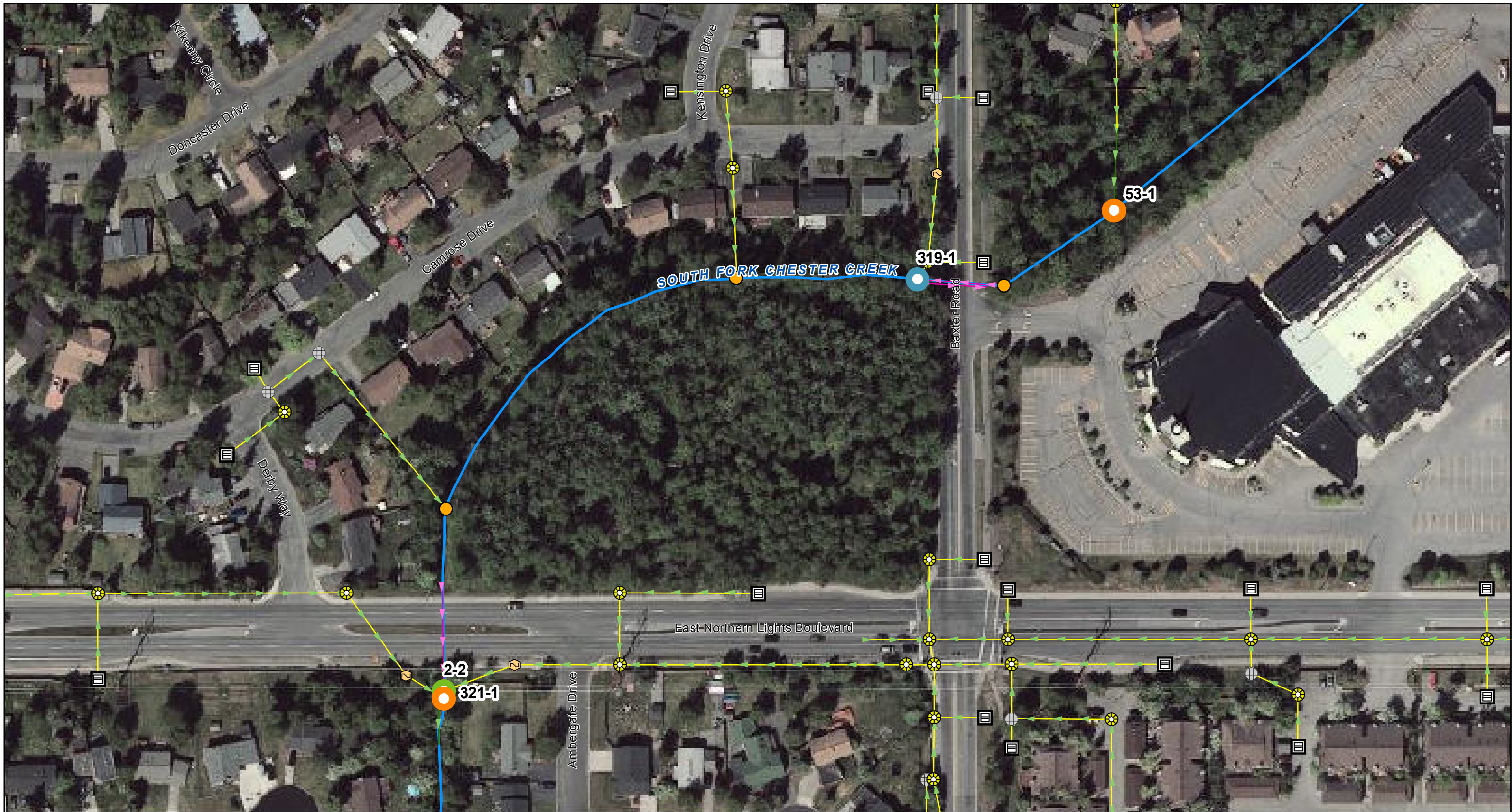
-  Catch Basin
-  Catchbasin Manhole
-  Curb Inlet
-  OGS
-  Outfall
-  Outlet



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 21

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

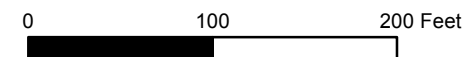
- Stream
- 2016 Sampled Outfall
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

Drainage Ways

- Pipe
- Open Channel
- Xing Culvert

Drainage Way Nodes

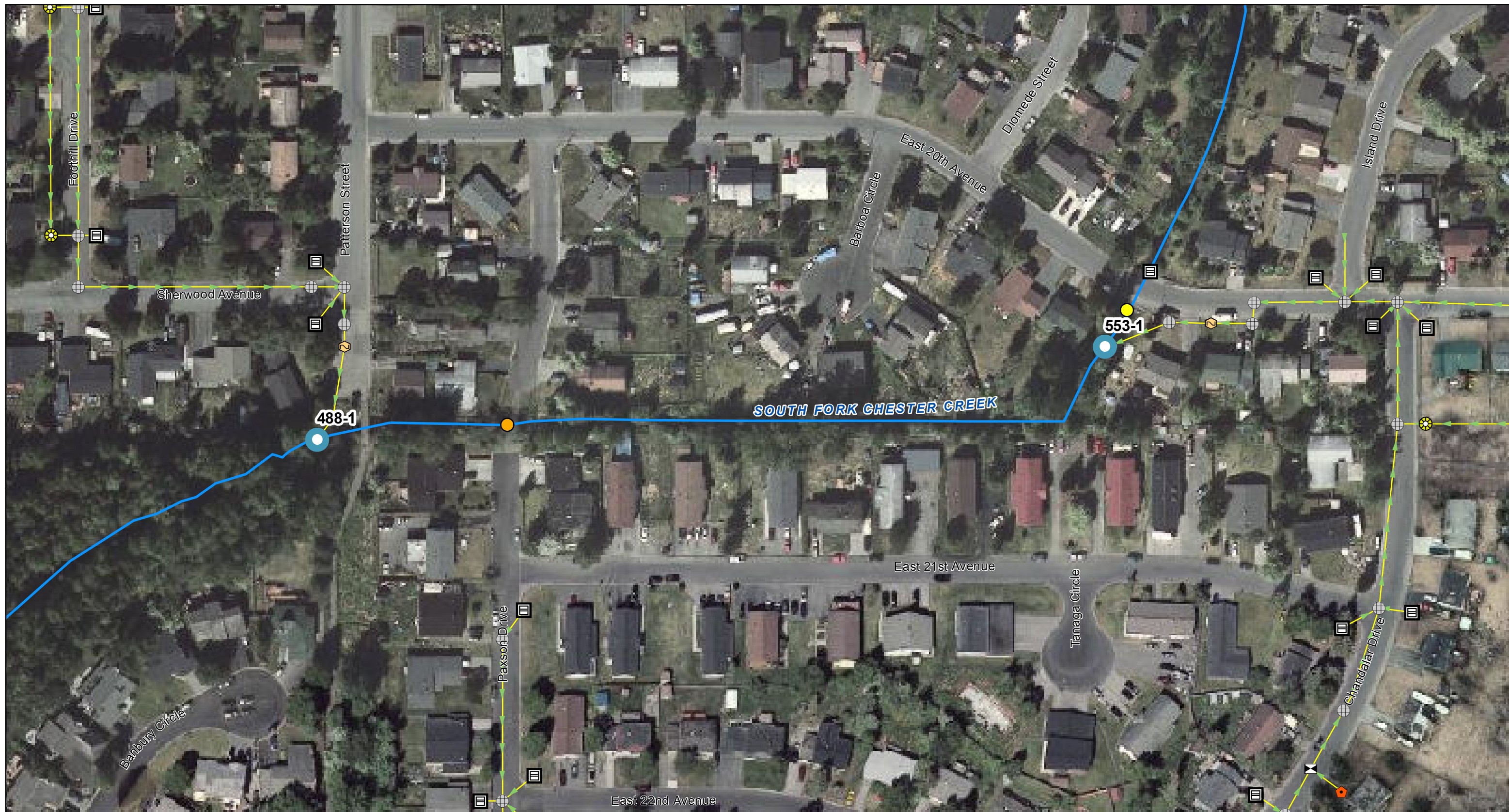
- Catch Basin
- Catchbasin Manhole
- Manhole
- OGS
- Outfall
- Outfall Major





Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 22

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016














LEGEND

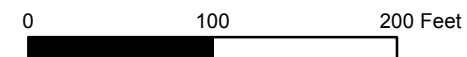
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe

Drainage Way Nodes

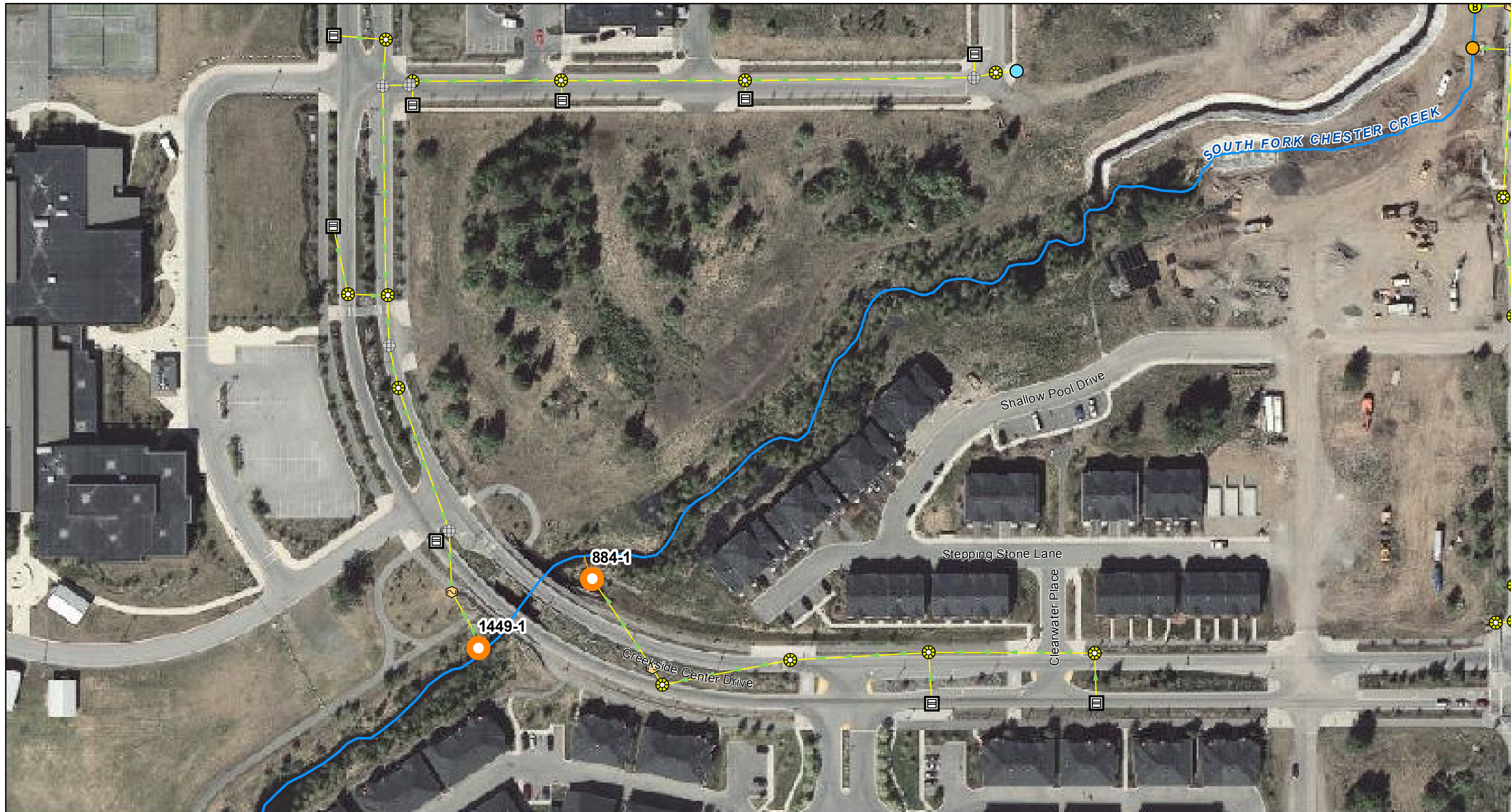
-  Blind Connect
-  Catch Basin
-  Catchbasin Manhole
-  Clean-out
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outlet




Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 23




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016










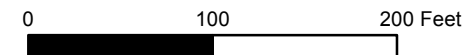


LEGEND

-  Stream
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Routing
 -  Open Channel

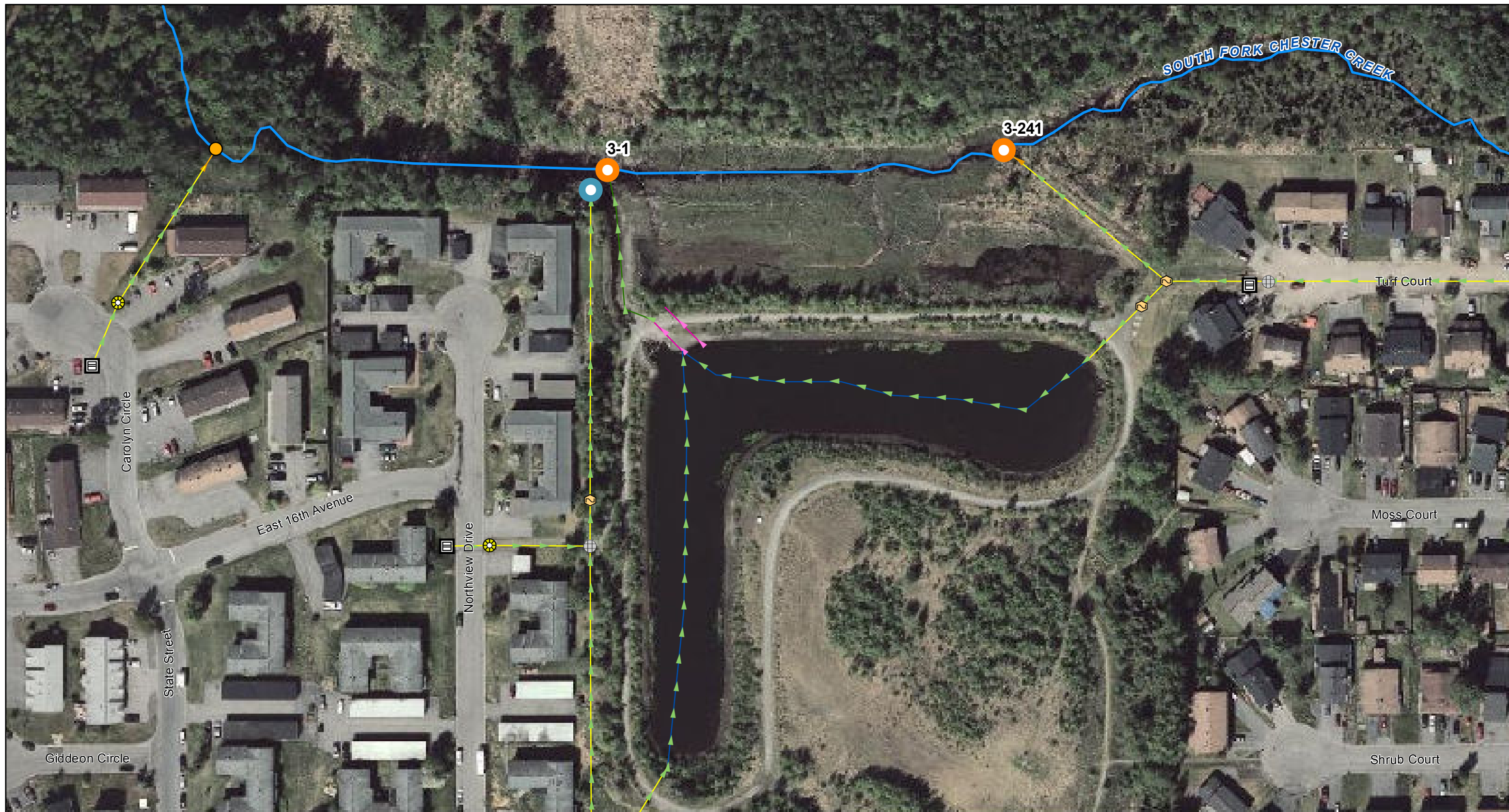
- Drainage Way Nodes**
-  Bypass Outlet
 -  OGS
 -  Catch Basin
 -  Outfall
 -  Catchbasin Manhole
 -  Inlet
 -  Manhole



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 24

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

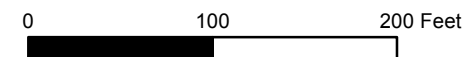
- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

Drainage Ways

- Continuity
- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

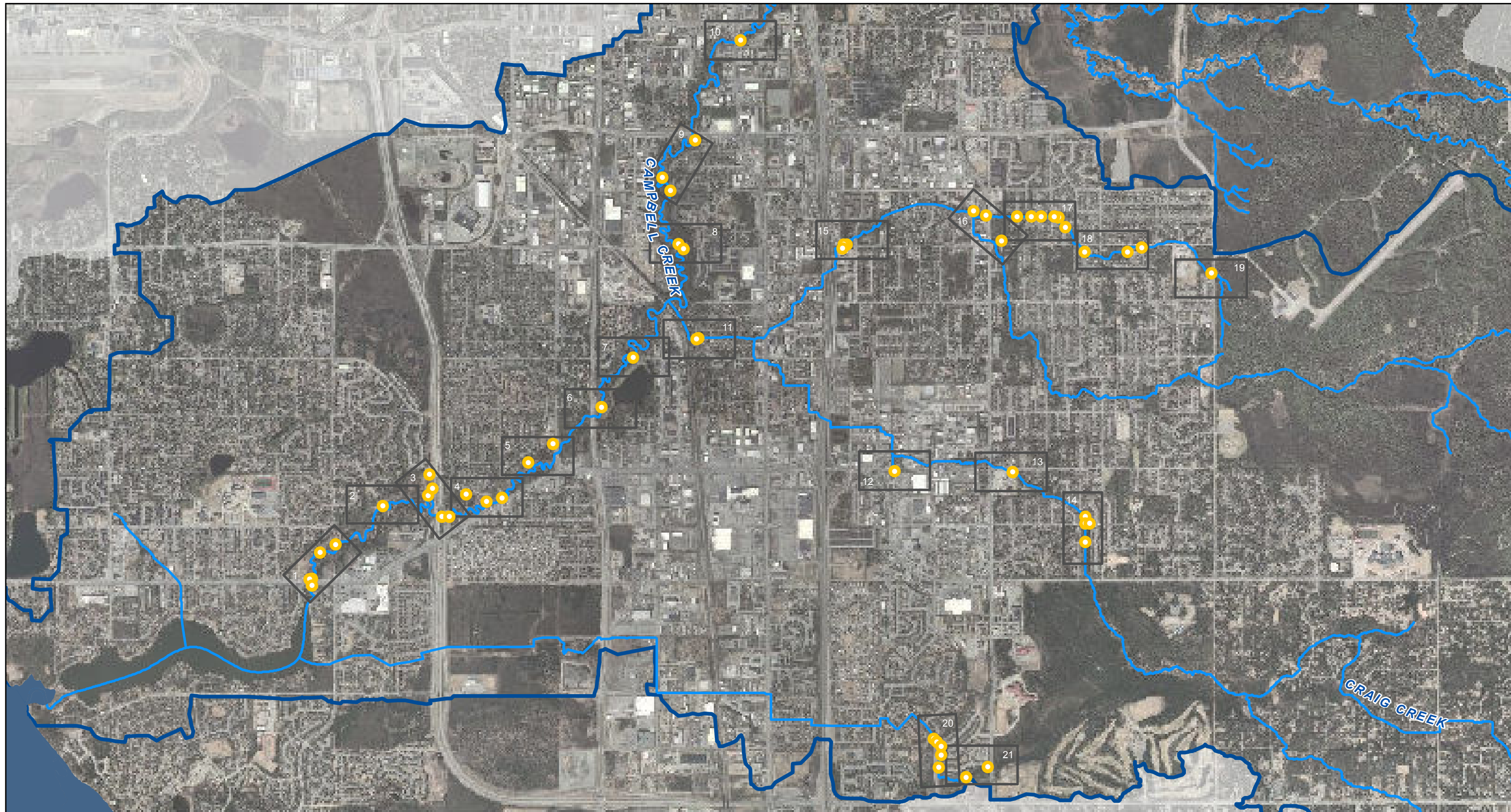
- Blind Connect
- Bypass Outlet
- Catch Basin
- Catchbasin Manhole
- Manhole
- OGS
- Outfall
- Outfall Major



Dry Weather Screening 2016
Chester Creek
 Examined and Sampled Outfalls
Page 25

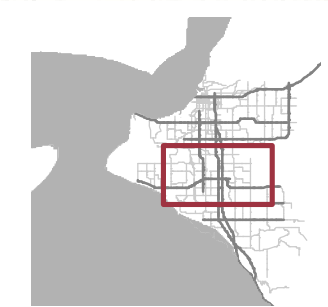
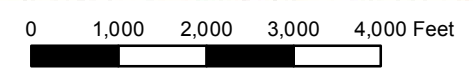
Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

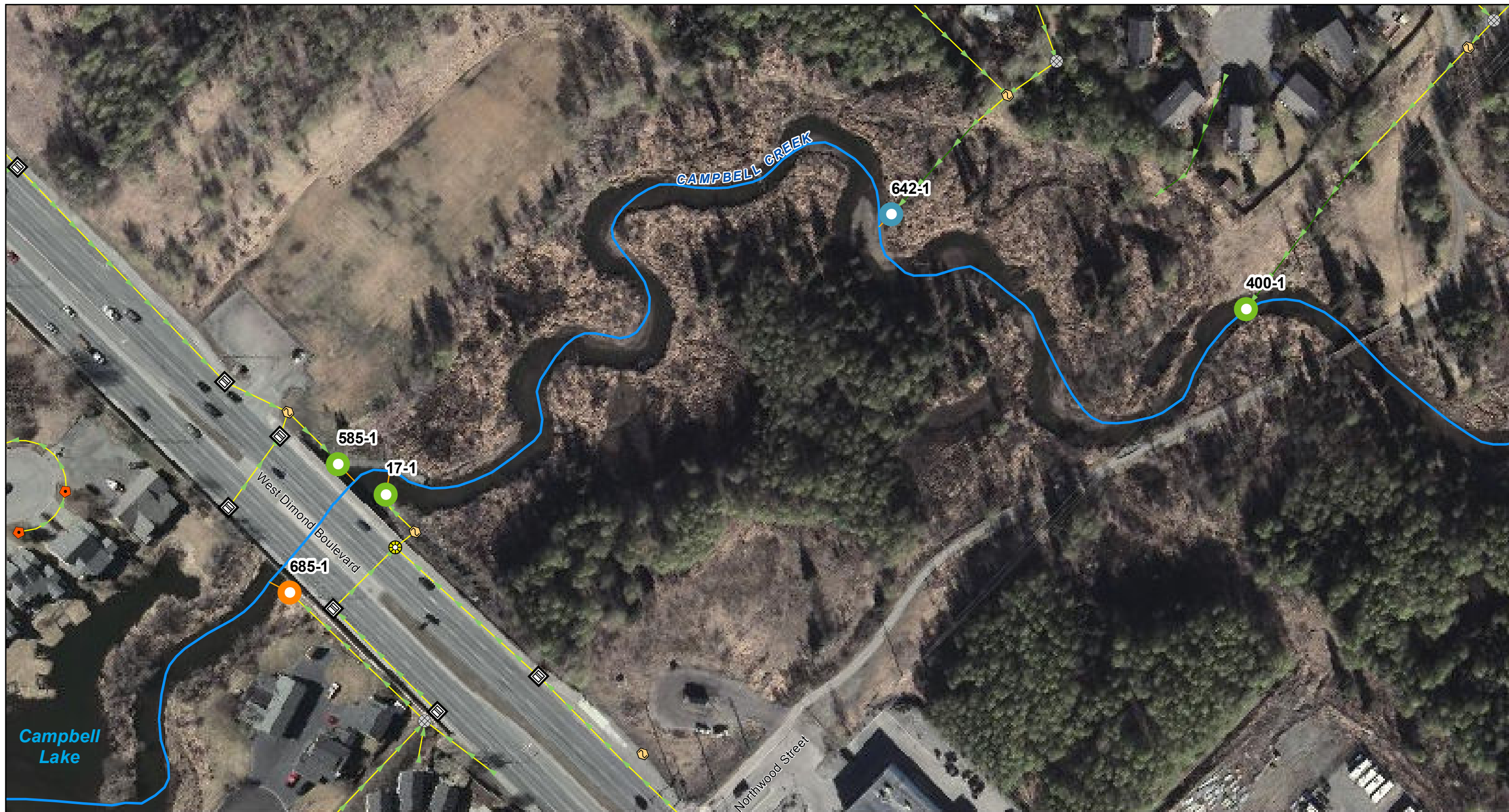
- 2016 Investigated Outfall
- ~ Stream
- Map Page Index
- + Watershed Boundary







Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Map Index




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016




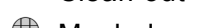
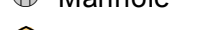





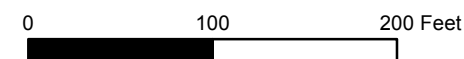


LEGEND

-  Stream
-  2016 Sampled Outfall
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Routing
 -  Open Channel

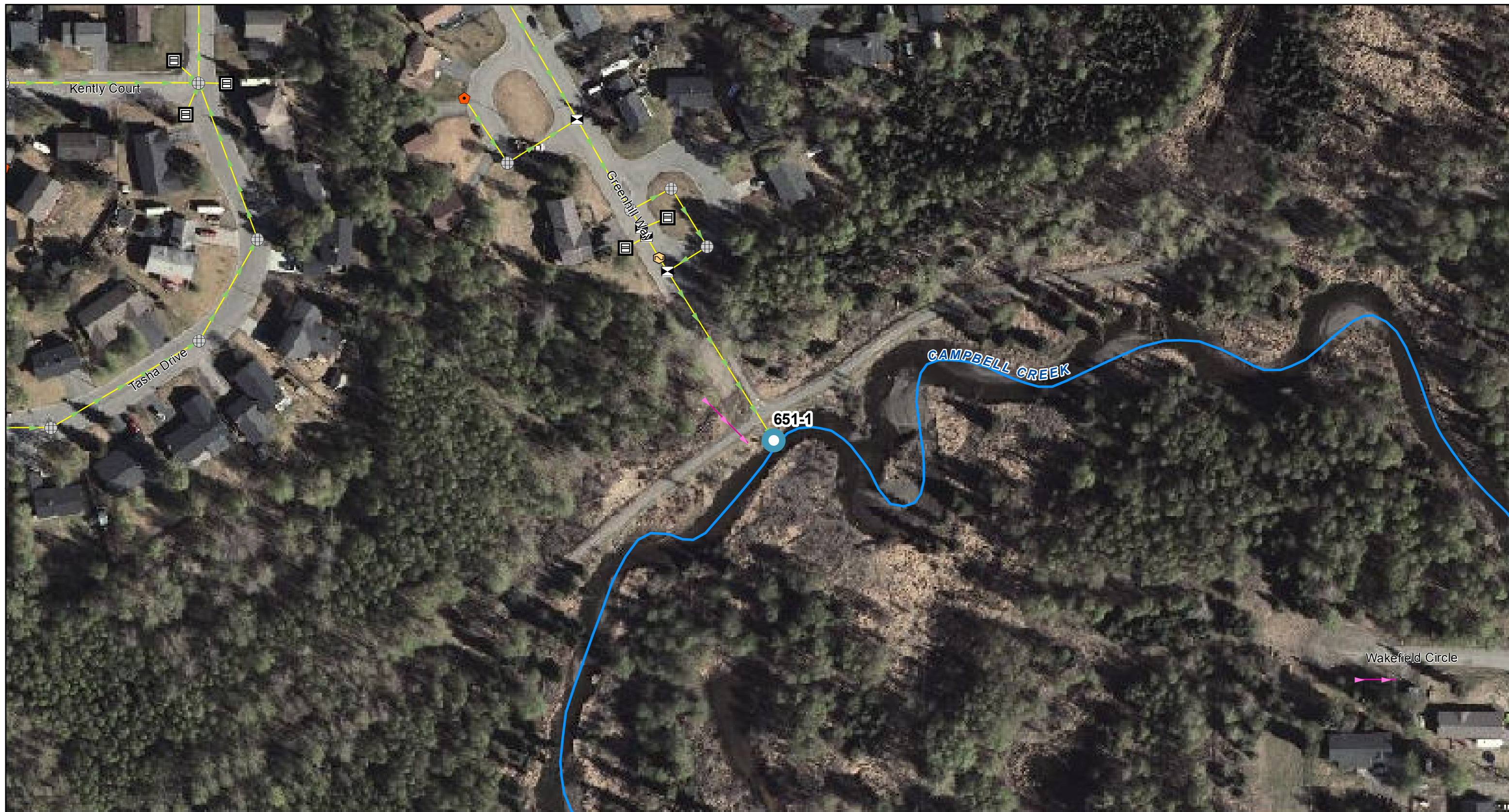
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Clean-out
 -  Manhole
 -  OGS
 -  Outfall
 -  Outfall Major
 -  Outfall Minor





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 1

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016














LEGEND

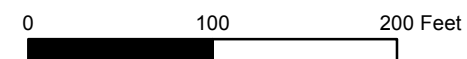
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe
-  Routing
-  Xing Culvert

Drainage Way Nodes

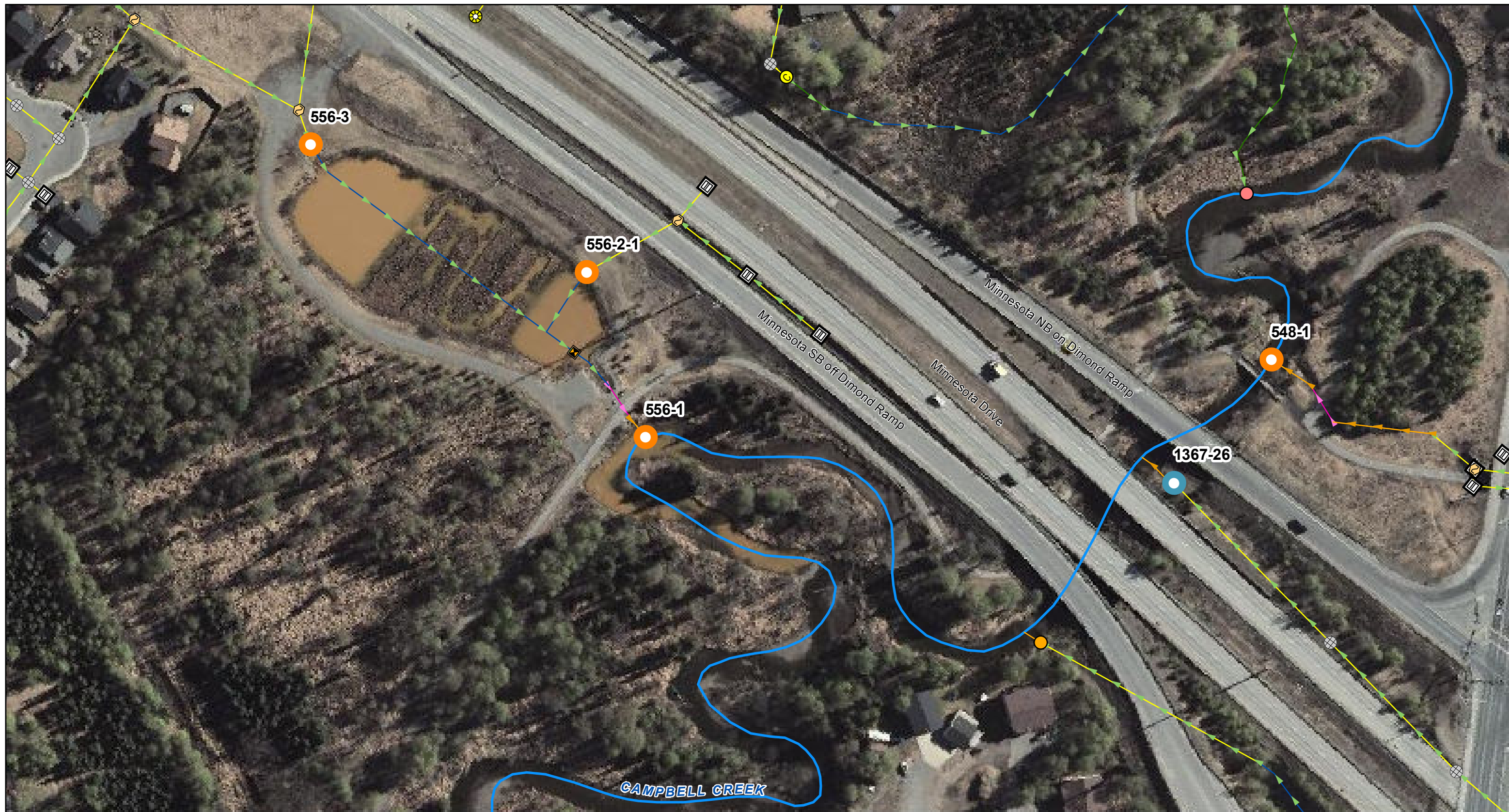
-  Blind Connect
-  Catch Basin
-  Clean-out
-  Manhole
-  OGS
-  Outfall Major



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 2

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

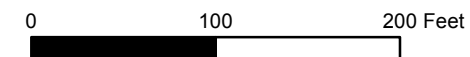
- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

Drainage Ways

- Continuity
- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

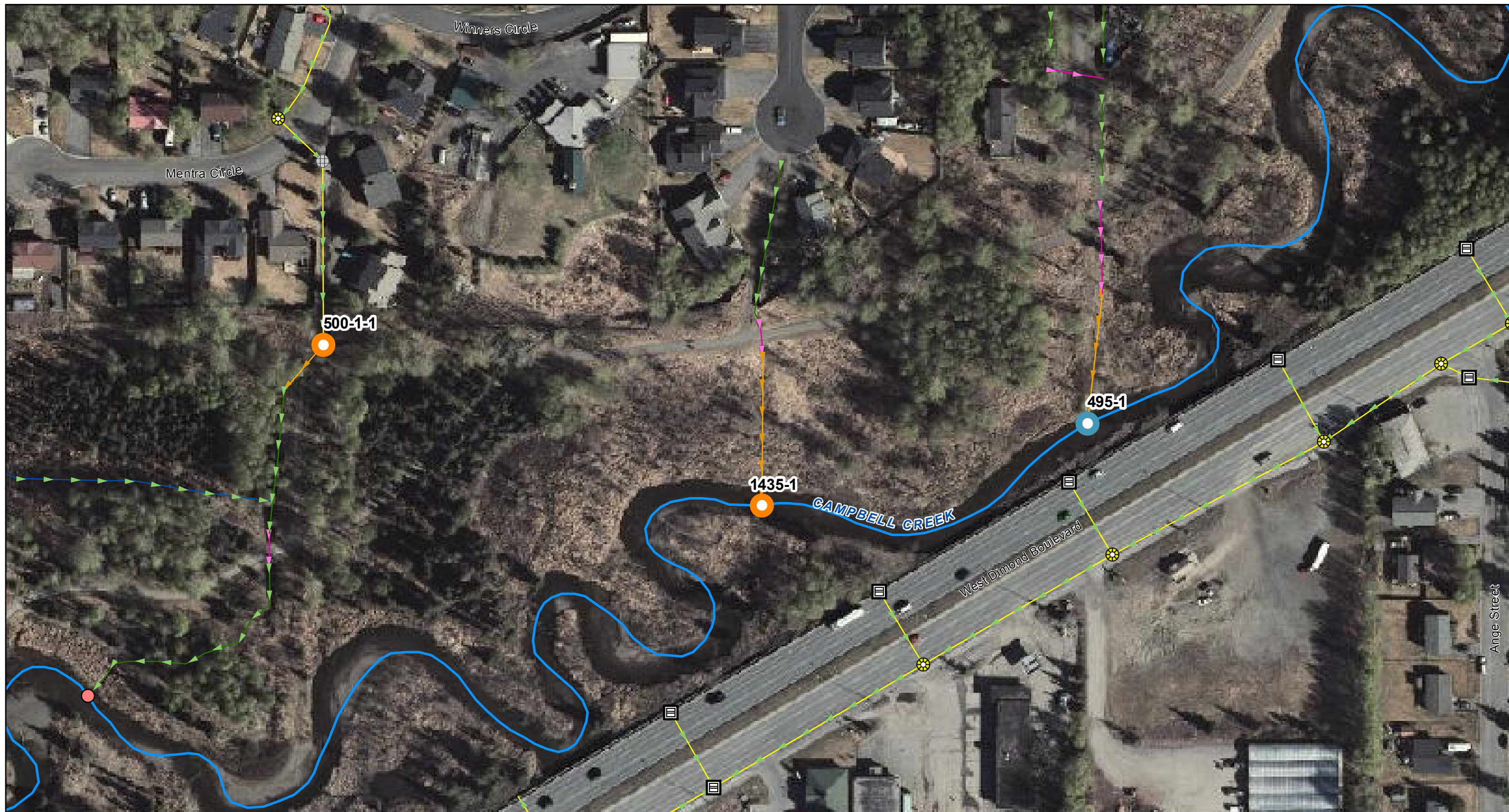
- Catch Basin
- Catchbasin Manhole
- Control Outlet
- End of Pipe (EOP)
- Inlet
- Manhole
- OGS
- Outfall
- Outfall Major
- Outfall Minor
- Weir



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 3

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

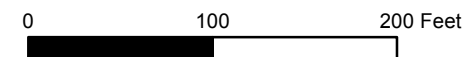
- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

Drainage Ways

- Continuity
- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

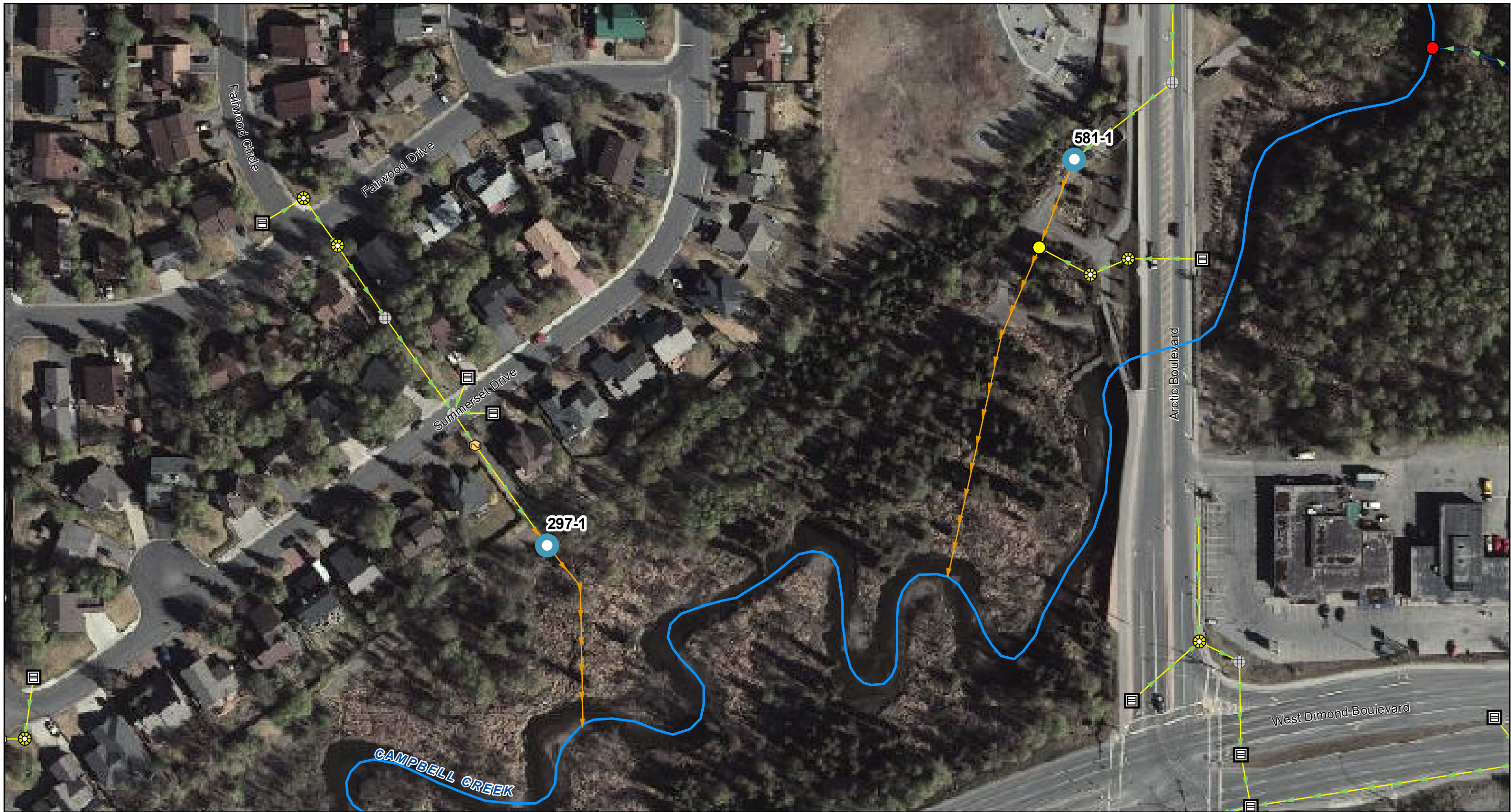
- Catch Basin
- Catchbasin Manhole
- Manhole
- Outfall
- Outfall Minor





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 4

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016









LEGEND

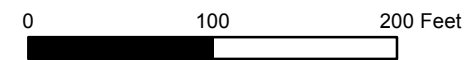
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Continuity
-  Pipe
-  Inlet
-  Routing

Drainage Way Nodes

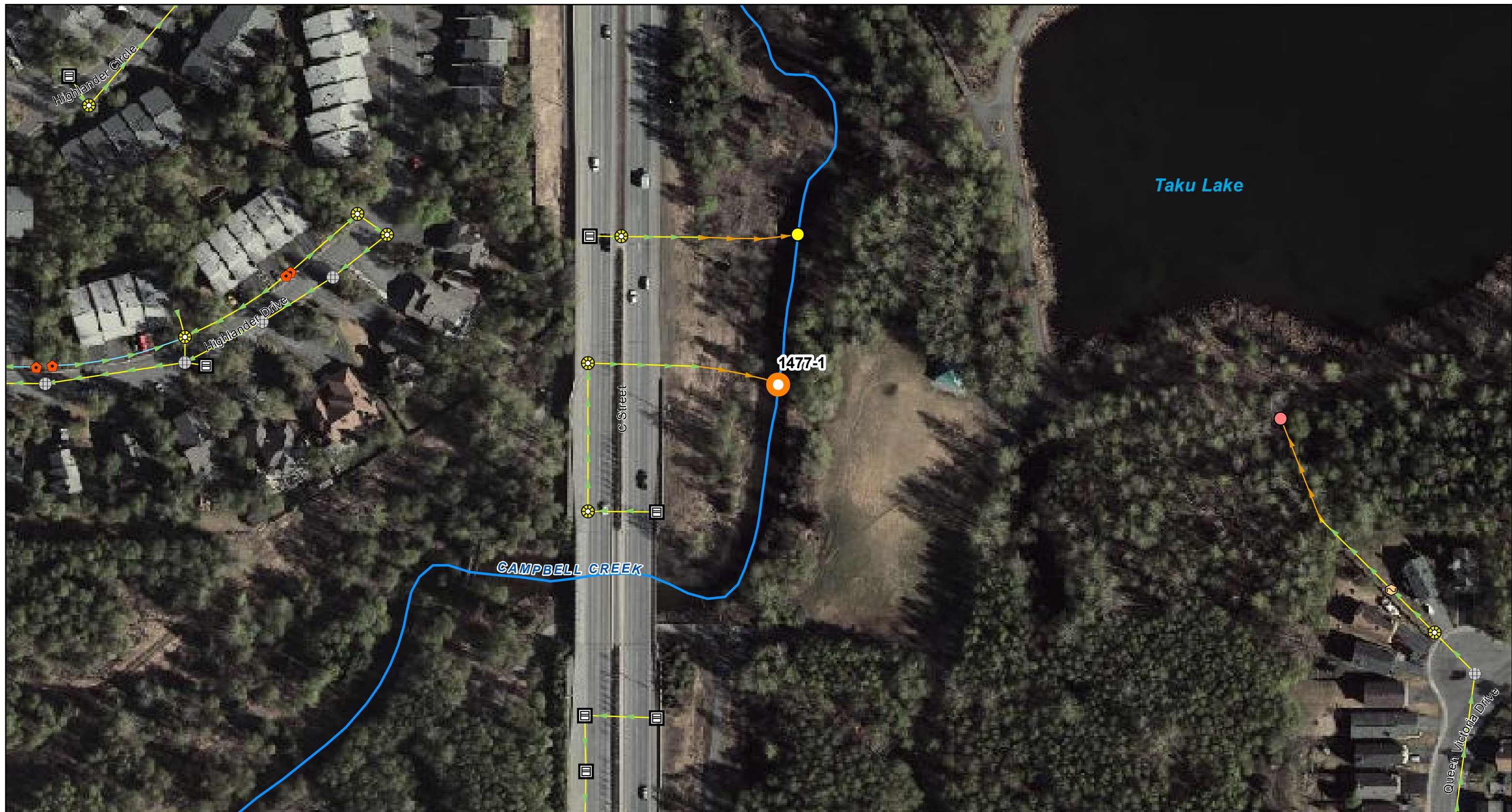
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall Major
-  Outfall Minor
-  Outlet




Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 5

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016





LEGEND

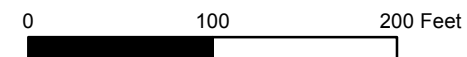
-  Stream
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Inlet
-  Routing

Drainage Way Nodes

-  Catch Basin
-  Catchbasin Manhole
-  Clean-out
-  Manhole
-  OGS
-  Outfall
-  Outfall Minor
-  Outlet





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 6




Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016


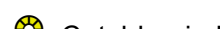
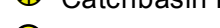

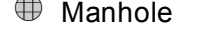




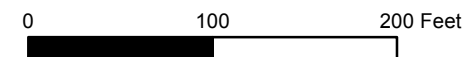


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate

- Drainage Ways**
-  Pipe
 -  Routing
 -  Open Channel

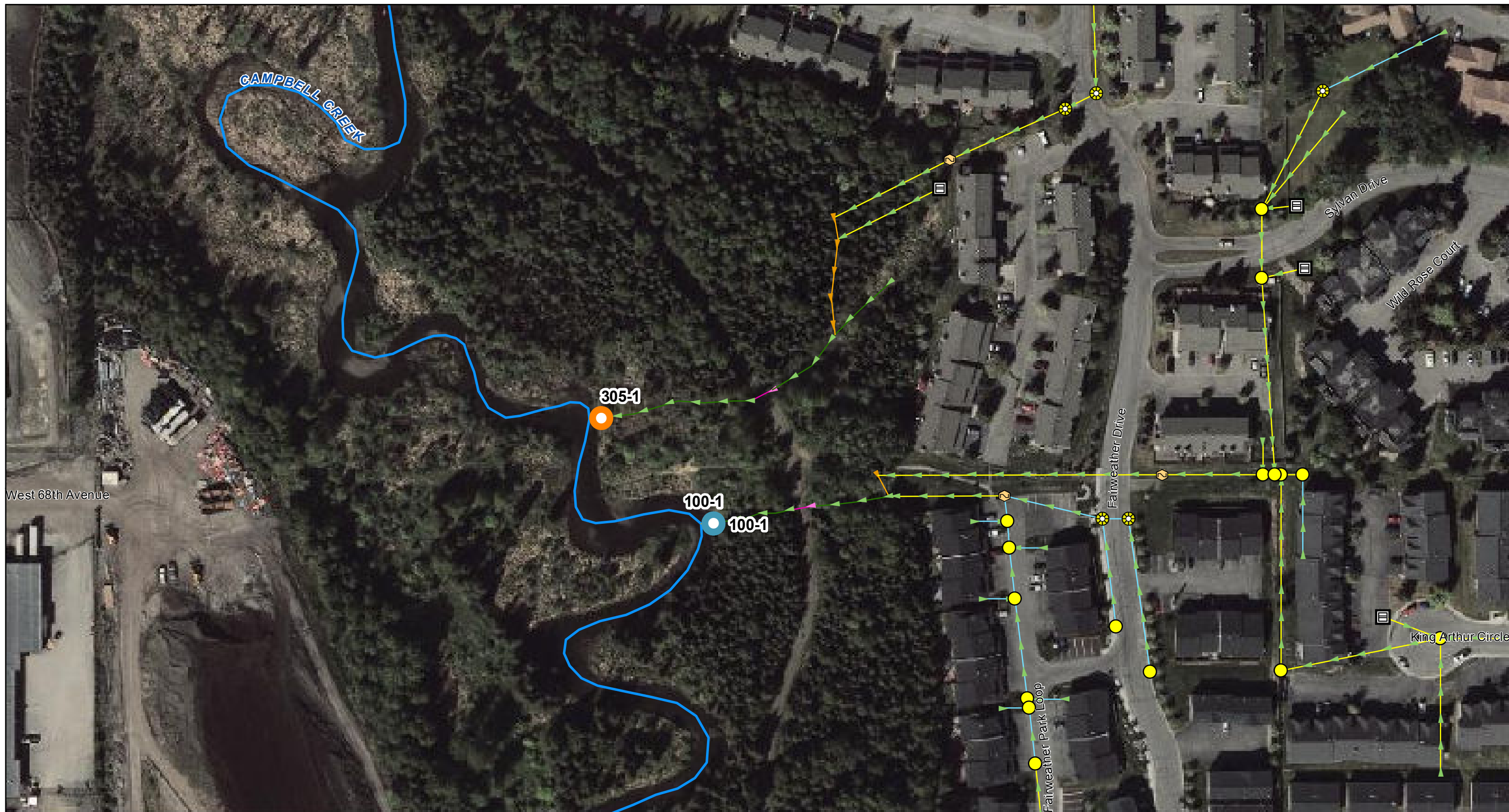
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Control Outlet
 -  Manhole
 -  OGS
 -  Outfall Major
 -  Outlet






Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 7

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016










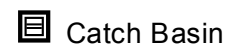
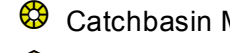



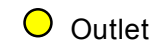
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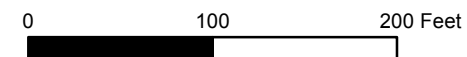
-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Inlet
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

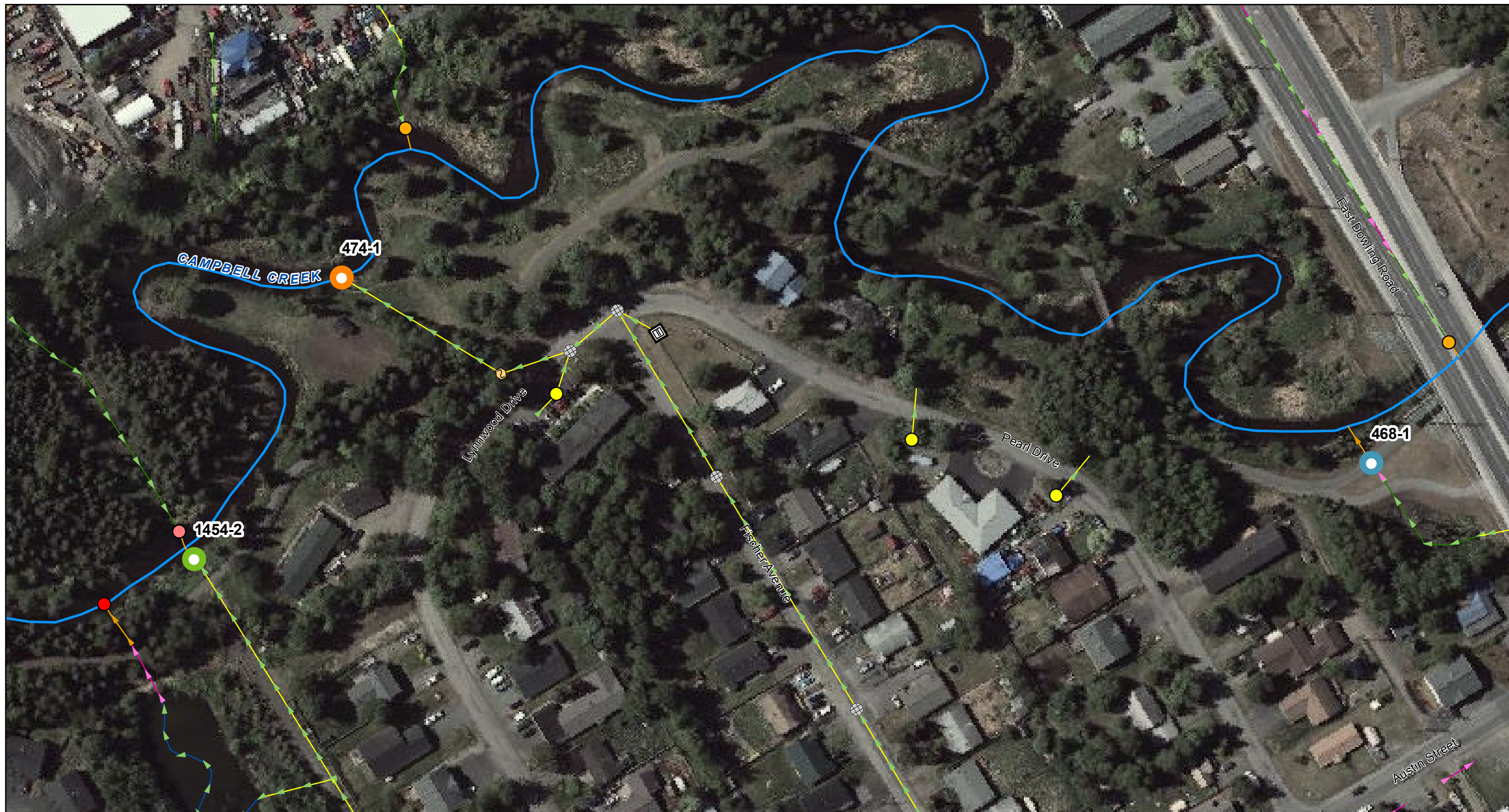
-  Catch Basin
-  Catchbasin Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outlet







Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 8

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016















LEGEND

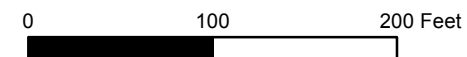
-  Stream
-  2016 Sampled Outfall
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Continuity
-  Pipe
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

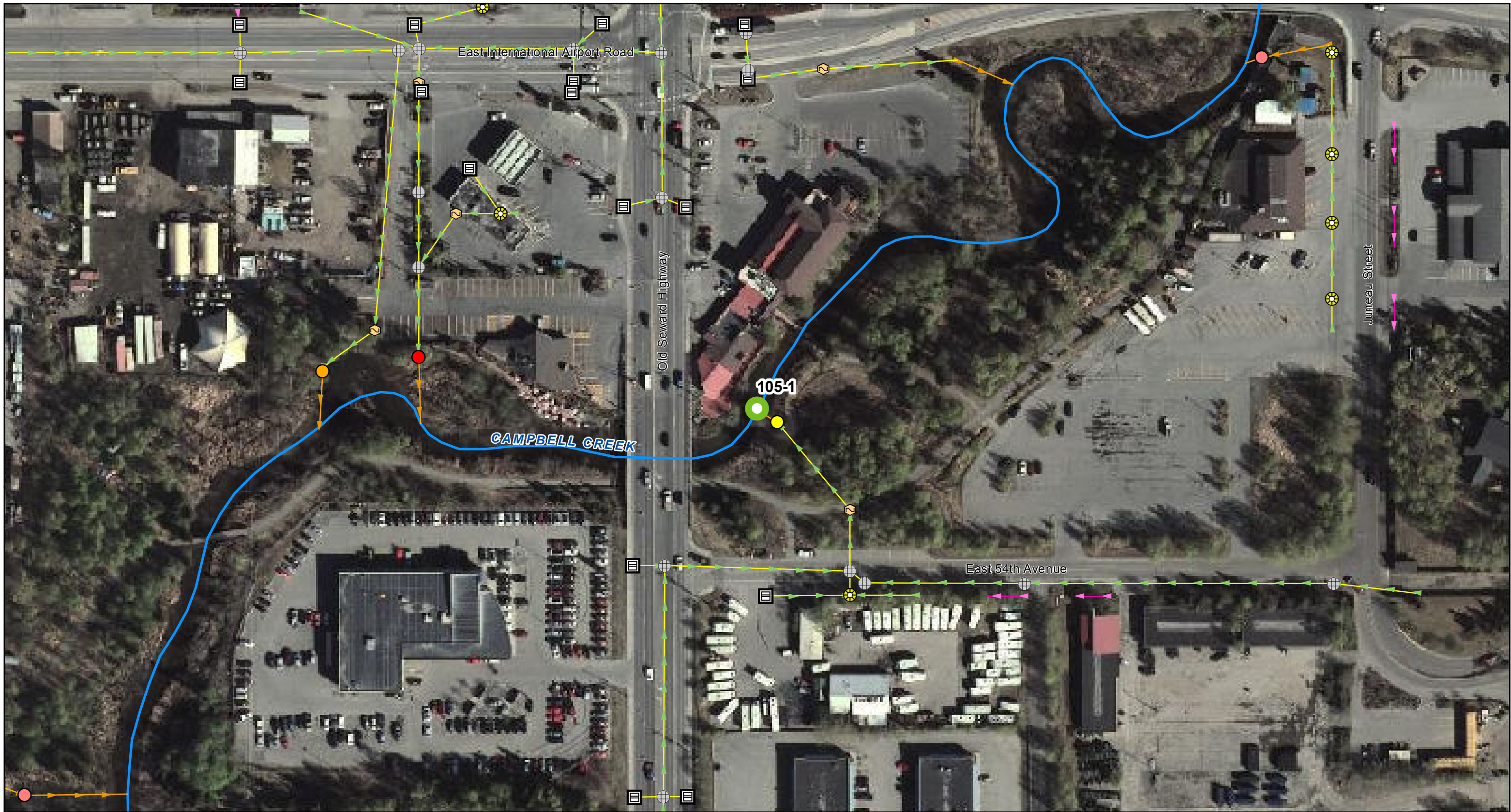
-  Bypass Outlet
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outfall Minor
-  Outlet





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 9

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016










LEGEND

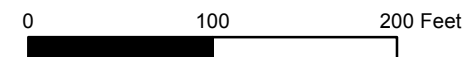
-  Stream
-  2016 Sampled Outfall

Drainage Ways

-  Pipe
-  Routing
-  Xing Culvert

Drainage Way Nodes

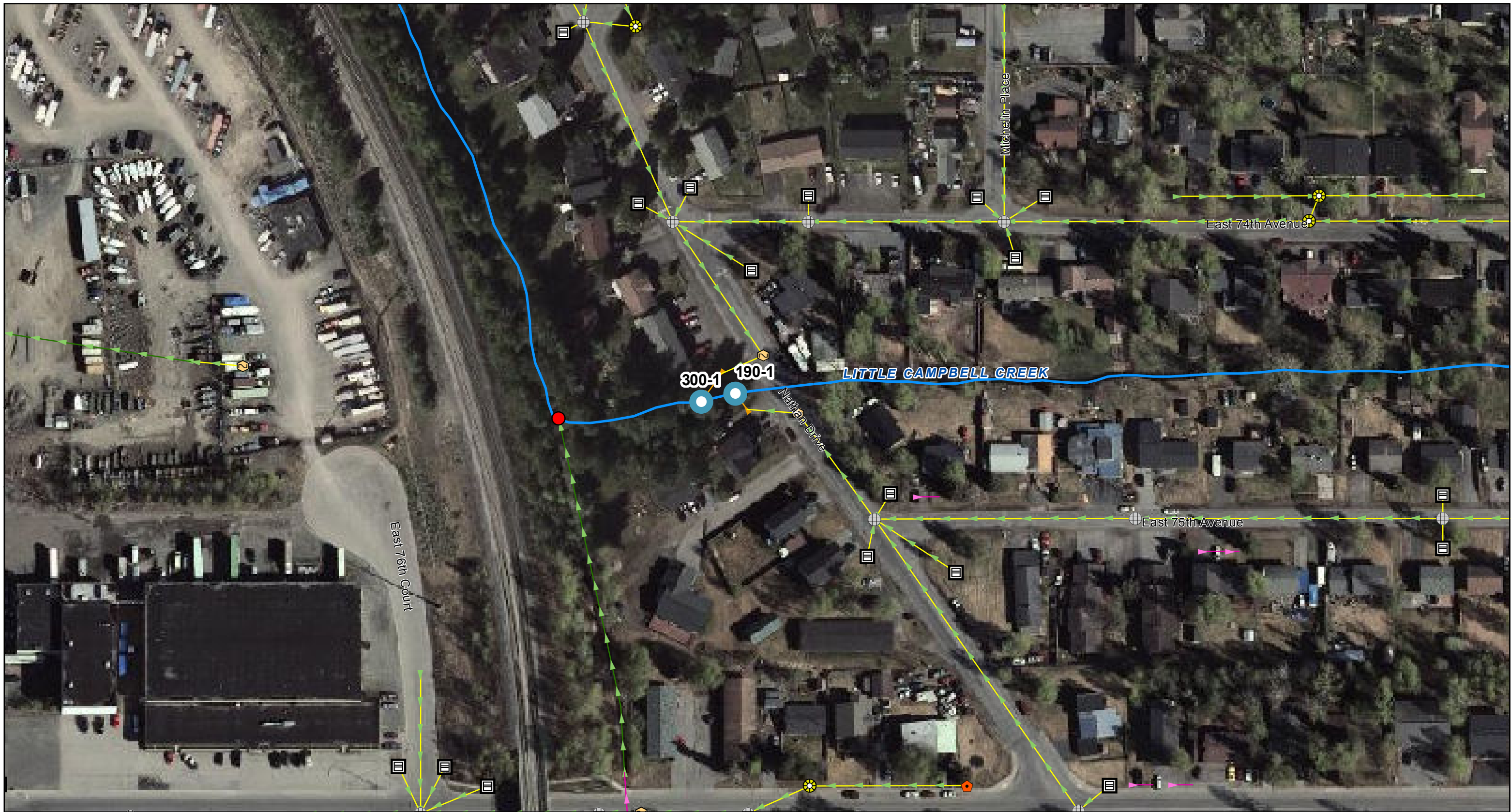
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall
-  Outfall Major
-  Outfall Minor
-  Outlet





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 10

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016









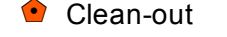
LEGEND

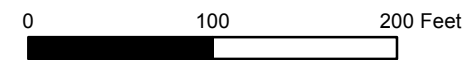
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

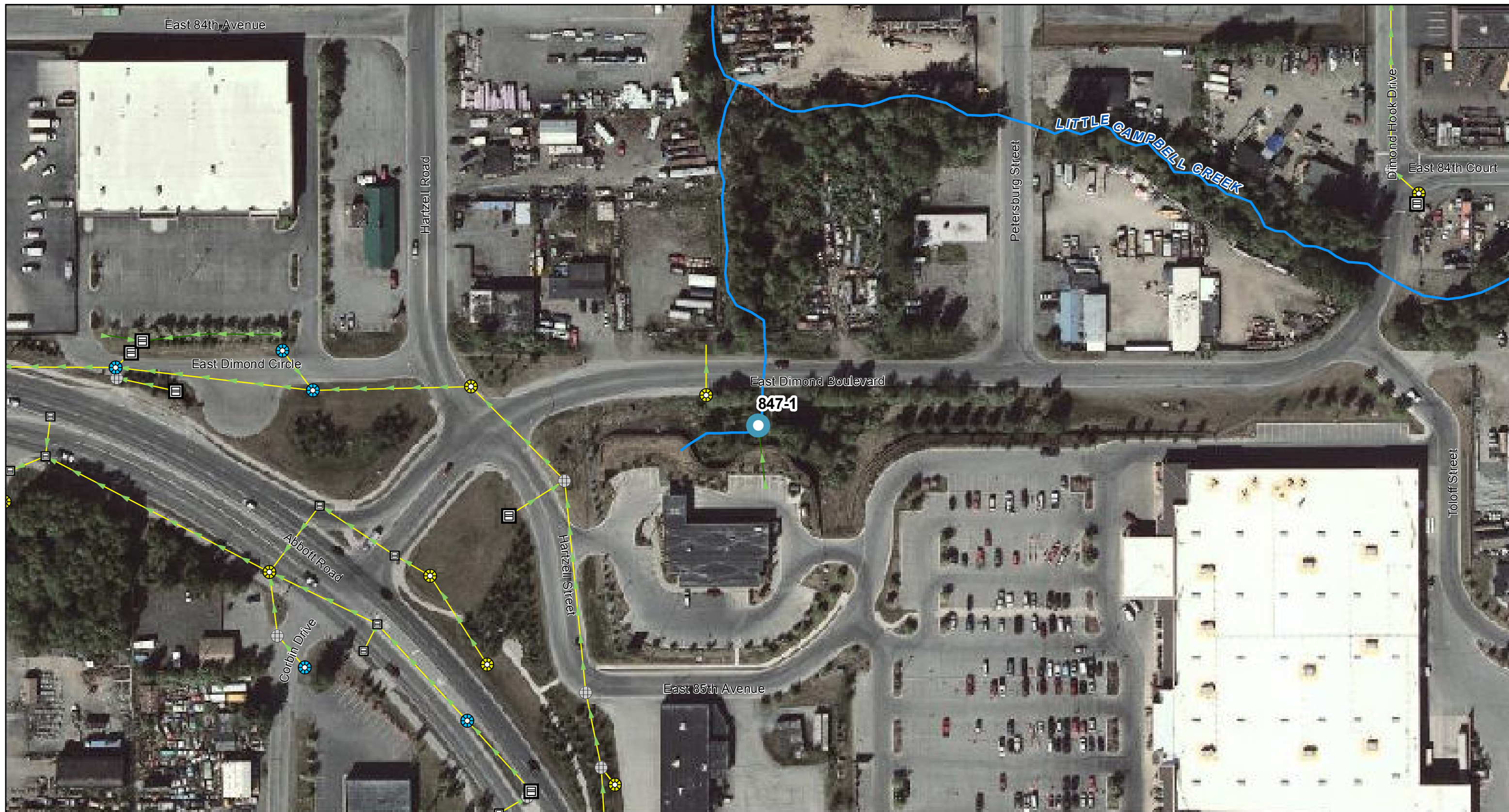
-  Catch Basin
-  Catchbasin Manhole
-  Clean-out
-  Manhole
-  OGS
-  Outfall
-  Outfall Major





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 11



Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
 12/28/2016



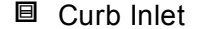





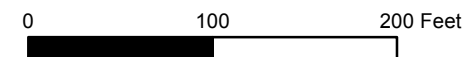


LEGEND

-  Stream
-  2016 Examined Outfall, Alternate

- Drainage Ways**
-  Pipe
 -  Open Channel

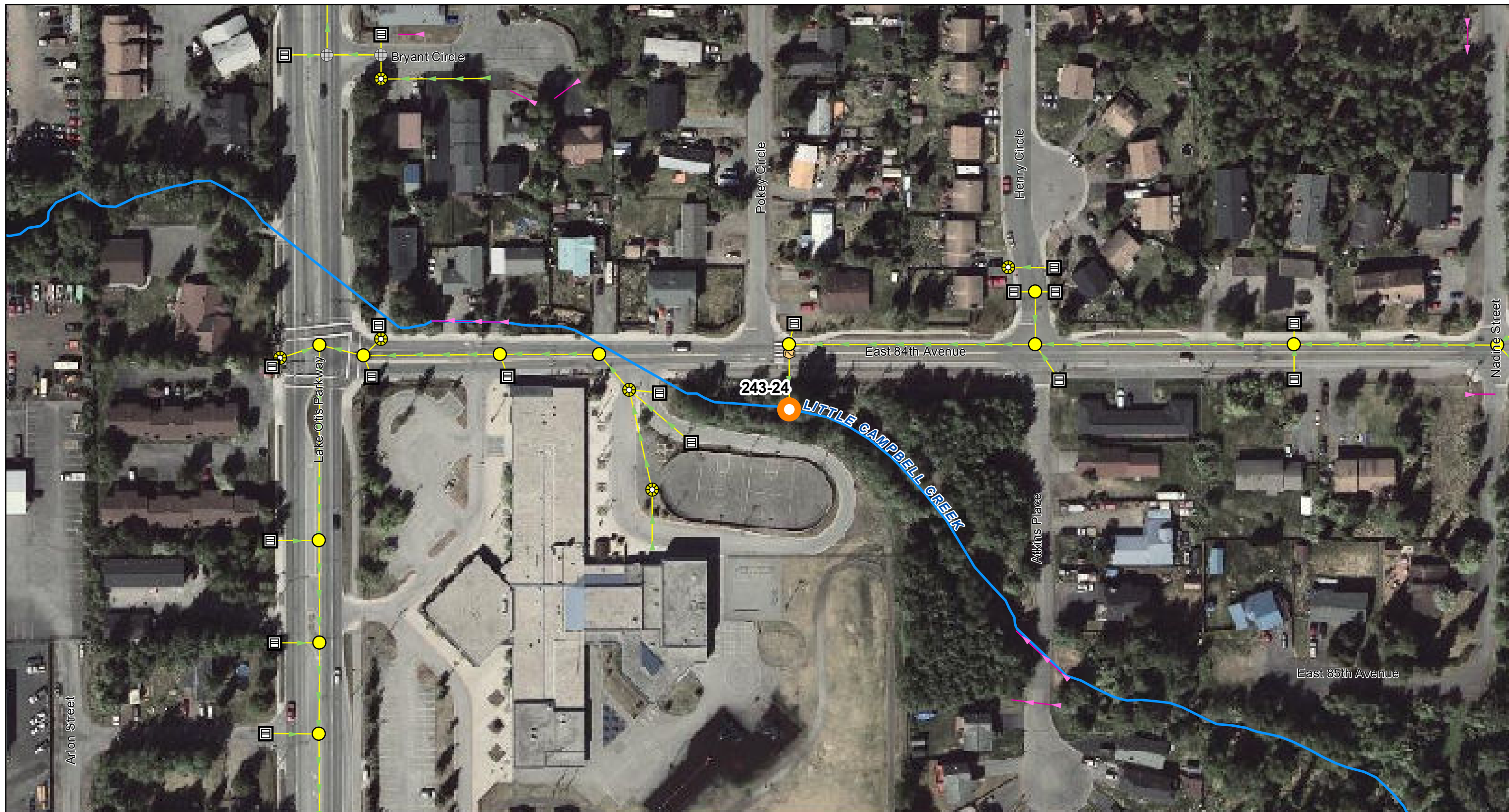
- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Curb Inlet
 -  Manhole
 -  Outfall
 -  Top Intake Manhole



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 12

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
 HDR Alaska, Inc.
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LEGEND

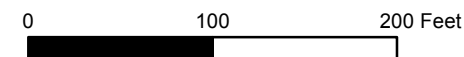
-  Stream
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Routing
-  Xing Culvert

Drainage Way Nodes

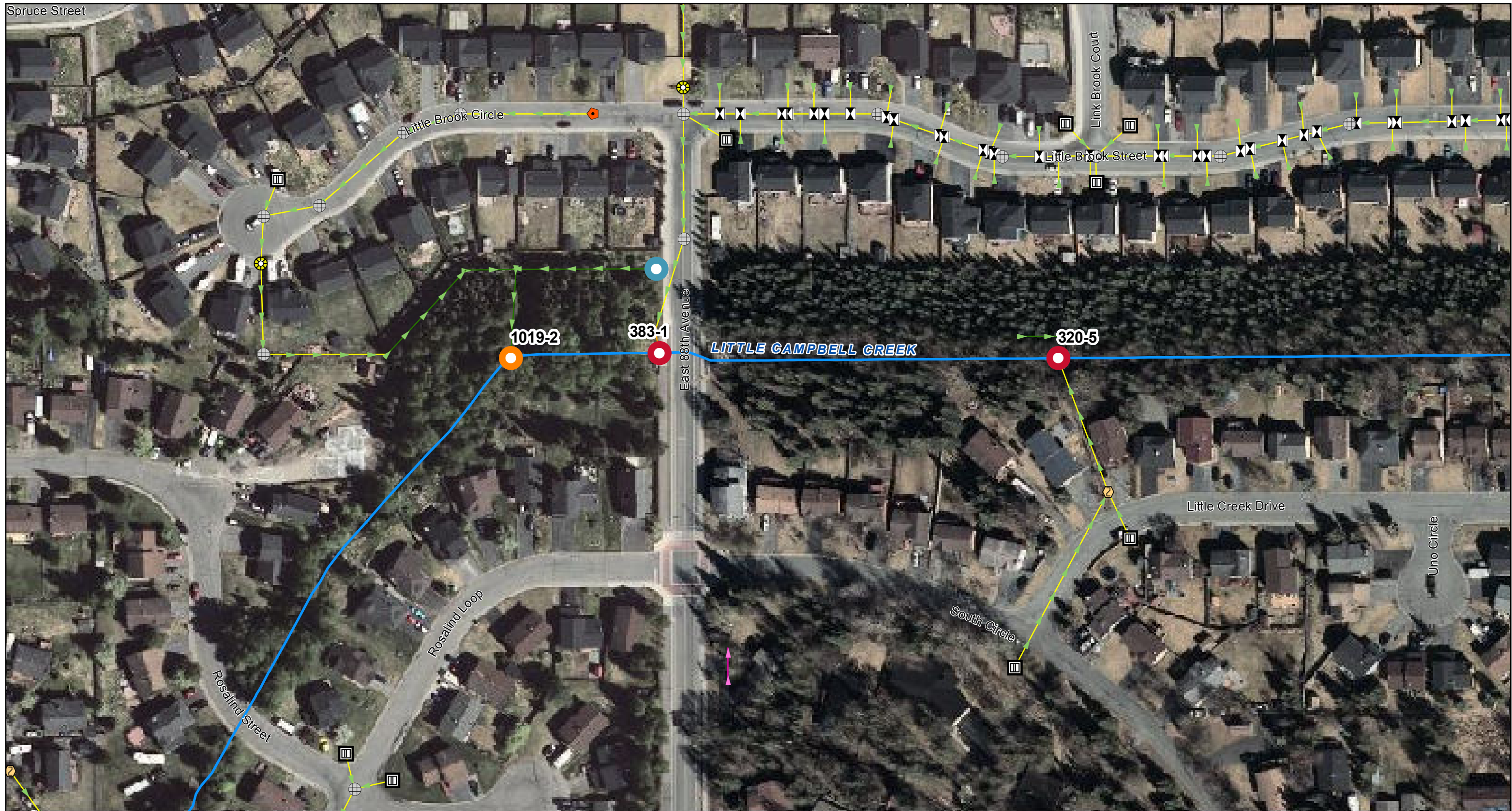
-  Catch Basin
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 13

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
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LEGEND

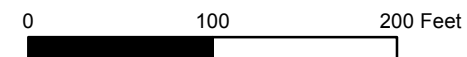
- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable
- 2016 Could Not Locate Outfall

Drainage Ways

- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

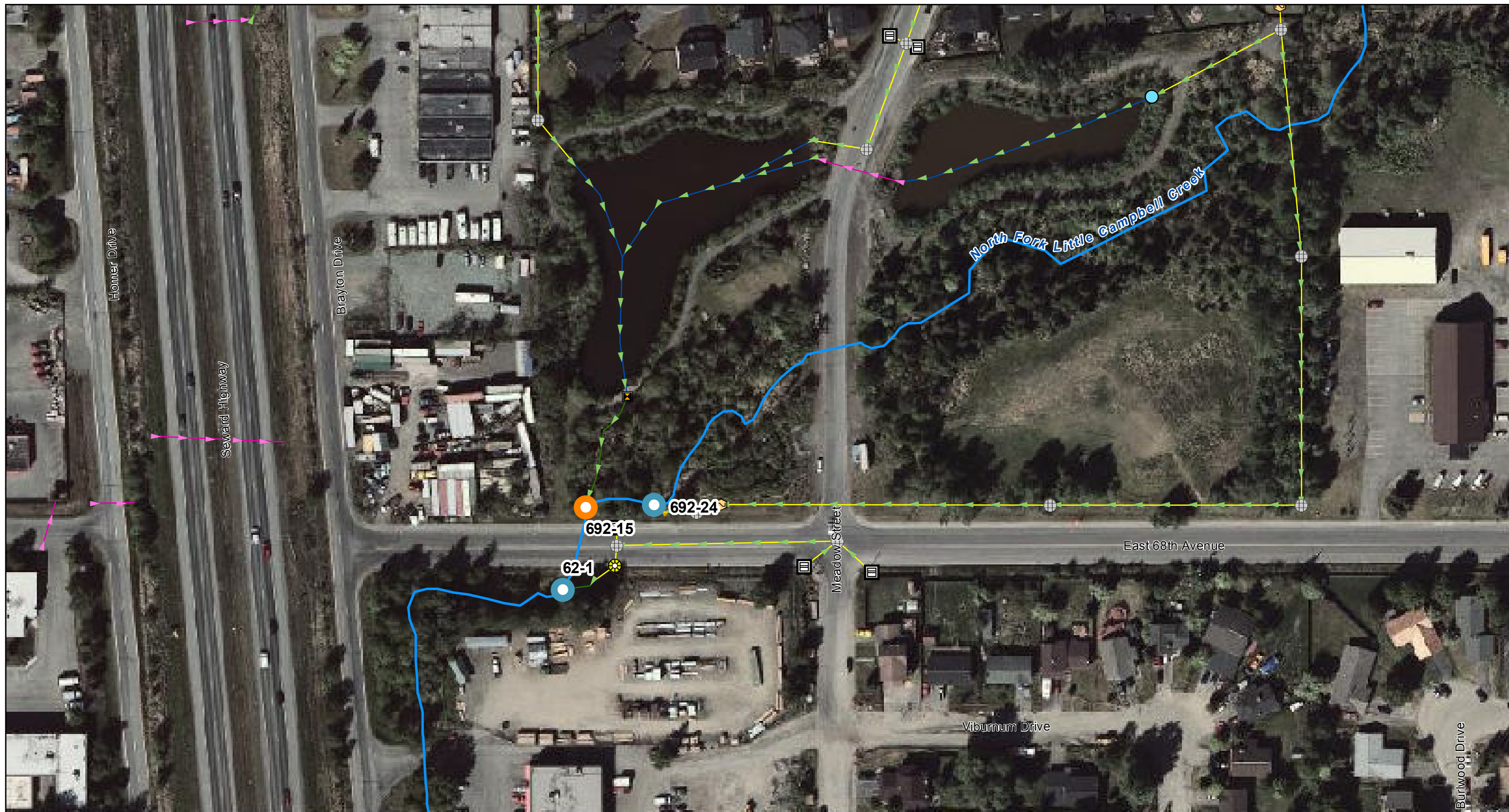
- Blind Connect
- Catch Basin
- Catchbasin Manhole
- Clean-out
- Manhole
- OGS
- Outfall
- Outfall Major



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
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Source: MOA HGDB 2016
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LEGEND

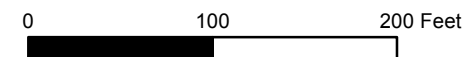
- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

Drainage Ways

- Continuity
- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

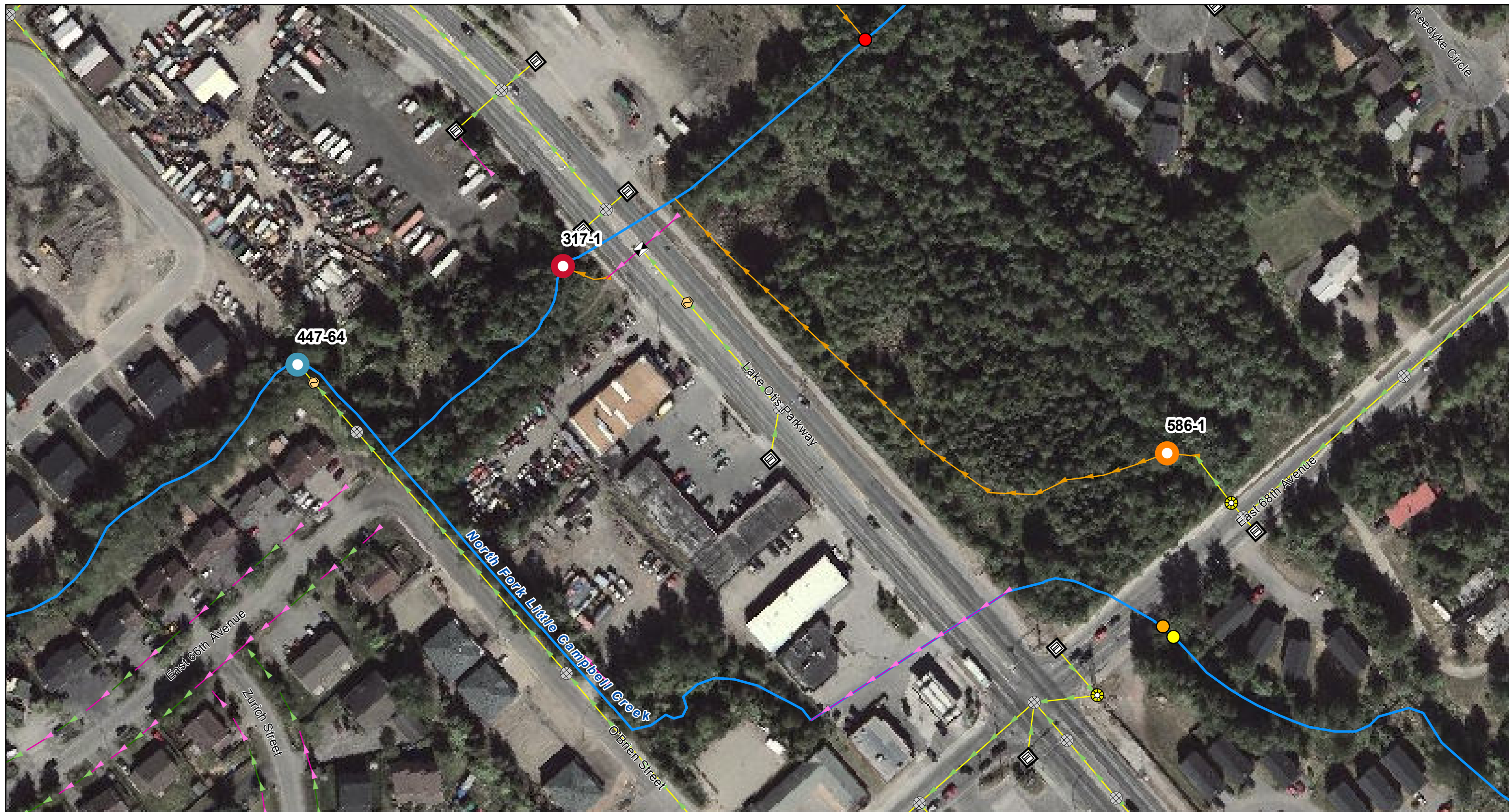
- Bypass Outlet
- Catch Basin
- Catchbasin Manhole
- Inlet
- Manhole
- OGS
- Outfall
- Outfall Major
- Weir



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
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LEGEND

Stream

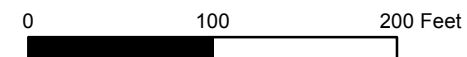
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable
- 2016 Could Not Locate Outfall

Drainage Ways

- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

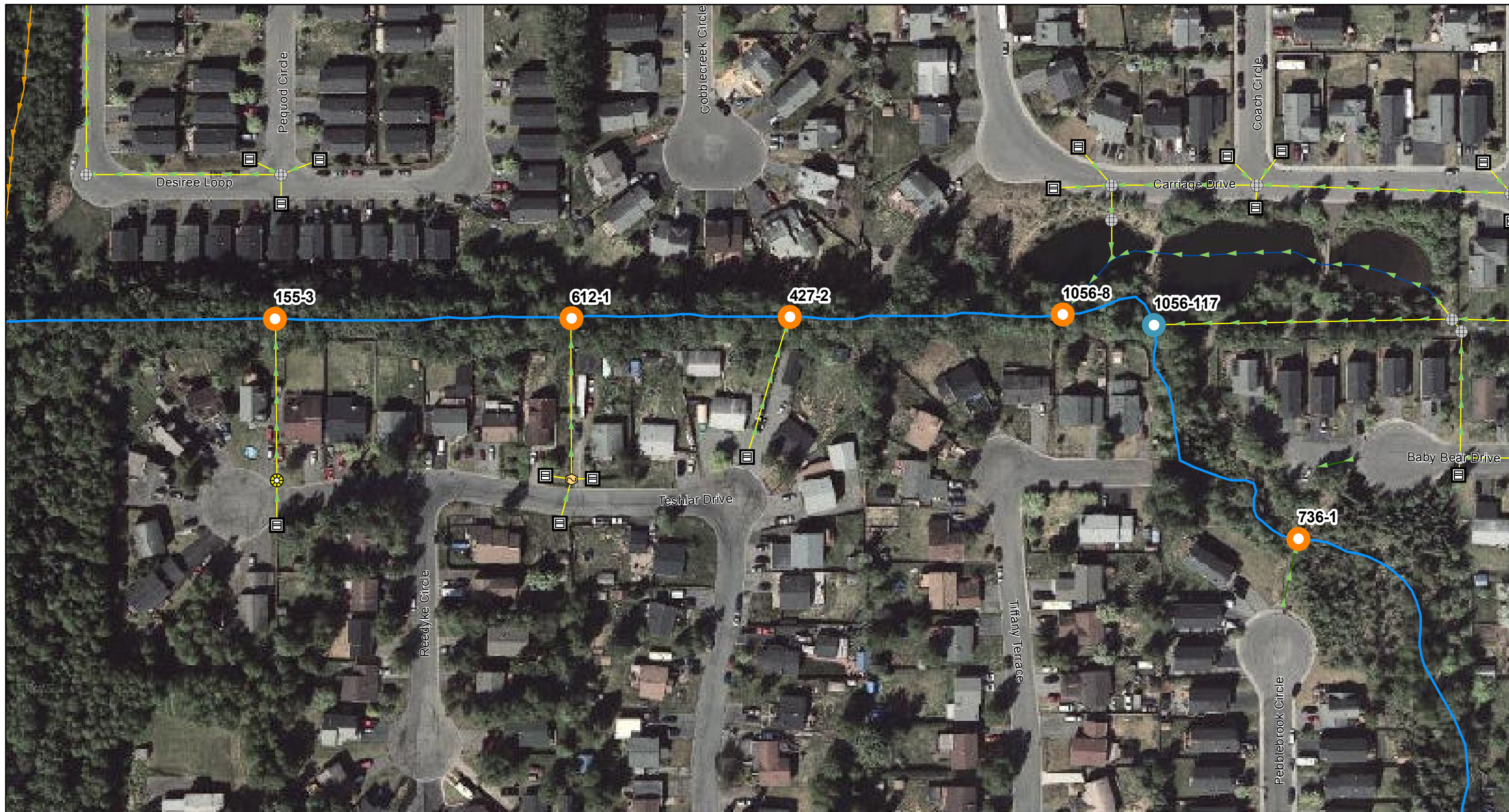
- Blind Connect
- Catch Basin
- Catchbasin Manhole
- Manhole
- OGS
- Outfall
- Outfall Major
- Outlet



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
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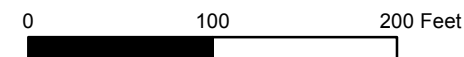


LEGEND

- Stream
- 2016 Examined Outfall, Alternate
- 2016 Examined Outfall, Not Suitable

- Drainage Ways**
- Continuity
 - Pipe
 - Routing
 - Open Channel

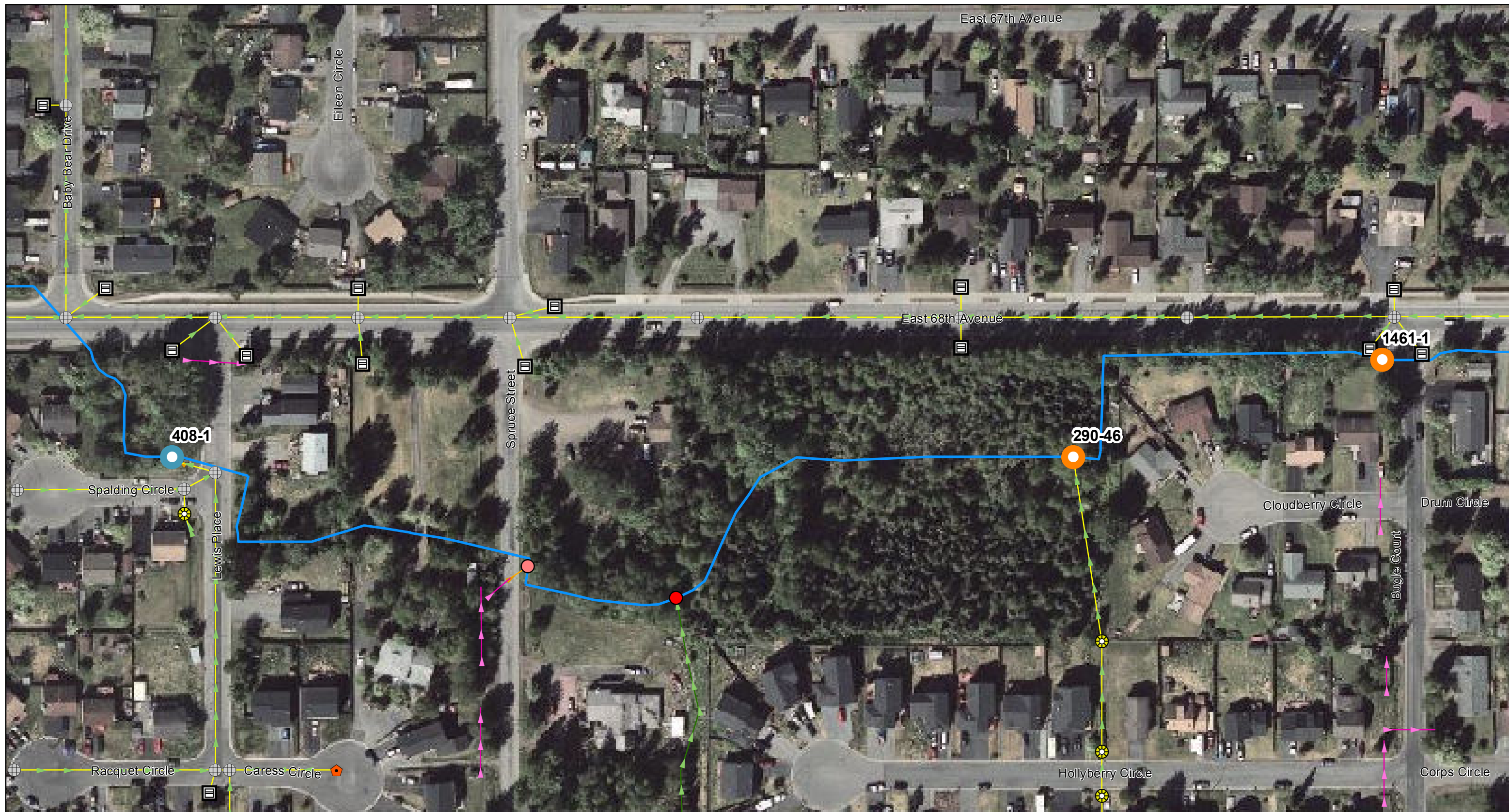
- Drainage Way Nodes**
- Bypass Outlet
 - Outfall Major
 - Outfall Minor
 - Catch Basin
 - Catchbasin Manhole
 - Manhole
 - OGS
 - Outfall






Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
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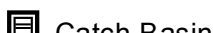






LEGEND

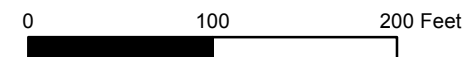
-  Stream
-  2016 Examined Outfall, Alternate
-  2016 Examined Outfall, Not Suitable

Drainage Ways

-  Pipe
-  Inlet
-  Routing
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

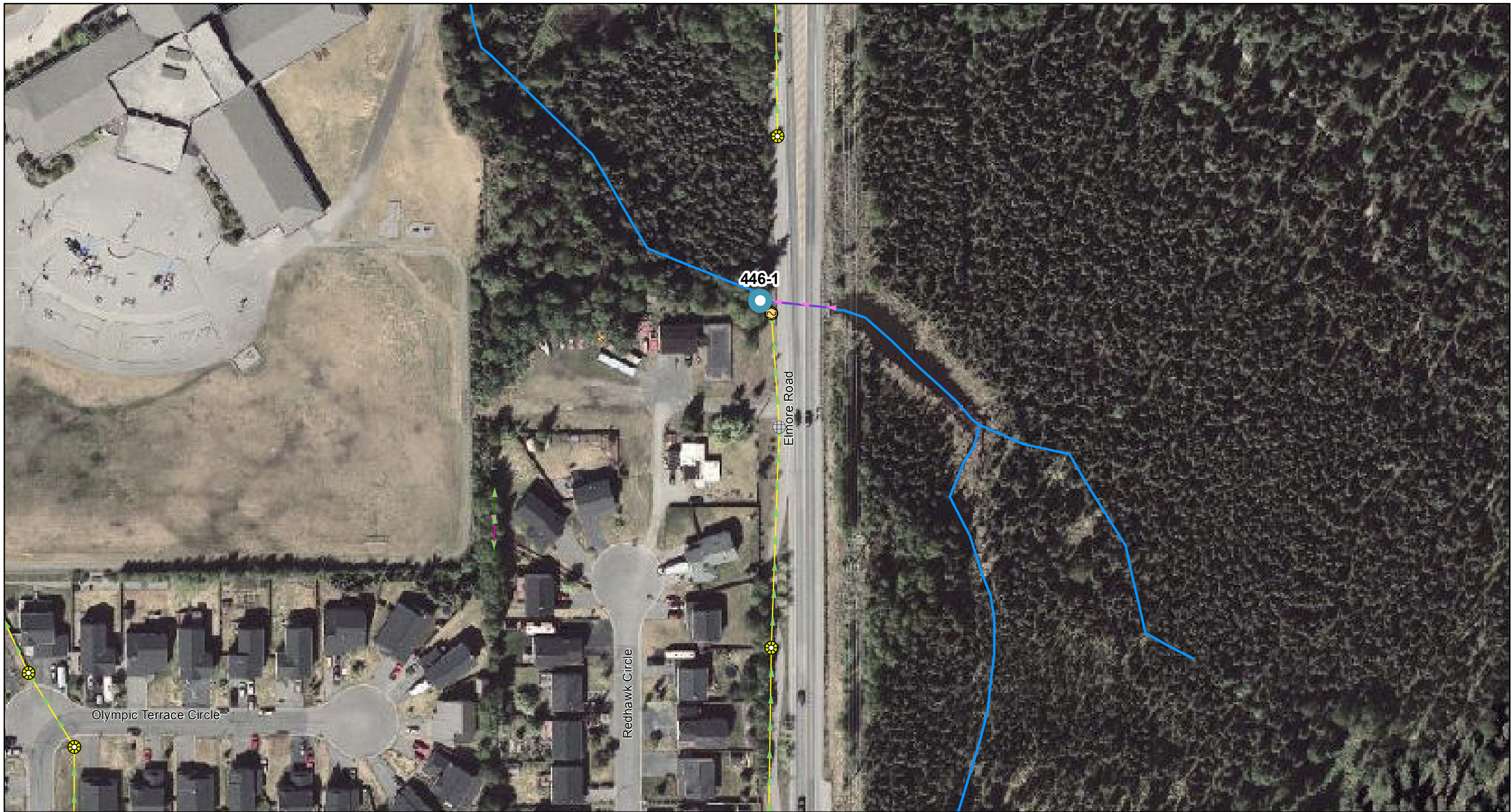
-  Catch Basin
-  Catchbasin Manhole
-  Clean-out
-  Manhole
-  Outfall
-  Outfall Major
-  Outfall Minor





Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
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LEGEND

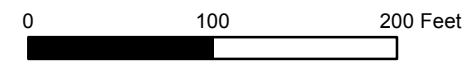
-  Stream
-  2016 Examined Outfall, Alternate

Drainage Ways

-  Pipe
-  Open Channel
-  Xing Culvert

Drainage Way Nodes

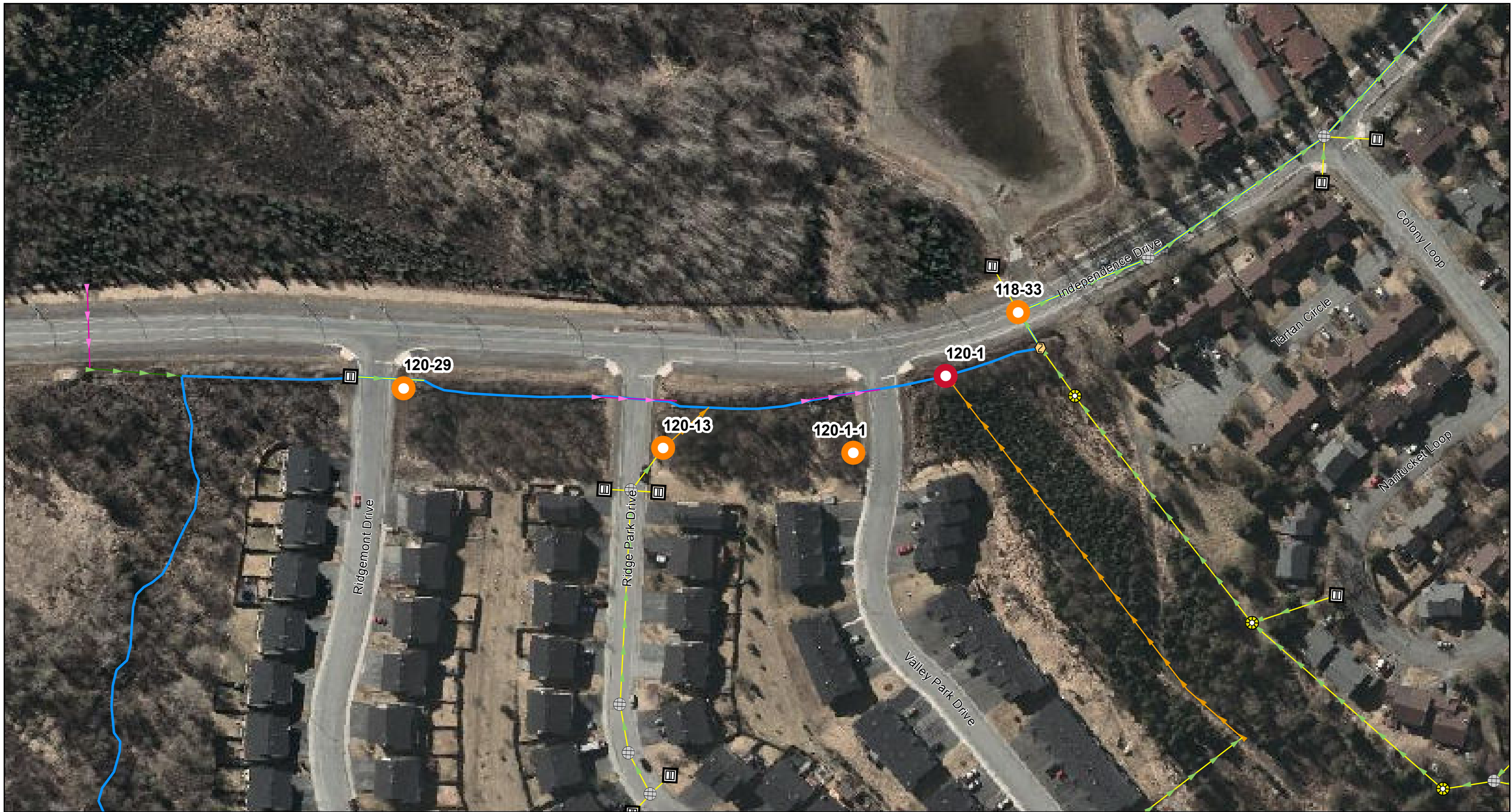
-  Catchbasin Manhole
-  Manhole
-  OGS
-  Outfall



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 19

Source: MOA HGDB 2016
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LEGEND

Stream

2016 Examined Outfall, Not Suitable

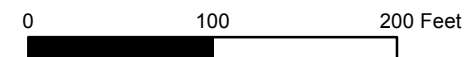
2016 Could Not Locate Outfall

Drainage Ways

- Pipe
- Routing
- Open Channel
- Xing Culvert

Drainage Way Nodes

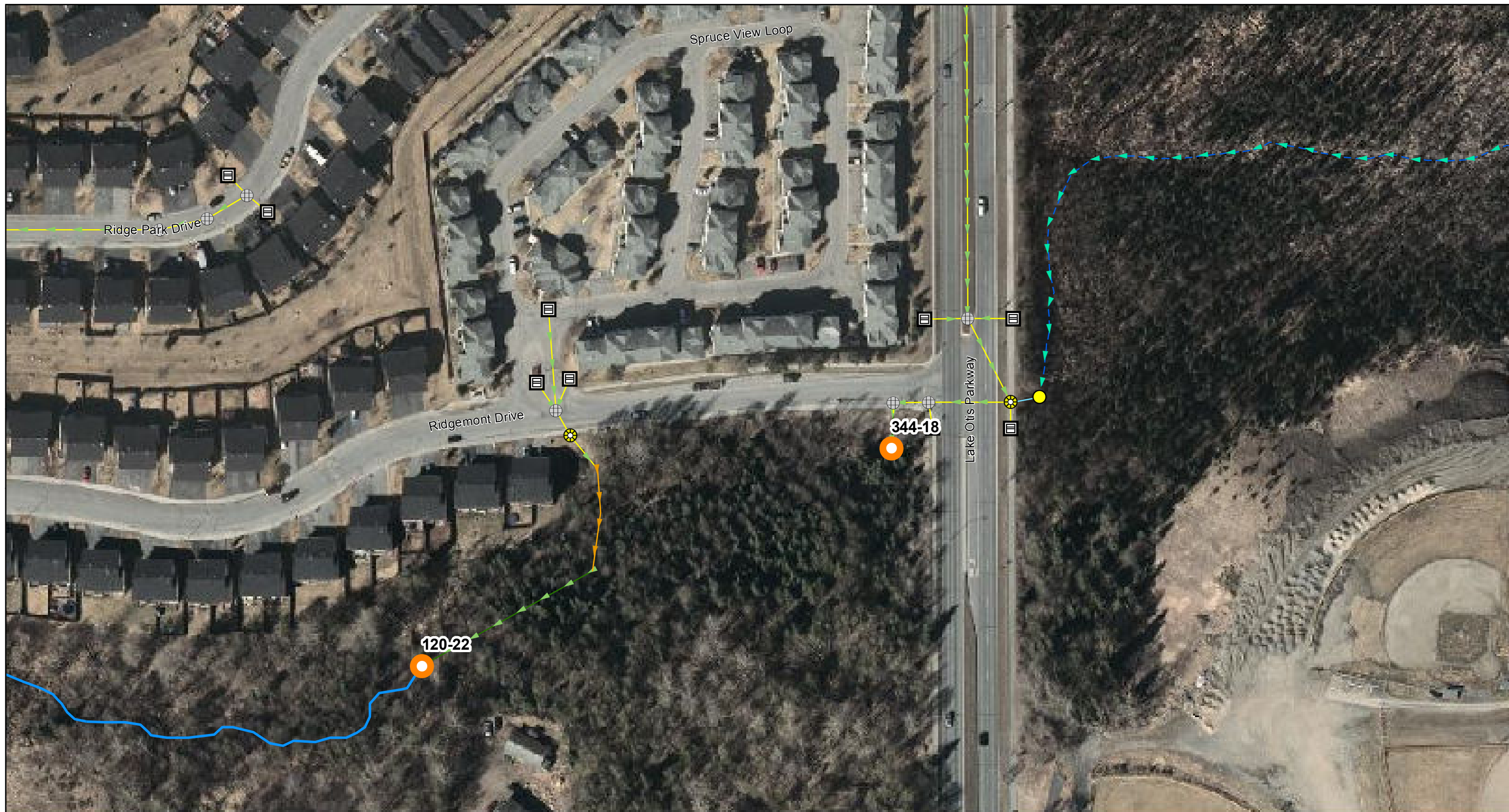
- Catch Basin
- Catchbasin Manhole
- Manhole
- OGS
- Outfall
- Outfall Major
- Outlet



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 20






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 Imagery: MOA Pictometry 2015
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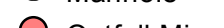
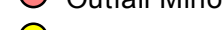


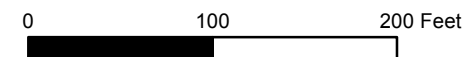


LEGEND

-  Stream
-  2016 Examined Outfall, Not Suitable

- Drainage Ways**
-  Pipe
 -  Inlet
 -  Routing
 -  Ephemeral Channel
 -  Open Channel

- Drainage Way Nodes**
-  Catch Basin
 -  Catchbasin Manhole
 -  Manhole
 -  Outfall Minor
 -  Outlet



Dry Weather Screening 2016
Campbell Creek
 Examined and Sampled Outfalls
Page 21

Source: MOA HGDB 2016
 Imagery: MOA Pictometry 2015
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2016 Dry Weather Screening Field Notes

14 July 2016 - Campbell Creek Recon	-	(1)
15 July 2016 - Campbell Creek Recon	-	(5)
20 July 2016 - Campbell Creek Recon	-	(9)
29 August 2016 - Ship Creek Recon	-	(11)
30 August 2016 - Ship Creek Recon	-	(17)
31 August 2016 - Chester Creek Recon	-	(21)
1 Sept 2016 - Chester Creek Recon	-	(23)
7 Sept 2016 - Chester Creek Recon	-	(30)
8 Sept 2016 - Chester Creek Recon	-	(31)
11 Sept 2016 - Chester Creek Recon	-	(39)
14 Sept 2016 - Campbell Creek Recon	-	(44)
20 Sept 2016 - Ship Creek Sampling	-	(45)
20 Sept 2016 - Chester Creek Sampling	-	(47)
14 Sept 2016 - Campbell Creek Recon	-	(49)

Field Team -

IW - Isaac Watkins

LS - Lynn Spencer

AG - Alena Gerlek

AR - Audrey Russo

AD - Andrew Dougherty

DWS Region - Campbell Creek: 14 July 2016

585-1 / CAM-585

Isaac Watkins, Alana

sampled in 2011 - good to sample

flowing

3 ft cutout on W side of creek +
NO of Diamond

17-1 / CAM-17

sampled in 2011 - good to sample

flowing

channel down EOP + creek is full of grass

685-1 / CAM 685

some standing water w/ algae

no flow, cannot sample

642-1

completely submerged, v. low flow

outfall is in base of concrete

manhole

could sample if needed - all water is

coming from storm system

alternate but low priority

CAM-400

good to sample

Park on Boyd Cir, walk to trail

outfall is directly south of Northwood

051-1

can sample, make sure to sample inside outfall + not get stream water cloudy plume

556-3, 556-2-1, 556-1 skipper seep basin

556-3 can sample

556-2-1 usually dry, can check on site

556-1 not an outfall

548-1

standing water - oily green

channel to stream is impounded w/ veg + sediment. Pipe almost full of sediment

30P is culvert under trail, open channel above - check network? actually drains storm system?

1367-26

flowing - can sample

lots of oxidation - vs orange

Access: from Cambell Creek trail at MNM. take bridge south across creek

follow path under on ramp

outfall is on N side of path

②

500-1-1

EOP half full of standing water

- could sample in pipe, though it's not flowing

EOP is next to wood post on E side

- of trail where paved trail begins - green spray paint on veg

1435-1

open channel, surface runoff from
Winners Circle

cannot sample, no EOP - not connected
to storm system

445-1-1

EOP 1/4 full of standing water

- low priority sampled in 2013

^{alternative} EOP is on south side of the driveway at
the last house on the E side of Revenna's

- looks like water may infiltrate before
it reaches the creek, no water
flowing into culvert under trail

97-1

top almost full of water

in sample - flowing slowly, alternate?

top is directly across trail from path

to Somerset, orange marker

thick grass, if sampled bring hard rimms

320-5

cannot locate

sink may have eroded + crushed pipe

83-1

cannot locate

019-2

not flowing

access from E 88th. Follow path down stream + cross drainage ditch.

EOP is at N end of red fence.

243-24

dry

④

15 July 2016

1W + AG

Dry weather Screening - Recon

□ Campbell Creek

120-22-1

wet weather sampling site

□ standing water in pipe, no flow
probably not good for DWS

□ 344-18

short network

good flow, but likely mostly water
from wetland / ephemeral reach on
E. side of Lake Otis

not good for sampling b/c can't
isolate storm water.

□ 120-29

dry -

□ creek not flowing updrainery Ridgeman,
likely getting backed up / dispersing in
woods S of Ridgeman behind houses

□ 120-13

impounded by sediment, partially
buried. Not draining to creek. Soil
DS of outlet is saturated.

2016 DWS equipment list
trash bags
gloves
hand clippers
shovel

⊗ ask Scott - can we use iPads?

120-1-1

on S side of Valley Park
dry. leaf litter + sediment, def.
flows during storm events.

⊗ Need updated network for
Valley Park Drive. New houses
constructed since last update

1160-33

manhole cover in Independence Dr

120-1 - could not find

⊗ no channel btwn Valley Park + train

1454-2

can sample

large outfall across from gravel
road w/ red railings

468-1

trickle flow, Alternate.

EOP is in embankment S of Doubly

E of trail exn to Campbell trail

474-1

dry.

447-64 - Alt.

EOP Broken: Bent into stream
gap @ Break large enough to
collect sample - Alternate

317-1?

eop on north side of creek
100+ ft up a drainage ditch
no flow

could not locate eop on
south side of creek. ^{or drainage way}

586-1

eop blew out load of
debris, but is still buried.
no good.

155-3 dry

212-1 dry

427-2 dry

736-1 = overlnd drainage only
no eop

105-1 good

South side of creek
Access from Peanut Farm

11. DUNSMUIR CO. CO.

11. DUNSMUIR CO. CO.
1200 W. 1st St.
DUNSMUIR, WA 98221

No. 692

20 July 2016

LS, AG

Dry Weather Screening - Reconn
Campbell Creek

581-1

outfall is N of underpass
in cement wall
steady flow

546-1

channel to stream has lots of debris
EOP is half full, flowing
can sample

1477-1

low, stagnant water & trash in EOP
outfall channel is higher elev. than outfall
not flowing to stream
cannot sample

unnamed outfall N of 1477-1

could not locate outfall - covered w/ gravel?
blue marker, remnant routing channel
w/ no water

2AM 300

V side of 2 stream culverts
flowing slightly, slightly backed up
could sample inside pipe w/
bottle on a stick
alternate

SAM 190

S side of 2 stream culverts
can sample
careful - thistles!

100-1 *

two outfalls - WWS sites.

N outfall - 2 ft culvert, flowing well
S outfall - 1 ft culvert, flowing
can sample both

305-1 *

water flowing onto ditch, but not
from EOP, seeping through gravel
beneath plastic mats - manhole upstream
cannot sample

* significant construction on Fairweather Dr
including on storm system. shouldn't sample
this season

SHP WS, WMS MOA | LS/outfall
1600 - 1620 8/29/16 vecon

71-1

Tide high - Need Low T
24-36" pipe - crushed at
top - 1/2 underwater -
came back @ lower tide
to access flow - photos
taken

436-1

1625
24-30" trickle - pipe
in good shape - run off
clear, no odor, foam, color
smell - pics taken

396-1

1635 - 1640 *
two pipes - one cm
one plastic - metal looking
as soon as daylighted from
ground - grid over entrance -
both flowing well w/ clear
H₂O, no odor, color, scum, foam
or debris - pics taken

8/29/16 (NS)

46-1 1645 - 1655

took pics -

could not find

illicit discharge shown
here

151-3 1655 - 1705

took pics of dam +
slough outlet

1710 - tooks at US end
of slough

OF crushed -

debris -

sheen, scum

1/2 - 3/4 buried

orange tinge - not flow
- ponded

8/29/16

1710 - 1740

1363-1

550-2

Area completely
reconstructed -
does not appear
to have flowing
OF to SHP

see photos -

119-1

1742 - 1746

Out fall dry - suspended
corroded + slightly crush
gravel + sed. in bottom +
possible clogging OF upgrad.
fish, ducks, geese present.
Photos

491-1

* 1800 - 1830

Flowing - About 1/4 filled
with sediment - flow is clear
- have to jump over 2 fences
- no smell, silt, debris, sheer
color - flow path to
Creek has lots of twigs +
leaves obstructing it.
Photos

(13)

8/30/16

231-1

Q13-1

J. L. GORING CO. COOP
TACOMA, WA 98401

 J. L. GORING CO. COOP

cont.

8-29-16

491-1 - extensive ¹⁸¹⁵
meandering of low path to
Creek - looks like it has
changed course several
times - last photo up
next to bike path bank.

213-1 @ Allied Alaska
AAA Moving & Storage
Outfall behind buildings
- 24' 30" - good flow -
fuel odor - slight
rust colored rocks in
substrate - last flow looked
clear -
no scum, sleet, foam or
debris - photos

1835-1900

LS

8/30/16

1100
look more189-1 Yikes!Cross Drain - not flowing
clogged -

Look @ Photos @ 1103+1104

- Deeply buried - barely
visible @ just up from
the dual culverts -* 96-2Sitta 1100

36" - perched -

Running - lots of flow
clear & noodor, slum, foam, debris
color - Pipe is clearNice flow path to crest -
with normal organic debris
- sticks - etc. 1115-1116-1117

8/30/16 - L8

1125

690-1

Taylor + Parsons

Nothing but garbage
and slosh over the hill -

- then the fence -

SD lid @ top of hill

photos → 1135

245-1

* @

YAKAAT 1150

24" - Running clear = good flow
small bits of foam - per usage
no scum, spon, odor, color, debris
- flow path to creek has
slits + leave + some urban
debris. But not blocked
in any way.

924-1 - walked extensively
looking for OF -

there is a side flood
channel @ base of slope
of what looks like new fill
but no sign of OF
photos

(h-s) 8/30/16

154-1 - Ditch OF to
Creek - clogged @ PS
end with stick dams
- ponded @ various levels
- photos @ 1225-1230

Pipe OF

large plastic pipe - between
railroad tracks on Whiting
photos @ 1240-1242

ponded but flowing -
probably 1' deep -
completely overgrown
with tall grass

H₂O clear, no odor, some
foam, sheen, or color

- pipe $\frac{2}{3}$ full + probably
backed up -

8/30/16 (LS)

82-1 *

1300
30" ?

Concrete structure
gravel + sand filling bottom
flowing freely - clear
flow to pond + then to
creek

no odor, sheen, scum
foam, color

heavily overgrown with tall
grass - photos

8/30/16
Chester CreekLS -
AG

549-1 - EOP - not found

419-6

backed up w/ water from pond - ^{12" pipe}_{3/16" full}
water moving slowly -1 ft/sec, clear water, no odor/sheen/scum
photos 2:46 - 2:47

pipe is dented

could sample for MTO pipe - alternate

(117-1)

outfall located on slope N/E of Westchester
Overlook - EOP ~100 ft S of tarmac
flows into swale

trickle flow - water clear, no odor/sheen/scum

photos 3:15

outfall in good condition

163-5 - could not locate

~~outfall completely submerged in creek~~~~4 inch pipe extending 3 ft into creek~~~~EOP covered in algae - hope that's a tree~~308-1 - could not locate
slough!

~~Wester~~ Creek LS, AG

31 Aug 18

(079-21)

flowing - 20 gpm, 1/2 full w/ water

Pft pipe, 1/4 full w/ fine sed. + gravel

water clear - no odor / scum / sheen

organic debris in slough, but not clogged

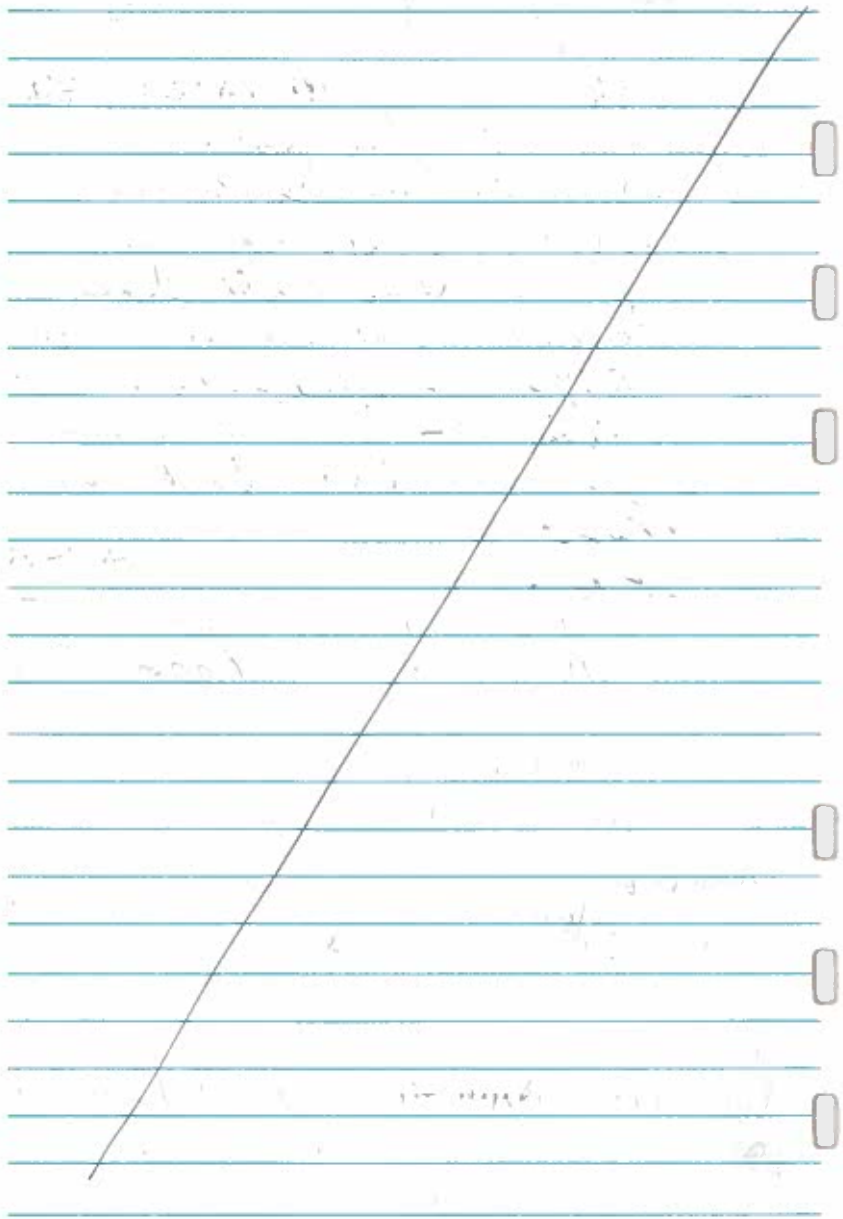
photos 3:57 + 3:58

152-1 - could not locate

no storm network!

Chester Creek Reson LS AG 1 Sept 16

676 - 2 culvert 1750 - 52
1/2 full of water)
bottom one in creek - back-
watered crushed -
top one dry - extended
out over bank lip -
neither appropriate for
sampling -



1600 LS, Aly 9-1-16

Chester Creek

* 296-1 # 1602-1604

Slight musty odor -
slightly cloudy, urban
debris in grate that is
pushed open off front
clogged with leaves + twigs
flowing freely -

flow channel some
organic debris but no
back up -

flow slightly tea colored
no sign. floatables,
odor, scum, sheen, foam

unnamed outfall

1 ft steel pipe in concrete headwall
discharging into swale

trickle flow, water clear, no odor/scum/sheen
outfall is N of Barrow St. on N side
of AST trail

photos 4/15

does not outfall to Chester Creek. - infiltrates

not shown on storm network -
database needs to be updated

new construction

Chester Creek L5, AG 1 Sept 16

302-2

outfall is completely obstructed by sediment + leaves. Flow channel is ponded + not flowing. Water in channel is rusty + has a sheen, no odor. Organic debris in channel.

EOP is N of Cordova St.

Does not outfall to creek.

photos: 4:25 + 4:27

525-2

Net weather screening outfall

2 ft pipe in concrete headwall

water clear no scum/sheen, slight metallic odor

pipe has rusted stain on bottom at water line

strong flow, water 2 1/2 - 3" deep in pipe

photos 4:35

unnamed outfall

directly across creek from 525-2

trickle flow, EOP rusted + unavailing, covered in moss

perched 1 ft above creek

no manhole/ditch, no ~~water~~ evidence up system

not on database

photos 4:38

clear water, no odor/scum/sheen

(26)

499-1

WPS outfall

2 ft pipe in stream embankment, good condition
flows 8 ft overland to creek in incised
channel, not clogged

water clear, no odor/scum/sheen
flowing, 2" of water in pipe
photos 4:44 + 4:45

499-17

EOP in creek - 4 ft pipe - behind gravel
outfall crushed + half buried in sediment
flowing 1 ft/min

cloud of red/orange algae / iron floc? in
creek around outfall to ~12 ft DS
no sheen, slightly colored, slight odor
photos 4:49 + 4:50

299-29

11-16" pipe, EOP ^{5ft} in creek

"1/2 full of water backwashing w/ creek water
some foam 8" slight eddy

1-2" of sediment in bottom of pipe
slight fuel smell

hole in bottom of pipe at stream bank
water flowing out, could sample
photos 5:01

Chester Creek LS, AG

1 Sept 16

(299-20)

(X)

pipe extends ~5ft into creek

bottom is completely rusted, water flowing
out of bottom of pipe at stream bank

Strong flow

no color/todor/sheen/scum

algae/iron floc on creek bottom where
water is flowing in

photos 5:03

previous illicit discharge - NEED TO

SAMPLE

(X)

(06-1)

WWS outfall

4 foot concrete pipe, good

water clear, strong fuel smell

no scum/sheen/water, slightly cloudy

iron stain on bottom of pipe + rocks

Strong flow, 1" of water in pipe

photos 5:10

YB4-1 - WWS outfall

2ft metal pipe, slightly dented

not flowing - flowing strongly during recent WWS

some coarse sand in pipe

photos 5:12

(20)

15-1

30" pipe, EOP in creek, US side dented
creek water backwashing in to pipe
could not sample

pipe is $3/4$ submerged in creek

photos 5:22 + 5:24

552-105

3 ft rubber pipe in concrete headwall

outfall is ~250 ft S of creek

discharges into swale, water in filtrates before
the end of the swale, does not fall to creek

water is cloudy, iron/metal sheen, sewage
smell, rust stain on bottom of pipe

red-orange algae/floc in water tracks DS
from outfall

photos 5:33

Chester Creek Recon LS, ATG 7 Sept 16

314-23

W/S outfall

flowing freely

water clear, no odor/sum/sheen

collar around outfall is rusted, small scour
pool at EOP

flowpath clear, some organic debris

209-12

EOP in pond

flowing ~ 60 ft/min, 2 ft pipe, water 4-6 deep

water clear, no odor/sum/sheen

bottom of pipe rusted out

30-1

S of creek W of Lake Otis

not flowing, cannot sample

pipe is rusted out ~ 3 ft up from EOP

green algae on bottom of pipe, bottom of pipe

is wet - probably flowing during recent

rain

347-1

V of creek W of Lake Otis - directly across from 30-1

not flowing, cannot sample

outfall in good condition, some corrosion in bottom
of pipe

527-1

not flowing, flow path is backed up +
stationary all the way to the creek
lots of green algae in flow path
2 ft rubber pipe w/ grate
some organic debris in grate (leaves +
grass droppings) 2 inches standing water
in pipe. clear water, no odor / silt / scum

418-1

W side of creek N of N. Lights - 18' pipe
outfall in good condition

stream water is backwashing into pipe, cannot sample
eddying for at least 6 ft up pipe
water in pipe is 3-4" deep back in to pipe,
water marks about half way up - from recent
run?

542-1

E side of creek N of N. Lights - 18" pipe
less than 1" of water in the bottom of the
pipe, flowing steadily. EOP is slightly submerged
in creek. would be diff.icult to sample -
maybe could siphon? alternate
water clear, no odor / silt / scum

Chester Creek Run LS, AG 7 Sept 16

45-1

5 foot metal pipe
water 1 foot deep, flowing ~45 ft/sec
some leaf debris in grate
outfall in good condition
flow path incised 6 inches, good flow,
no impoundments
outfall on NE side of parking lot

100-10

North W of Engineering Building just S
of bike path
4" pipe, 4" of water flowing strongly
flow path incised 6 inches - 2 feet
water clear, no debris seen down

148-615

could not locate

148-432

3 foot concrete pipe in concrete headwall
fully submerged in creek - creek water is
back washing into outfall. Some outflow, but
impossible to isolate from creek water. Sediment
a gravel in bottom of pipe (~0.5 feet) + water
1 foot deep

1293-1

EOP in hill 25 ft from edge of University
 Lake. Not flowing, cannot sample.
 Outfall slightly dented. Trash + debris
 (crabs) inside pipe.

4-1

2 ft metal pipe at lake edge.

large rocks in outfall collar

good condition

lots of organic debris + trash clogging
 grate - ~65% obstructed

water flowing out through obstruction

slight milky tint - no scum/sheen

trash odor

Chester Creek Recon LS, AG 8 Sept 16

578-1

could not locate

← there is geofabric + gravel
blocking drainage in gutters
along Westman - causing
catch basin. Recent work
on storm network here!

339-1

could not locate

104-1

COF in creek under bridge - 2ft pipe

completely submerged, small (1.5 inch) hole

on top of pipe, slightly dented

many fish at mouth of pipe in pool

no visible cloudiness or debris coming out of

outfall

cannot sample

083-1

could not locate

outfall likely under road

570-1

work on KNIGHTS + walk up creek at property line

18 inch pipe half submerged in creek

slightly dented

backwash from creek, cannot sample

no color or cloudiness

428-2

could not locate

Large cottonwood fell landward where database shows outfall should be, maybe outfall was crushed?

345-1

immediately adjacent to creek culvert
1 foot pipe, half filled w/ water backwashing
from creek, cannot sample

98-2

3 foot pipe with grate, good condition
grate clogged with trash, not flowing
4 inches standing water in pipe level
with creek water - backwashing into pipe
cannot sample

2-2

4 foot metal pipe, unclogging, grate has fallen
off, flowing, 4 inches of water in pipe.
clear water, no odor when swim
Rust on bottom of pipe.

321-1

18 inch metal pipe. Creek water backwashing into pipe.
No visible cloudiness. Cannot sample

Chester Creek Pecon LS, AG 8 Sept 16

319-1

18 inch pipe, good condition

flowing slightly - flowpath somewhat obstructed by sediment + leaves. Sediment + leaves in bottom of pipe, water slightly turbid w/ sediment

2.5 inches water in pipe. Alternate.

33-1

OP is approx. 75 ft N of creek.

lots of wind fall trees covering flowpath + pipe. Pipe has hose coming out of end.

Channel has water in it, but it is not flowing into creek.

Difficult to access, uncertain flow.
Cannot sample.

188-1

2 ft plastic pipe at the dead end of Patterson, some trash in grate (x-type)

Grass is heavily overgrown w/ grass

1 1/2 inches of water in pipe, flowing slightly. Flowpath slightly perched. ^{note}
Previous kill + discharge - need to sample

photos - Lynn's phone. bracketed

no odor / swim / sheen

by r ses

(X)

553-1

30 inch pipe with 3 inch weir

overgrown w/ grass

Strong flow over weir

water clear, no odor/sum/skell

1449-1 - alternate?

18 inch plastic pipe w/ plastic collar

good condition

outfall + flow channel vegetated - sedges + grass

lots of rocks in pipe *Epilobium ciliatum*

1/2 inches standing water in pipe - not

flowing

~~844-1~~ 884-1 - AG

18 inch plastic pipe w/ plastic collar

Good condition

flow path to creek clear - rock channel

no water

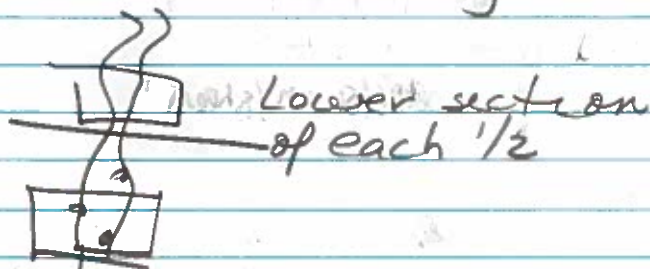
debris + trash in pipe

5 per WS

* must sample those with
Microt Discharge

Alternates per WS

15 total flanging



10 Alternates per WS

Audrey

907 382-2228

Chester Creek Recon
LS, AS, AR, AD

14 Sept 16

③ unnamed outfall next to 3-1
3 ft metal pipe w/ collar + grate
leaves in outfall, flowing, could sample
(may need pipe to fill bottles)
some rust color on bottom of pipe
water clear, no odor/sound/shell

3-241

3 ft metal pipe w/ collar + grate
not flowing - pipe is tilted up hill
moss in collar

bypass in OGS - outfall will only
flow during high water

two outfalls into sed basin
outfall into E side - flowing
3 ft pipe w/ collar + grate
flowing strongly

outfall into S side

collar is separated from EOP
4 ft metal pipe w/ grate
20 ft section of pipe is separated from
network - ~~water flowing under pipe into basin~~



~~could sample or break~~ → 39

DARLAND CORP
TACOMA, WA 98421

DRILLING

Chester Creek Recon

14 Sept 16

S, AB, AR, AD

3-1 outfall on S side of seal basin
standing water in pipe, not outfalling
into basin

Water flowing into basin from
underneath pipe - cannot tell if it is
originating in storm network or
surface run off
cannot sample

~~397~~
397-2 - Outfalls under into manhole
under Sapien Rd Enters a pipe
up gradient Sapien 60 yards open
channel. Outfall is CMP at 18 in ϕ
Potentially crushed at top has collar
6 in filled sed, 6 in water on top
Orange organic algae and silt
Flowing at 4 g/sft

Could not find 301-1 & there were
numerous electrical conduits
that gave pause

Master ~~RAM~~ LS, AG, AIR, AD, 14 Sept 16

(236-1) Perched, 18 in CMP, Collar

has eroded out, goes into punch panel.

Perched about 2.5 ft. Suspect pipe used to come and further water is clear, not cloudy, no tint, no odor

Accumulation of iron/rusty residue in pipe and channel. Has normal organic debris but does not have a lot of urban

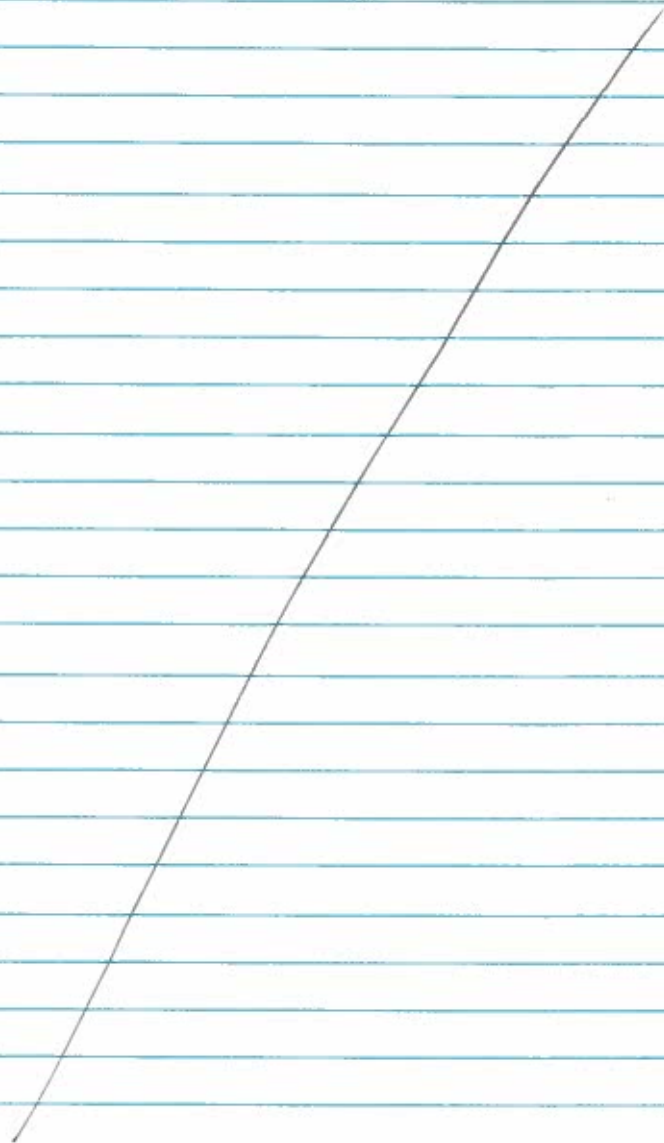
trash. - Running fast, bin scow in Outfall chan

647-26 24 in CMP Perched 2.5 ft,

bottom has corroded out Collar has fallen off. Punch panel about 1 ft deep

No accumulation in pipe due to flow. ~15-2 in deep in bottom of channel. ~3³/₅ gal bucket

~~34-36 in~~ 32 in x 4 in deep x 1 ft x



CAM LSAR

14 Sept 16

019-1 18in HDPE. Flowing very slowly, has plastic collar.

Would need submerged bottle to sample about 8in water, organics at bottom

Floating organics light oil sheen. color

Heavy oil sheen down ditch. Most likely

collects old 383-1 outfall due to new

culvert installation. Pipe is backwatered

End of pipe near 88th St. (1019-6)

019-2 (1019-2, toward N). Completely

sucked up. Filled w/ lots of urban

trash. 18in HDPE.

243-24 24in HDPE No flow but

evidence that it has been flowing. Bed

of organics & rock

847 (7 iPad died) 18in HDPE. Brown

Algae. Clear, no color, no odor

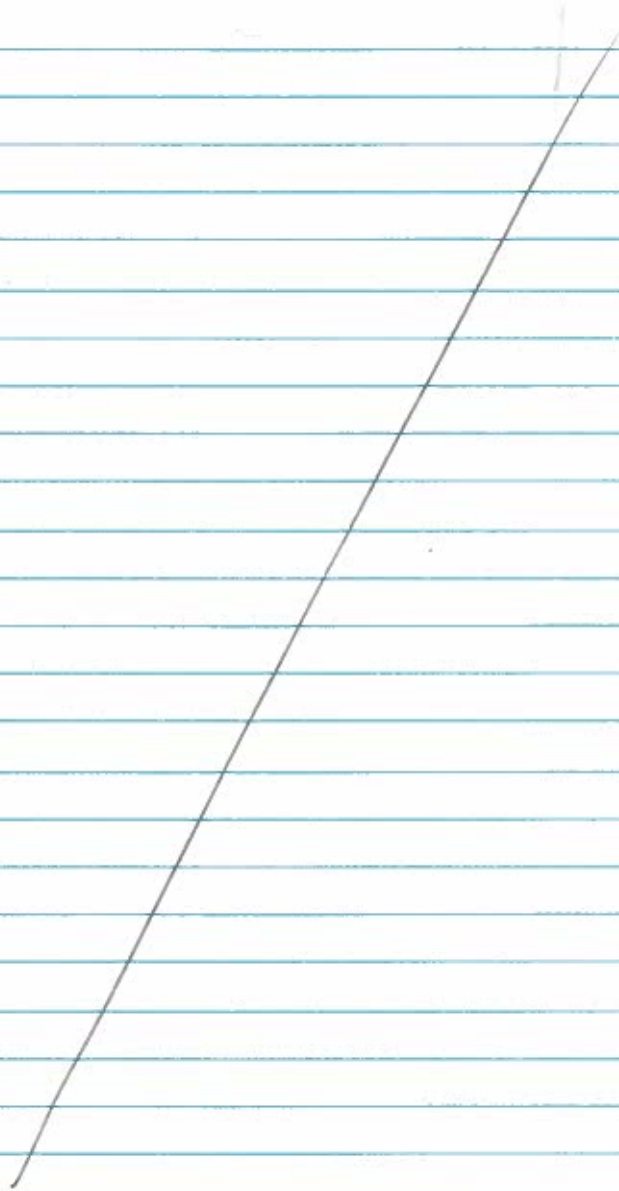
slow, good condition, new

Ship Creek sampling AG, AR 20 Sept 16

target out falls:

910-2 ✓

491-1 ✓



Chester Creek sampling AG, AR 20 Sept 66

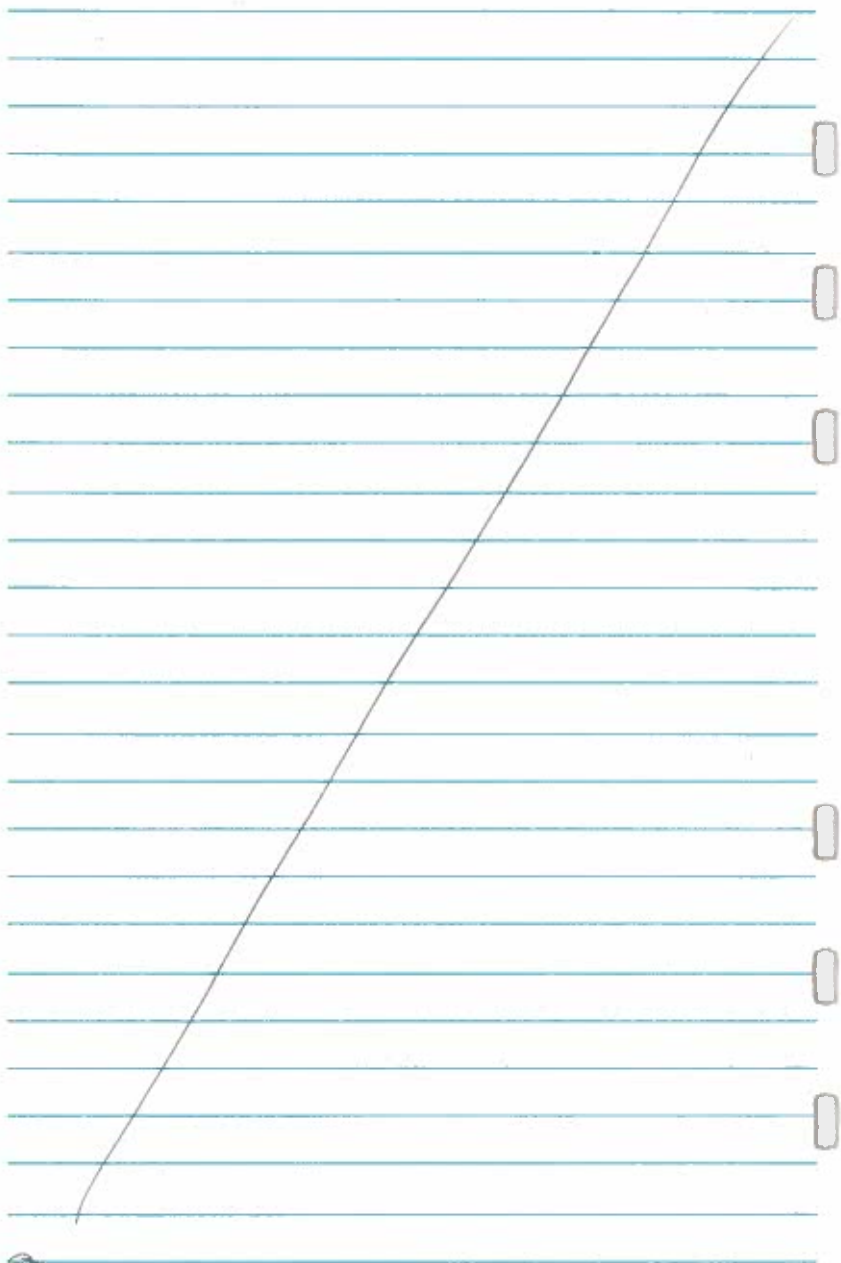
target outfalls:

- | | | |
|--------|------------------------|---|
| 86-1 | ③ - New Seawall | ✓ |
| 299-20 | ② - Eagle | ✓ |
| 296-1 | ① - A St | ✓ |
| 488-1 | ⑤ - Patterson (DeBarr) | |
| 645-1 | ④ - University | |

488-1

not flowing at time of sampling

alternate:



Campbell Creek Recon A6, AD 14 Sept 19

446-D

18 inch metal pipe w/ collar
 somewhat overgrown w/ grass
 flowing, water in pipe 5 inches deep
 sandbag 175 in pipe, rocks in flow path
 to creek. Not obstructed
 water clear, no odor/sulfur/sheen.

446-1

18 inch pipe w/ collar, good condition
 water perched on collar backwashing
 slightly into pipe
 not flowing

290-46

1 ft pipe w/ collar, good condition
 1 inch standing water in pipe
 obstructed by organic debris in
 flow path - sediment, leaves
 water - clear, no odor/sulfur/sheen
 not flowing to creek

Campbell Creek Decon AG, AD 14 Sept 16

408-1

18 inch pipe, 1/2 inch water in pipe
flowing slowly
sheen on water - organic?
no odor / scum / cloudiness
would forget for sampling

1056-8

outfall on N side of sed basm, S side
of carriage Dr
18 inch plastic pipe, extends 4 ft
into pond. Backwashing w/ pond water.
Cannot sample.

1056-17

2 ft metal pipe w/ grate
pipe partially covered w/ gravel from
recent trail maintenance
grate partially clogged w/ organic + urban
debris, 4 inches of water in pipe, flowing.
Lots of orange algae / fluc? in pipe +
flowpath to creek. Strong sulphur
smell at times, not continuous.
water clear, no sheen / scum.

50

11

1056-8

outfall on SE side of sed basm (inlet)
2 ft metal pipe w/ grate
grate clogged w/ organic + urban debris
filled w/ water backwashing from pond
cannot sample.

447-64

18 inch metal pipe, 3 feet of pipe
are separated + has fallen into creek.
Water flowing from network down into
creek through separated segment.
No odor / scum / sheen
could sample but may need to siphon

317-1

Could not work. Likely outfalls to creek
in culvert under Lake Otis

586-1

outfall completely obstructed by sediment
water is ponded above EOP, not draining
lots of sediment + debris in flowpath.
Looks like water overflows from road.
No flow in flowpath, likely obstructed +
not outfalling to creek.

Rite in the Rain

51

12 Campbell Creek Recon AG, AD 14 Sept 16

697-15

(M1) to sed basin - NE side of pond
4 ft metal pipe, good condition
good flow, 2 inches of water in pipe
no debris/slum/sheen
water has a slight yellow tint
no odor

(EOP) on W side of meadow st. draining
into W side of pond

3 ft plastic pipe w/ grate
very clogged w/ organic + urban debris
water flowing through debris
Xing culvert between ponds

outfall is marked by orange lathe
very overgrown w/ grass + sediment
orange floc, sheen (organic?)
flowing in flowpath to pond

(EOP) on NW side of pond

2 EOPs. (W) - 2 ft pipe w/ collar. Flowing.
No debris/sheen/slum. Some rust staining
E 2 ft pipe w/ collar + grate. Not flowing.
Lots of plants growing in pipe + collar
Rust staining + sheen. No odor

52

13

(67-1)

18 inch pipe w/ plastic collar
3 inches water in pipe. Flowing slowly
Flowpath obstructed by sediment or
organic debris. Some urban debris
in flowpath. Orange algae/floculent?
Lots of sheen on water surface
Water cloudy. No slum/odor.

(697-24)

18 inch pipe inside 2 ft pipe
Flowing slowly, 5 inches of water in
pipe - level with creek water, but
no backwashing/eddying in pipe.
Some algae/floc being borne in outfall
flow. No odor/slum. ~~Some~~ Some sheen
on water, slight cloudiness.
Small fish swimming into outfall.

53

Rate in the Rain

Isaac Watkins
 HDR Alaska, Inc.
 2525 C Street #500
 Anchorage, AK 99503

Work Order: 1165199
 Dry Weather Screening

Client: HDR Alaska, Inc.

Report Date: September 06, 2016

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCC/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
 All DRO/RRO analyses are integrated per SOP.



SGS Ref.# 1165199001
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID SHP 436-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/06/2016 8:52
Collected Date/Time 09/02/2016 13:50
Received Date/Time 09/02/2016 16:28
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	2.0	1.00	col/100mL	SM21 9222D	A			09/02/16	DSH



SGS Ref.# 1165199002
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID SHP 1363-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/06/2016 8:52
Collected Date/Time 09/02/2016 14:15
Received Date/Time 09/02/2016 16:28
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	2.0	1.00	col/100mL	SM21 9222D	A			09/02/16	DSH



SGS Ref.# 1165199003
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID SHP 550-2
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/06/2016 8:52
Collected Date/Time 09/02/2016 14:25
Received Date/Time 09/02/2016 16:28
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	3.0	1.00	col/100mL	SM21 9222D	A			09/02/16	DSH



SGS Ref.# 1165199004
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID SHP 436-1D
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/06/2016 8:52
Collected Date/Time 09/02/2016 13:50
Received Date/Time 09/02/2016 16:28
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	ND	1.00	col/100mL	SM21 9222D	A			09/02/16	DSH



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1165199



Locations Nationwide
Maryland
New York
New Jersey
Carolina
Virginia
Indiana
Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: HDR Inc
 CONTACT: Isaac Watkins PHONE NO: 907-644-7088
 PROJECT: Dry weather screening
 NAME: Isaac Watkins PWSID/ PERMIT#: HDR Inc.com
 REPORTS TO: Isaac Watkins@HDR Inc.com E-MAIL:
 INVOICE TO: Isaac Watkins@HDR Inc.com QUOTE #:
 PO #: Dry weather screening

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX CODE	Type C = COMP G = GRAB M = Multi I = Incremental S = Soils	CONTAINER #	REMARKS/ LOC ID
1A	SHP 436-1	09/22/16	13:50	H ₂ O	G	1	X
2A	SHP 1363-1	"	14:15	H ₂ O	G	1	X
3A	SHP 550-2	"	14:25	H ₂ O	G	1	X
4A	SHP 436-1 D	"	13:50	"	G	1	X

Section 3

Preservative

Section 4

DOD Project? Yes No

Cooler ID: _____

Requested Turnaround Time and/or Special Instructions: _____

Data Deliverable Requirements: _____

Chain of Custody Seal: (Circle)
 INTACT **BROKEN** **ABSENT**
 (See attached Sample Receipt Form)

Temp Blank °C: Chilled
 or Ambient []

(See attached Sample Receipt Form)

Section 5

Relinquished By: (1) _____ Received By: _____
 Relinquished By: (2) _____ Received By: _____
 Relinquished By: (3) _____ Received By: _____
 Relinquished By: (4) _____ Received For Laboratory By: Anna Wilh

http://www.sgs.com/terms-and-conditions

Hand Delivered

[] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
 [] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

F083-Kit_Request_and_COC_Templates-Blank
 Revised 2013-03-24



e-SAMPLE RECEIPT FORM

1165199



1 1 6 5 1 9 9

Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	ABSENT
<input checked="" type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	Chilled
If <0°C, were sample containers ice free?	<input type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/>	<input type="checkbox"/> ***Exemption permitted for metals (e.g., 200.8/6020A).
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input type="checkbox"/>	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/>	
Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165199001-A	Na2S2O3 for Chlorine Redu	OK			
1165199002-A	Na2S2O3 for Chlorine Redu	OK			
1165199003-A	Na2S2O3 for Chlorine Redu	OK			
1165199004-A	Na2S2O3 for Chlorine Redu	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Isaac Watkins
 HDR Alaska, Inc.
 2525 C Street #500
 Anchorage, AK 99503

Work Order: 1165084
 Dry Weather Screening

Client: HDR Alaska, Inc.

Report Date: September 07, 2016

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
 All DRO/RRO analyses are integrated per SOP.



SGS Ref.# 1165084001
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 585-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 14:00
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	24	1.00	col/100mL	SM21 9222D	A			08/29/16	DSH



SGS Ref.# 1165084002
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 585-1-D
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 14:00
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	13	1.00	col/100mL	SM21 9222D	A			08/29/16	DSH



SGS Ref.# 1165084003
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 17-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 14:30
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	34	1.00	col/100mL	SM21 9222D	A			08/29/16	DSH



SGS Ref.# 1165084004
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 400
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 15:15
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	7.0	1.00	col/100mL	SM21 9222D	A			08/29/16	DSH



SGS Ref.# 1165084005
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 1454-2
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 16:00
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	ND	1.00	col/100mL	SM21 9222D	A			08/29/16	DSH



SGS Ref.# 1165084006
Client Name HDR Alaska, Inc.
Project Name/# Dry Weather Screening
Client Sample ID CAM 105-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/07/2016 11:12
Collected Date/Time 08/29/2016 16:30
Received Date/Time 08/29/2016 16:41
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	410	10.0	col/100mL	SM21 9222D	A			08/29/16	DSH



CLIENT: HDR Inc.		PHONE NO: 644-7088		Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.			
CONTACT: ISAAC LEATKINS		PROJECT PWSID/ PERMIT#:					
PROJECT NAME: Dry weather screening		E-MAIL: isaac.leatkins@HDRINC.COM		Section 3 Preservative Type C = COMP G = GRAB MI = Multi Incremental Soils			
REPORTS TO: ISAAC LEATKINS		QUOTE #: MOA PM3E					
INVOICE TO: Kristi Bischoff		P.O. #: Dry weather screening		Section 4 DOD Project? Yes No Cooler ID: Requested Turnaround Time and/or Special Instructions:			
RESERVED for lab use		MATRIX/ MATRIX CODE					
SAMPLE IDENTIFICATION		DATE mm/dd/yy		TIME HH:MM		REMARKS/ LOC ID	
① DA	CAM 585-1	08/29/16	14:00	1120	G		
② DA	CAM 585-1-D	08/29/16	14:00		G		
③ DA	CAM 17-1		14:30		G		
④ DA	CAM 400		15:15		G		
⑤ DA	CAM 1454-2		16:00		G		
⑥ DA	CAM 105-1		16:30		G		
Relinquished By: (1)		Date		Time		Received By:	
<i>[Signature]</i>		8-29-16		1640		<i>[Signature]</i>	
Relinquished By: (2)		Date		Time		Received By:	
<i>[Signature]</i>						<i>[Signature]</i>	
Relinquished By: (3)		Date		Time		Received By:	
<i>[Signature]</i>						<i>[Signature]</i>	
Relinquished By: (4)		Date		Time		Received For Laboratory By:	
<i>[Signature]</i>		8/29/16		16:41		<i>[Signature]</i>	

Page ____ of ____

Chain of Custody Seal: (Circle) INTACT **BROKEN** **ABSENT**

Temp Blank °C: *Chilled* or Ambient []

(See attached Sample Receipt Form)

Handwritten

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank Revised 2013-03-24



e-SAMPLE RECEIPT FORM

1165084



Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	ABSENT
<input checked="" type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	Chilled
If <0°C, were sample containers ice free?	<input type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***)used?	<input checked="" type="checkbox"/>	<input type="checkbox"/> ***Exemption permitted for metals (e.g,200.8/6020A).
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input type="checkbox"/>	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/>	
Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165084001-A	Na2S2O3 for Chlorine Redu	OK			
1165084002-A	Na2S2O3 for Chlorine Redu	OK			
1165084003-A	Na2S2O3 for Chlorine Redu	OK			
1165084004-A	Na2S2O3 for Chlorine Redu	OK			
1165084005-A	Na2S2O3 for Chlorine Redu	OK			
1165084006-A	Na2S2O3 for Chlorine Redu	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Kristi Bischofberger
 MOA-Project Mngmt/Engr-WMS
 PO Box 196650
 Anchorage, AK 995196650

Work Order: 1165585
 Dry Weather Screening

Client: MOA-Project Mnmt/Engr

Report Date: September 26, 2016

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCC/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
 All DRO/RRO analyses are integrated per SOP.



SGS Ref.# 1165585001
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID SHP 491-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 10:15
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	1.0	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585002
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID SHP 96-2
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 10:35
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	1.0	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585003
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 296-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 11:05
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	268	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585004
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 299-20
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 11:30
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	ND	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585005
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 299-20D
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 11:30
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	ND	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585006
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 86-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 12:05
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	1.0	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585007
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 645-1
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 12:25
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	9.0	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS Ref.# 1165585008
Client Name MOA-Project Mnmt/Engr
Project Name/# Dry Weather Screening
Client Sample ID CHS 2-2
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 09/26/2016 14:55
Collected Date/Time 09/20/2016 13:00
Received Date/Time 09/20/2016 13:34
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Microbiology Laboratory</u>									
Fecal Coliform	2.0	1.00	col/100mL	SM21 9222D	A			09/20/16	K.W



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1165585



Locations Nationwide
Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming
www.us.sgs.com

CLIENT: HDR INC

CONTACT: Alena Gelek
PHONE NO: 909.644.2122

PROJECT NAME: Dry Weather Screenings
PROJECT/PWSID/PERMIT#: _____

REPORTS TO: E-MAIL: alena.gelek@hdrinc.com

INVOICE TO: QUOTE #: _____
MORRIS K. BISHOP, P.O. #: Dry Weather Screenings

Section 1

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	Type C = COMP G = GRAB M = Multi I = Incremental S = Soils	#	CONTAINERS	REMARKS/LOC ID
① A	SHP 491-1	9/20/16	10:15	H2O	G	1		
② A	SHP 96-2	9/20/16	10:35	H2O	G	1		
③ A	CHS 296-1	9/20/16	11:05	H2O	G	1		
④ A	CHS 299-20	9/20/16	11:30	H2O	G	1		
⑤ A	CHS 299-20 D	9/20/16	11:30	H2O	G	1		
⑥ A	CHS 96-1	9/20/16	12:05	H2O	G	1		
⑦ A	CHS 645-1	9/20/16	12:15	H2O	G	1		
⑧ A	CHS 2-2	9/20/16	13:00	H2O	G	1		

Feed cell form

Section 3

Section 4

Section 5

Relinquished By: (1) Alena Gelek
Date: 9/20/16
Time: 13:34

Relinquished By: (2) _____
Date: _____
Time: _____

Relinquished By: (3) _____
Date: _____
Time: _____

Relinquished By: (4) _____
Date: 9/20/16
Time: 13:34

Received By: _____
Date: _____
Time: _____

Received By: _____
Date: _____
Time: _____

Received By: _____
Date: _____
Time: _____

Received For Laboratory By: _____
Date: _____
Time: _____

Temp Blank °C: Chilled
or Ambient []

Chain of Custody Seal: (Circle)
INTACT **BROKEN** ABSENT

Data Deliverable Requirements:

Section 4 DOD Project? Yes No
Cooler ID: _____
Requested Turnaround Time and/or Special Instructions: _____

Section 5 (See attached Sample Receipt Form)

Section 6 (See attached Sample Receipt Form)

Page ____ of ____

[] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

Hard Delivered



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165585001-A	Na2S2O3 for Chlorine Redu	OK			
1165585002-A	Na2S2O3 for Chlorine Redu	OK			
1165585003-A	Na2S2O3 for Chlorine Redu	OK			
1165585004-A	Na2S2O3 for Chlorine Redu	OK			
1165585005-A	Na2S2O3 for Chlorine Redu	OK			
1165585006-A	Na2S2O3 for Chlorine Redu	OK			
1165585007-A	Na2S2O3 for Chlorine Redu	OK			
1165585008-A	Na2S2O3 for Chlorine Redu	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.



Ship Creek 436-1. Photograph taken September 2, 2016.



Ship Creek 1363-1. Photograph taken September 2, 2016.



Ship Creek 550-2. Photograph taken September 2, 2016.



Ship Creek 491-1. Photograph taken September 20, 2016.



Ship Creek 96-2. Photograph taken September 20, 2016.



Chester Creek 296-1. Photograph taken September 20, 2016.



Chester Creek 299-20. Photograph taken September 20, 2016.



Chester Creek 86-1. Photograph taken September 20, 2016.



Chester Creek 245-1. Photograph taken September 20, 2016.



Chester Creek 2-2. Photograph taken September 20, 2016..



Campbell Creek 585-1. Photograph taken August 29, 2016.



Campbell Creek 17-1. Photograph taken August 29, 2016.



Campbell Creek 400-1. Photograph taken August 29, 2016.



Campbell Creek 1454-2. Photograph taken August 29, 2016.



Campbell Creek 105-1. Photograph taken August 29, 2016.