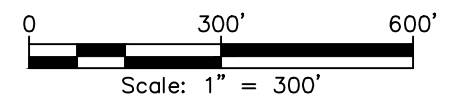


- Notes:**
- Existing topography was created by Eastern Topographics of Wolfeboro, New Hampshire. The survey was created from Aerial Survey performed on November 15, 2022. Horizontal datum is based on NAD83 NH State Plane coordinates system and the Vertical datum is based on NAVD88.
 - Contours represent seasonal high groundwater contours per Sanborn Head & Associates Hydrogeologic report in Attachment V(4).
 - Secondary liner is depicted by proposed contours.
 - This figure depicts the distance between the secondary liner and the seasonal high groundwater table.

Legend

| | |
|--|--|
| | Existing Property Line |
| | Existing Edge of Gravel |
| | Existing Edge of Pavement |
| | Existing Perennial Stream |
| | Existing Intermittent Stream |
| | Existing Wetlands |
| | Proposed 10' Contours |
| | Groundwater Contour |
| | Separation Between Secondary Liner and Seasonal High Groundwater |



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Granite State Landfill, LLC
Granite State Landfill
Dalton, New Hampshire
Standard Permit for Solid Waste Landfill

Groundwater Separation

Figure 4

Appendix W

Water Balance Backup Information



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall A

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 182.1 acres
Total Rainfall Volume 607.0 acre-ft Annual
Total Surface Water from Outfall 0.0 acre-ft From average rain event
Surface Water Projected to Full Year 0.0 acre-ft Multiply average rain event by # of rain events
Remaining Water 607.0 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 485.6 acre-ft 80% of Remaining Water*
Assumed Infiltration 121.4 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 176.5 acres
Total Rainfall Volume 588.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Infiltration Basin Pond 13 | A3,A4 | 17.8 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| TOTAL (PER STORM) | | 17.8 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| TOTAL (PER YEAR) | | 17.8 | 59.3 | 0.0 | 0.0 | 41.5 | 17.8 |

Remaining Area (Primarily Woodland)

Remaining Area 158.7 acres
Rainfall Volume over Remaining Area 529.0 acre-ft
Surface Water from Outfall 0.0 acre-ft From average rain event
Surface Water Projected to Full Year 0.0 acre-ft Multiply average rain event by # of rain events
Remaining Water 529.0 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 423.2 acre-ft 80% of Remaining Water*
Assumed Infiltration 105.8 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Outfall A Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 182.1 | 176.5 | acres |
| Surface Water | 0.000 | 0.000 | acre-ft |
| Total ET | 485.6 | 464.7 | acre-ft |
| Total Infiltration | <u>121.4</u> | <u>123.6</u> | acre-ft |
| Total Water | 607.0 | 588.3 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall B

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 112.9 acres | |
| Total Rainfall Volume | 376.3 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 376.3 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 301.1 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 75.3 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 81.7 acres
Total Rainfall Volume 272.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| Infiltration Basin Pond 11 | B3,B4 | 11.0 | 0.5 | 0.0 | 0.0 | 0.3 | 0.1 |
| Infiltration Basin Pond 12 | B2,B5 | 18.2 | 0.8 | 0.0 | 0.0 | 0.5 | 0.2 |
| TOTAL (PER STORM) | | 29.2 | 1.2 | 0.0 | 0.0 | 0.9 | 0.4 |
| TOTAL (PER YEAR) | | 29.2 | 97.3 | 0.0 | 0.0 | 68.1 | 29.2 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 52.5 acres | |
| Rainfall Volume over Remaining Area | 175.0 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 175.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 140.0 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 35.0 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall B Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 112.9 | 81.7 | acres |
| Surface Water | 0.0 | 0.0 | acre-ft |
| Total ET | 301.1 | 208.1 | acre-ft |
| Total Infiltration | <u>75.3</u> | <u>64.2</u> | acre-ft |
| Total Water | 376.3 | 272.3 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall C

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 237.0 acres | |
| Total Rainfall Volume | 790.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 790.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 632.0 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 158.0 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 270.9 acres
Total Rainfall Volume 903.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | <u>ET Water Remain Watershed Inf.</u> | |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| Lined Detention Pond 1 | C18 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 2 | C19,C20 | 7.1 | 0.3 | 0.0 | 0.0 | 0.2 | 0.1 |
| Infiltration Basin Pond 3 | C14,C15 | 16.8 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| Infiltration Basin Pond 4 | C13 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 5 | C11 | 1.9 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Rain Garden Pond 6 | C10 | 2.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond 7 | C3 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 8 | C4,C5 | 14 | 0.6 | 0.0 | 0.0 | 0.4 | 0.2 |
| Infiltration Basin Pond 9 | C6,C7 | 24.6 | 1.0 | 0.0 | 0.0 | 0.7 | 0.3 |
| Infiltration Basin Pond 10 | C8 | 24.8 | 1.0 | 0.0 | 0.0 | 0.7 | 0.3 |
| TOTAL (PER STORM) | | 93.3 | 3.9 | 0.0 | 0.0 | 2.7 | 1.2 |
| TOTAL (PER YEAR) | | 93.3 | 311.0 | 0.0 | 2.4 | 216.0 | 92.6 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 177.6 acres | |
| Rainfall Volume over Remaining Area | 592.0 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 592.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 473.6 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 118.4 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
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Date: May-23
Calc. By: AJS
Chkd. By: RJG

Outfall C Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 237.0 | 270.9 | acres |
| Surface Water | 0.0 | 0.0 | acre-ft |
| Total ET | 632.0 | 689.6 | acre-ft |
| Total Infiltration | <u>158.0</u> | <u>213.4</u> | acre-ft |
| Total Water | 790.0 | 903.0 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall D

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 24.9 acres | |
| Total Rainfall Volume | 83.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 83.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 66.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 16.6 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 27.7 acres
Total Rainfall Volume 92.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Rain Garden Pond DD-5 | D5 | 2.4 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond DD-6 | D7 | 4.4 | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 |
| TOTAL (PER STORM) | | 6.8 | 0.3 | 0.0 | 0.0 | 0.2 | 0.1 |
| TOTAL (PER YEAR) | | 6.8 | 22.7 | 0.0 | 0.0 | 15.9 | 6.8 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 20.9 acres | |
| Rainfall Volume over Remaining Area | 69.7 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.2 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 69.4 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 55.5 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 13.9 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall D Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 24.9 | 27.7 | acres |
| Surface Water | 0.0 | 0.2 | acre-ft |
| Total ET | 66.4 | 71.4 | acre-ft |
| Total Infiltration | <u>16.6</u> | <u>20.7</u> | acre-ft |
| Total Water | 83.0 | 92.3 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
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Chkd. By: RJG

GSL Water Balance Calculations - Outfall E

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 28.4 acres
Total Rainfall Volume 94.7 acre-ft Annual
Total Surface Water from Outfall 0.0 acre-ft From average rain event
Surface Water Projected to Full Year 0.2 acre-ft Multiply average rain event by # of rain events
Remaining Water 94.4 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 75.5 acre-ft 80% of Remaining Water*
Assumed Infiltration 18.9 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 28.5 acres
Total Rainfall Volume 95.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| | | | | | | (acre-ft) | (acre-ft) |
| Rain Garden Pond DD-1 | E4 | 1.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detention Basin DD-1A | E3 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-2 | E7 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-3 | E8,E9 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-3A | E11 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-4 | E10,E15 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER STORM) | | 5.2 | 0.2 | 0.0 | 0.0 | 0.2 | 0.1 |
| TOTAL (PER YEAR) | | 5.2 | 17.3 | 0.0 | 0.0 | 12.1 | 5.2 |

Remaining Area (Primarily Woodland)

Remaining Area 23.3 acres
Rainfall Volume over Remaining Area 77.7 acre-ft
Surface Water from Outfall 0.0 acre-ft From average rain event
Surface Water Projected to Full Year 1.0 acre-ft Multiply average rain event by # of rain events
Remaining Water 76.7 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 61.4 acre-ft 80% of Remaining Water*
Assumed Infiltration 15.3 acre-ft 20% of Remaining Water*

*Remaining Water = Total Rainfall Volume - Surface Water



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
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Outfall E Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 28.4 | 28.5 | acres |
| Surface Water | 0.2 | 1.0 | acre-ft |
| Total ET | 75.5 | 73.5 | acre-ft |
| Total Infiltration | <u>18.9</u> | <u>20.5</u> | acre-ft |
| Total Water | 94.7 | 95.0 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

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Water Balance Summary (0.5" Average Rain Event)

PRE-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 112.9 | 237.0 | 24.9 | 28.4 | 585.3 | acres |
| Surface Water (acre-ft) | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | Surface Water |
| Total ET (acre-ft) | 485.6 | 301.1 | 632.0 | 66.4 | 75.5 | 1560.6 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>121.4</u> | <u>75.3</u> | <u>158.0</u> | <u>16.6</u> | <u>18.9</u> | <u>390.2</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 376.3 | 790.0 | 83.0 | 94.7 | 1951.0 | TOTAL |

POST-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 176.5 | 81.7 | 270.9 | 27.7 | 28.5 | 585.3 | acres |
| Surface Water (acre-ft) | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 1.2 | Surface Water |
| Total ET (acre-ft) | 464.7 | 208.1 | 689.6 | 71.4 | 73.5 | 1507.4 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>123.6</u> | <u>64.2</u> | <u>213.4</u> | <u>20.7</u> | <u>20.5</u> | <u>442.4</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 588.3 | 272.3 | 903.0 | 92.3 | 95.0 | 1951.0 | TOTAL |



35 Bow Street
Portsmouth, NH 03801

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GSL Water Balance Calculations - Outfall A

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 182.1 acres
Total Rainfall Volume 607.0 acre-ft Annual
Total Surface Water from Outfall 1.8 acre-ft From average rain event
Surface Water Projected to Full Year 36.0 acre-ft Multiply average rain event by # of rain events
Remaining Water 571.0 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 456.8 acre-ft 80% of Remaining Water*
Assumed Infiltration 114.2 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 176.5 acres
Total Rainfall Volume 588.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Infiltration Basin Pond 13 | A3,A4 | 17.8 | 3.0 | 0.0 | 0.6 | 1.7 | 0.7 |
| TOTAL (PER STORM) | | 17.8 | 3.0 | 0.0 | 0.6 | 1.7 | 0.7 |
| TOTAL (PER YEAR) | | 17.8 | 59.3 | 0.0 | 11.4 | 33.5 | 14.4 |

Remaining Area (Primarily Woodland)

Remaining Area 158.7 acres
Rainfall Volume over Remaining Area 529.0 acre-ft
Surface Water from Outfall 1.4 acre-ft From average rain event
Surface Water Projected to Full Year 28.7 acre-ft Multiply average rain event by # of rain events
Remaining Water 500.3 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 400.2 acre-ft 80% of Remaining Water*
Assumed Infiltration 100.1 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Outfall A Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 182.1 | 176.5 | acres |
| Surface Water | 36.0 | 28.7 | acre-ft |
| Total ET | 456.8 | 433.7 | acre-ft |
| Total Infiltration | <u>114.2</u> | <u>125.8</u> | acre-ft |
| Total Water | 607.0 | 588.3 | acre-ft |



35 Bow Street
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Project: Granite State Landfill
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Chkd. By: RJG

GSL Water Balance Calculations - Outfall B

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 112.9 acres
Total Rainfall Volume 376.3 acre-ft Annual
Total Surface Water from Outfall 1.1 acre-ft From average rain event
Surface Water Projected to Full Year 21.5 acre-ft Multiply average rain event by # of rain events
Remaining Water 354.8 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 283.9 acre-ft 80% of Remaining Water*
Assumed Infiltration 71.0 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 81.7 acres
Total Rainfall Volume 272.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Infiltration Basin Pond 11 | B3,B4 | 11.0 | 1.8 | 0.0 | 0.3 | 1.0 | 0.4 |
| Infiltration Basin Pond 12 | B2,B5 | 18.2 | 3.0 | 0.0 | 0.6 | 1.7 | 0.7 |
| TOTAL (PER STORM) | | 29.2 | 4.9 | 0.0 | 0.9 | 2.8 | 1.2 |
| TOTAL (PER YEAR) | | 29.2 | 97.3 | 0.0 | 18.1 | 55.4 | 23.8 |

Remaining Area (Primarily Woodland)

Remaining Area 52.5 acres
Rainfall Volume over Remaining Area 175.0 acre-ft
Surface Water from Outfall 0.2 acre-ft From average rain event
Surface Water Projected to Full Year 3.2 acre-ft Multiply average rain event by # of rain events
Remaining Water 171.8 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 137.5 acre-ft 80% of Remaining Water*
Assumed Infiltration 34.4 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Outfall B Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 112.9 | 81.7 | acres |
| Surface Water | 21.5 | 3.2 | acre-ft |
| Total ET | 283.9 | 192.9 | acre-ft |
| Total Infiltration | 71.0 | 76.3 | acre-ft |
| Total Water | 376.3 | 272.3 | acre-ft |



35 Bow Street
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Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall C

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 237.0 acres | |
| Total Rainfall Volume | 790.0 acre-ft | Annual |
| Total Surface Water from Outfall | 3.6 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 71.6 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 718.4 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 574.7 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 143.7 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 270.9 acres
Total Rainfall Volume 903.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Lined Detention Pond 1 | C18 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 2 | C19,C20 | 7.1 | 1.2 | 0.0 | 0.5 | 0.5 | 0.2 |
| Infiltration Basin Pond 3 | C14,C15 | 16.8 | 2.8 | 0.0 | 0.3 | 1.8 | 0.8 |
| Infiltration Basin Pond 4 | C13 | 1.0 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond 5 | C11 | 1.9 | 0.3 | 0.0 | 0.2 | 0.1 | 0.0 |
| Rain Garden Pond 6 | C10 | 2.0 | 0.3 | 0.1 | 0.0 | 0.2 | 0.1 |
| Infiltration Basin Pond 7 | C3 | 0.8 | 0.1 | 0.0 | 0.3 | -0.1 | 0.0 |
| Infiltration Basin Pond 8 | C4,C5 | 14 | 2.3 | 0.0 | 0.3 | 1.4 | 0.6 |
| Infiltration Basin Pond 9 | C6,C7 | 24.6 | 4.1 | 0.0 | 0.7 | 2.4 | 1.0 |
| Infiltration Basin Pond 10 | C8 | 24.8 | 4.1 | 0.0 | 0.2 | 2.8 | 1.2 |
| TOTAL (PER STORM) | | 93.3 | 15.6 | 0.1 | 2.4 | 9.2 | 3.9 |
| TOTAL (PER YEAR) | | 93.3 | 311.0 | 1.6 | 47.8 | 183.1 | 78.5 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 177.6 acres | |
| Rainfall Volume over Remaining Area | 592.0 acre-ft | |
| Surface Water from Outfall | 2.3 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 46.5 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 547.1 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 437.7 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 109.4 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

Outfall C Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 237.0 | 270.9 | acres |
| Surface Water | 71.6 | 46.5 | acre-ft |
| Total ET | 574.7 | 620.8 | acre-ft |
| Total Infiltration | <u>143.7</u> | <u>235.7</u> | acre-ft |
| Total Water | 790.0 | 903.0 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall D

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 24.9 acres | |
| Total Rainfall Volume | 83.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.2 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 3.8 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 79.2 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 63.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 15.8 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 27.7 acres
Total Rainfall Volume 92.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Rain Garden Pond DD-5 | D5 | 2.4 | 0.4 | 0.1 | 0.0 | 0.2 | 0.1 |
| Infiltration Basin Pond DD-6 | D7 | 4.4 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| TOTAL (PER STORM) | | 6.8 | 1.1 | 0.1 | 0.0 | 0.7 | 0.3 |
| TOTAL (PER YEAR) | | 6.8 | 22.7 | 2.4 | 0.0 | 14.2 | 6.1 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 20.9 acres | |
| Rainfall Volume over Remaining Area | 69.7 acre-ft | |
| Surface Water from Outfall | 0.3 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 5.3 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 66.8 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 53.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 13.4 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall D Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 24.9 | 27.7 | acres |
| Surface Water | 3.8 | 5.3 | acre-ft |
| Total ET | 63.4 | 67.6 | acre-ft |
| Total Infiltration | 15.8 | 19.4 | acre-ft |
| Total Water | 83.0 | 92.3 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall E

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 28.4 acres | |
| Total Rainfall Volume | 94.7 acre-ft | Annual |
| Total Surface Water from Outfall | 0.2 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 3.9 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 90.8 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 72.6 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 18.2 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Post-Development

Post-Development Watershed Area 28.5 acres
Total Rainfall Volume 95.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Rain Garden Pond DD-1 | E4 | 1.4 | 0.23 | 0.06 | 0.00 | 0.12 | 0.05 |
| Detention Basin DD-1A | E3 | 1.2 | 0.20 | 0.00 | 0.00 | 0.14 | 0.06 |
| Rain Garden Pond DD-2 | E7 | 0.6 | 0.10 | 0.03 | 0.00 | 0.05 | 0.02 |
| Rain Garden Pond DD-3 | E8,E9 | 0.6 | 0.10 | 0.04 | 0.00 | 0.04 | 0.02 |
| Rain Garden Pond DD-3A | E11 | 0.6 | 0.10 | 0.03 | 0.00 | 0.05 | 0.02 |
| Rain Garden Pond DD-4 | E10,E15 | 0.8 | 0.13 | 0.07 | 0.00 | 0.05 | 0.02 |
| TOTAL (PER STORM) | | 5.2 | 0.87 | 0.22 | 0.00 | 0.45 | 0.19 |
| TOTAL (PER YEAR) | | 5.2 | 17.33 | 4.36 | 0.06 | 9.04 | 3.87 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 23.3 acres | |
| Rainfall Volume over Remaining Area | 77.7 acre-ft | |
| Surface Water from Outfall | 0.3 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 6.7 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 75.3 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 60.2 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 15.1 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

Outfall E Summary

| | <u>PREDEV</u> | <u>POSTDEV</u> | |
|--------------------|---------------|----------------|---------|
| Area | 28.4 | 28.5 | acres |
| Surface Water | 3.9 | 6.7 | acre-ft |
| Total ET | 72.6 | 69.3 | acre-ft |
| Total Infiltration | <u>18.2</u> | <u>19.0</u> | acre-ft |
| Total Water | 94.7 | 95.0 | acre-ft |



35 Bow Street
 Portsmouth, NH 03801

Project: Granite State Landfill
 Project No: 1101
 Date: May-23
 Calc. By: AJS
 Chkd. By: RJG

Water Balance Summary (2.0" Average Rain Event)

PRE-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 112.9 | 237.0 | 24.9 | 28.4 | 585.3 | acres |
| Surface Water (acre-ft) | 36.0 | 21.5 | 71.6 | 3.8 | 3.9 | 136.8 | Surface Water |
| Total ET (acre-ft) | 456.8 | 283.9 | 574.7 | 63.4 | 72.6 | 1451.3 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>114.2</u> | <u>71.0</u> | <u>143.7</u> | <u>15.8</u> | <u>18.2</u> | <u>362.8</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 376.3 | 790.0 | 83.0 | 94.7 | 1951.0 | TOTAL |

POST-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 176.5 | 81.7 | 270.9 | 27.7 | 28.5 | 585.3 | acres |
| Surface Water (acre-ft) | 28.7 | 3.2 | 46.5 | 5.3 | 6.7 | 90.5 | Surface Water |
| Total ET (acre-ft) | 433.7 | 192.9 | 620.8 | 67.6 | 69.3 | 1384.3 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>125.8</u> | <u>76.3</u> | <u>235.7</u> | <u>19.4</u> | <u>19.0</u> | <u>476.2</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 588.3 | 272.3 | 903.0 | 92.3 | 95.0 | 1951.0 | TOTAL |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall A

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 182.1 acres | |
| Total Rainfall Volume | 607.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 607.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 485.6 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 121.4 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

Int-Development Watershed Area 182.1 acres
Total Rainfall Volume 607.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| None | N/A | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER STORM) | | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER YEAR) | | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 182.1 acres | |
| Rainfall Volume over Remaining Area | 607.0 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 607.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 485.6 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 121.4 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall A Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 182.1 | 182.1 | acres |
| Surface Water | 0.0 | 0.0 | acre-ft |
| Total ET | 485.6 | 485.6 | acre-ft |
| Total Infiltration | <u>121.4</u> | <u>121.4</u> | acre-ft |
| Total Water | 607.0 | 607.0 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall B

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 112.9 acres | |
| Total Rainfall Volume | 376.3 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 376.3 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 301.1 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 75.3 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

Int-Development Watershed Area 83.7 acres
Total Rainfall Volume 279.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| Infiltration Basin Pond 11 | B3,B4 | 11.0 | 0.5 | 0.0 | 0.0 | 0.3 | 0.1 |
| Infiltration Basin Pond 12 | B5,B6 | 13.8 | 0.6 | 0.0 | 0.0 | 0.4 | 0.2 |
| TOTAL (PER STORM) | | 24.8 | 1.0 | 0.0 | 0.0 | 0.7 | 0.3 |
| TOTAL (PER YEAR) | | 24.8 | 82.7 | 0.0 | 3.8 | 55.2 | 23.6 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 58.9 acres | |
| Rainfall Volume over Remaining Area | 196.3 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 196.3 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 157.1 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 39.3 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall B Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 112.9 | 83.7 | acres |
| Surface Water | 0.0 | 0.0 | acre-ft |
| Total ET | 301.1 | 212.2 | acre-ft |
| Total Infiltration | 75.3 | 66.8 | acre-ft |
| Total Water | 376.3 | 279.0 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall C

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 237.0 acres | |
| Total Rainfall Volume | 790.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 790.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 632.0 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 158.0 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 246.2 acres
Total Rainfall Volume 820.7 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Lined Detention Pond 1 | C18 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 2 | C19,C20 | 6.6 | 0.3 | 0.0 | 0.0 | 0.2 | 0.1 |
| Infiltration Basin Pond 3 | C14,C15 | 16.8 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| Infiltration Basin Pond 4 | C13 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 5 | C11 | 1.9 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Rain Garden Pond 6 | C10 | 2.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond 7 | C3 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 8 | C4,C5 | 14.0 | 0.6 | 0.0 | 0.0 | 0.4 | 0.2 |
| Infiltration Basin Pond 9 | C6,C7 | 10.7 | 0.4 | 0.0 | 0.0 | 0.3 | 0.1 |
| Infiltration Basin Pond 10 | C8 | 14.1 | 0.6 | 0.0 | 0.0 | 0.4 | 0.2 |
| TOTAL (PER STORM) | | 68.2 | 2.8 | 0.0 | 0.0 | 2.0 | 0.8 |
| TOTAL (PER YEAR) | | 68.2 | 227.3 | 0.0 | 1.7 | 158.0 | 67.7 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 178.0 acres | |
| Rainfall Volume over Remaining Area | 593.3 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 593.3 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 474.7 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 118.7 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

Outfall C Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 237.0 | 246.2 | acres |
| Surface Water | 0.0 | 0.0 | acre-ft |
| Total ET | 632.0 | 632.6 | acre-ft |
| Total Infiltration | <u>158.0</u> | <u>188.0</u> | acre-ft |
| Total Water | 790.0 | 820.7 | acre-ft |



35 Bow Street
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Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall D

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 24.9 acres | |
| Total Rainfall Volume | 83.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 83.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 66.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 16.6 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 27.7 acres
Total Rainfall Volume 92.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------|----------------|
| | | | | | | 70% | 30% |
| Rain Garden Pond DD-5 | D5 | 2.4 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond DD-6 | D7 | 4.4 | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 |
| TOTAL (PER STORM) | | 6.8 | 0.3 | 0.0 | 0.0 | 0.2 | 0.1 |
| TOTAL (PER YEAR) | | 6.8 | 22.7 | 0.0 | 0.0 | 15.9 | 6.8 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 20.9 acres | |
| Rainfall Volume over Remaining Area | 69.7 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.2 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 69.4 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 55.5 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 13.9 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall D Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 24.9 | 27.7 | acres |
| Surface Water | 0.0 | 0.2 | acre-ft |
| Total ET | 66.4 | 71.4 | acre-ft |
| Total Infiltration | <u>16.6</u> | <u>20.7</u> | acre-ft |
| Total Water | 83.0 | 92.3 | acre-ft |



35 Bow Street
Portsmouth, NH 03801

Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

GSL Water Balance Calculations - Outfall E

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 80 events
Assumed Average Rain Event 0.5 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 28.4 acres | |
| Total Rainfall Volume | 94.7 acre-ft | Annual |
| Total Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.2 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 94.4 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 75.5 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 18.9 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 28.5 acres
Total Rainfall Volume 95.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|------------------|------------------|
| | | | | | | 70% | 30% |
| | | | | | | <u>(acre-ft)</u> | <u>(acre-ft)</u> |
| Rain Garden Pond DD-1 | E4 | 1.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detention Basin DD-1A | E3 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-2 | E7 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-3 | E8,E9 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-3A | E11 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rain Garden Pond DD-4 | E10,E15 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER STORM) | | 5.2 | 0.2 | 0.0 | 0.0 | 0.2 | 0.1 |
| TOTAL (PER YEAR) | | 5.2 | 17.3 | 0.0 | 0.0 | 12.1 | 5.2 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 23.3 acres | |
| Rainfall Volume over Remaining Area | 77.7 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 1.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 76.7 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 61.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 15.3 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water



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Date: May-23
Calc. By: AJS
Chkd. By: RJG

Outfall E Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 28.4 | 28.5 | acres |
| Surface Water | 0.2 | 1.0 | acre-ft |
| Total ET | 75.5 | 73.5 | acre-ft |
| Total Infiltration | <u>18.9</u> | <u>20.5</u> | acre-ft |
| Total Water | 94.7 | 95.0 | acre-ft |



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Project: Granite State Landfill
Project No: 1101
Date: May-23
Calc. By: AJS
Chkd. By: RJG

Water Balance Summary (0.5" Average Rain Event)

PRE-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 112.9 | 237.0 | 24.9 | 28.4 | 585.3 | acres |
| Surface Water (acre-ft) | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | Surface Water |
| Total ET (acre-ft) | 485.6 | 301.1 | 632.0 | 66.4 | 75.5 | 1560.6 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>121.4</u> | <u>75.3</u> | <u>158.0</u> | <u>16.6</u> | <u>18.9</u> | <u>390.2</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 376.3 | 790.0 | 83.0 | 94.7 | 1951.0 | TOTAL |

INT-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 83.7 | 246.2 | 27.7 | 28.5 | 568.2 | acres |
| Surface Water (acre-ft) | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 1.2 | Surface Water |
| Total ET (acre-ft) | 485.6 | 212.2 | 632.6 | 71.4 | 73.5 | 1475.4 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>121.4</u> | <u>66.8</u> | <u>188.0</u> | <u>20.7</u> | <u>20.5</u> | <u>417.4</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 279.0 | 820.7 | 92.3 | 95.0 | 1894.0 | TOTAL |



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GSL Water Balance Calculations - Outfall A

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|---------------|---|
| Pre-Development Watershed Area | 182.1 acres | |
| Total Rainfall Volume | 607.0 acre-ft | Annual |
| Total Surface Water from Outfall | 1.8 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 36.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 571.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 456.8 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 114.2 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

Int-Development Watershed Area 182.1 acres
Total Rainfall Volume 607.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| None | N/A | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER STORM) | | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL (PER YEAR) | | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|---------------|---|
| Remaining Area | 182.1 acres | |
| Rainfall Volume over Remaining Area | 607.0 acre-ft | |
| Surface Water from Outfall | 1.8 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 36.0 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 571.0 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 456.8 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 114.2 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall A Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 182.1 | 182.1 | acres |
| Surface Water | 36.0 | 36.0 | acre-ft |
| Total ET | 456.8 | 456.8 | acre-ft |
| Total Infiltration | <u>114.2</u> | <u>114.2</u> | acre-ft |
| Total Water | 607.0 | 607.0 | acre-ft |



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GSL Water Balance Calculations - Outfall B

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 112.9 acres
Total Rainfall Volume 376.3 acre-ft Annual
Total Surface Water from Outfall 1.1 acre-ft From average rain event
Surface Water Projected to Full Year 21.5 acre-ft Multiply average rain event by # of rain events
Remaining Water 354.8 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 283.9 acre-ft 80% of Remaining Water*
Assumed Infiltration 71.0 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

Int-Development Watershed Area 83.7 acres
Total Rainfall Volume 279.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Infiltration Basin Pond 11 | B3,B4 | 11.0 | 1.8 | 0.0 | 0.3 | 1.1 | 0.5 |
| Infiltration Basin Pond 12 | B5,B6 | 13.8 | 2.3 | 0.0 | 0.5 | 1.2 | 0.5 |
| TOTAL (PER STORM) | | 24.8 | 4.1 | 0.0 | 0.8 | 2.3 | 1.0 |
| TOTAL (PER YEAR) | | 24.8 | 82.7 | 0.0 | 16.3 | 46.5 | 19.9 |

Remaining Area (Primarily Woodland)

Remaining Area 58.9 acres
Rainfall Volume over Remaining Area 196.3 acre-ft
Surface Water from Outfall 0.3 acre-ft From average rain event
Surface Water Projected to Full Year 6.6 acre-ft Multiply average rain event by # of rain events
Remaining Water 189.7 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 151.8 acre-ft 80% of Remaining Water*
Assumed Infiltration 37.9 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Outfall B Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 112.9 | 83.7 | acres |
| Surface Water | 21.5 | 6.6 | acre-ft |
| Total ET | 283.9 | 198.3 | acre-ft |
| Total Infiltration | 71.0 | 74.1 | acre-ft |
| Total Water | 376.3 | 279.0 | acre-ft |



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GSL Water Balance Calculations - Outfall C

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 237.0 acres
Total Rainfall Volume 790.0 acre-ft Annual
Total Surface Water from Outfall 3.6 acre-ft From average rain event
Surface Water Projected to Full Year 71.6 acre-ft Multiply average rain event by # of rain events
Remaining Water 718.4 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 574.7 acre-ft 80% of Remaining Water*
Assumed Infiltration 143.7 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 246.2 acres
Total Rainfall Volume 820.7 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Lined Detention Pond 1 | C18 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Infiltration Basin Pond 2 | C19,C20 | 6.6 | 1.1 | 0.0 | 0.5 | 0.4 | 0.2 |
| Infiltration Basin Pond 3 | C14,C15 | 16.8 | 2.8 | 0.0 | 0.3 | 1.8 | 0.8 |
| Infiltration Basin Pond 4 | C13 | 1.0 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 |
| Infiltration Basin Pond 5 | C11 | 1.9 | 0.3 | 0.0 | 0.2 | 0.1 | 0.0 |
| Rain Garden Pond 6 | C10 | 2.0 | 0.3 | 0.1 | 0.0 | 0.2 | 0.1 |
| Infiltration Basin Pond 7 | C3 | 0.8 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| Infiltration Basin Pond 8 | C4,C5 | 14.0 | 2.3 | 0.0 | 0.3 | 1.4 | 0.6 |
| Infiltration Basin Pond 9 | C6,C7 | 10.7 | 1.8 | 0.0 | 0.5 | 0.9 | 0.4 |
| Infiltration Basin Pond 10 | C8 | 14.1 | 2.4 | 0.0 | 0.1 | 1.6 | 0.7 |
| TOTAL (PER STORM) | | 68.2 | 11.4 | 0.1 | 2.1 | 6.4 | 2.8 |
| TOTAL (PER YEAR) | | 68.2 | 227.3 | 1.6 | 42.0 | 128.6 | 55.1 |

Remaining Area (Primarily Woodland)

Remaining Area 178.0 acres
Rainfall Volume over Remaining Area 593.3 acre-ft
Surface Water from Outfall 2.3 acre-ft From average rain event
Surface Water Projected to Full Year 46.5 acre-ft Multiply average rain event by # of rain events
Remaining Water 548.4 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 438.7 acre-ft 80% of Remaining Water*
Assumed Infiltration 109.7 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water



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Outfall C Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 237.0 | 246.2 | acres |
| Surface Water | 71.6 | 46.5 | acre-ft |
| Total ET | 574.7 | 567.4 | acre-ft |
| Total Infiltration | <u>143.7</u> | <u>206.8</u> | acre-ft |
| Total Water | 790.0 | 820.7 | acre-ft |



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GSL Water Balance Calculations - Outfall D

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

| | | |
|--------------------------------------|--------------|---|
| Pre-Development Watershed Area | 24.9 acres | |
| Total Rainfall Volume | 83.0 acre-ft | Annual |
| Total Surface Water from Outfall | 0.2 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 3.8 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 79.2 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 63.4 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 15.8 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 27.7 acres
Total Rainfall Volume 92.3 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| <u>Pond/Basin Watershed Area Name</u> | <u>Watersheds</u> | <u>Watershed Area (ac)</u> | <u>Rainfall Volume (acre-ft)</u> | <u>Surface Water (out) (acre-ft)</u> | <u>Basin Infiltration (acre-ft)</u> | ET Water Remain | Watershed Inf. |
|---------------------------------------|-------------------|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|----------------------|
| | | | | | | <u>70% (acre-ft)</u> | <u>30% (acre-ft)</u> |
| Rain Garden Pond DD-5 | D5 | 2.4 | 0.4 | 0.0 | 0.0 | 0.3 | 0.1 |
| Infiltration Basin Pond DD-6 | D7 | 4.4 | 0.7 | 0.0 | 0.0 | 0.5 | 0.2 |
| TOTAL (PER STORM) | | 6.8 | 1.1 | 0.0 | 0.0 | 0.8 | 0.3 |
| TOTAL (PER YEAR) | | 6.8 | 22.7 | 0.0 | 0.0 | 15.9 | 6.8 |

Remaining Area (Primarily Woodland)

| | | |
|--------------------------------------|--------------|---|
| Remaining Area | 20.9 acres | |
| Rainfall Volume over Remaining Area | 69.7 acre-ft | |
| Surface Water from Outfall | 0.0 acre-ft | From average rain event |
| Surface Water Projected to Full Year | 0.1 acre-ft | Multiply average rain event by # of rain events |
| Remaining Water | 69.6 acre-ft | Total Rainfall Volume Minus Surface Water |
| Assumed Evapotranspiration (ET) | 55.7 acre-ft | 80% of Remaining Water* |
| Assumed Infiltration | 13.9 acre-ft | 20% of Remaining Water* |

*Remaining Water = Total Rainfall Volume - Surface Water

Outfall D Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 24.9 | 27.7 | acres |
| Surface Water | 3.8 | 0.1 | acre-ft |
| Total ET | 63.4 | 71.6 | acre-ft |
| Total Infiltration | <u>15.8</u> | <u>20.7</u> | acre-ft |
| Total Water | 83.0 | 92.3 | acre-ft |



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GSL Water Balance Calculations - Outfall E

Assumptions

Assumed Annual Rainfall 40 inches (Based on 2016 to 2022 data)
Assumed # of Rain Events 20 events
Assumed Average Rain Event 2 in (HydroCAD input)

Pre-Development

Pre-Development Watershed Area 28.4 acres
Total Rainfall Volume 94.7 acre-ft Annual
Total Surface Water from Outfall 0.2 acre-ft From average rain event
Surface Water Projected to Full Year 3.9 acre-ft Multiply average rain event by # of rain events
Remaining Water 90.8 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 72.6 acre-ft 80% of Remaining Water*
Assumed Infiltration 18.2 acre-ft 20% of Remaining Water*
*Remaining Water = Total Rainfall Volume - Surface Water

Int-Development

int-Development Watershed Area 28.5 acres
Total Rainfall Volume 95.0 acre-ft Annual

Landfill, Infrastructure, and Douglas Drive Area Watersheds

| Pond/Basin Watershed Area Name | Watersheds | Watershed Area (ac) | Rainfall Volume (acre-ft) | Surface Water (out) (acre-ft) | Basin Infiltration (acre-ft) | ET Water Remain | Watershed Inf. |
|--------------------------------|------------|------------------------|------------------------------|----------------------------------|---------------------------------|------------------|------------------|
| | | | | | | 70% (acre-ft) | 30% (acre-ft) |
| Rain Garden Pond DD-1 | E4 | 1.4 | 0.23 | 0.00 | 0.00 | 0.16 | 0.07 |
| Detention Basin DD-1A | E3 | 1.2 | 0.20 | 0.00 | 0.00 | 0.14 | 0.06 |
| Rain Garden Pond DD-2 | E7 | 0.6 | 0.10 | 0.00 | 0.00 | 0.07 | 0.03 |
| Rain Garden Pond DD-3 | E8,E9 | 0.6 | 0.10 | 0.00 | 0.00 | 0.07 | 0.03 |
| Rain Garden Pond DD-3A | E11 | 0.6 | 0.10 | 0.00 | 0.00 | 0.07 | 0.03 |
| Rain Garden Pond DD-4 | E10,E15 | 0.8 | 0.13 | 0.00 | 0.00 | 0.09 | 0.04 |
| TOTAL (PER STORM) | | 5.2 | 0.87 | 0.00 | 0.00 | 0.61 | 0.26 |
| TOTAL (PER YEAR) | | 5.2 | 17.33 | 0.00 | 0.00 | 12.13 | 5.20 |

Remaining Area (Primarily Woodland)

Remaining Area 23.3 acres
Rainfall Volume over Remaining Area 77.7 acre-ft
Surface Water from Outfall 0.0 acre-ft From average rain event
Surface Water Projected to Full Year 0.2 acre-ft Multiply average rain event by # of rain events
Remaining Water 77.4 acre-ft Total Rainfall Volume Minus Surface Water
Assumed Evapotranspiration (ET) 61.9 acre-ft 80% of Remaining Water*
Assumed Infiltration 15.5 acre-ft 20% of Remaining Water*

*Remaining Water = Total Rainfall Volume - Surface Water



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Outfall E Summary

| | <u>PREDEV</u> | <u>INTDEV</u> | |
|--------------------|---------------|---------------|---------|
| Area | 28.4 | 28.5 | acres |
| Surface Water | 3.9 | 0.2 | acre-ft |
| Total ET | 72.6 | 74.1 | acre-ft |
| Total Infiltration | <u>18.2</u> | <u>20.7</u> | acre-ft |
| Total Water | 94.7 | 95.0 | acre-ft |



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Water Balance Summary (0.5" Average Rain Event)

PRE-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 112.9 | 237.0 | 24.9 | 28.4 | 585.3 | acres |
| Surface Water (acre-ft) | 36.0 | 21.5 | 71.6 | 3.8 | 3.9 | 136.8 | Surface Water |
| Total ET (acre-ft) | 456.8 | 283.9 | 574.7 | 63.4 | 72.6 | 1451.3 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>114.2</u> | <u>71.0</u> | <u>143.7</u> | <u>15.8</u> | <u>18.2</u> | <u>362.8</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 376.3 | 790.0 | 83.0 | 94.7 | 1951.0 | TOTAL |

INT-DEVELOPMENT

| Watershed | OUT-A | OUT-B | OUT-C | OUT-D | OUT-E | TOTAL | |
|-------------------------------------|--------------|-------------|--------------|-------------|-------------|---------------------|---------------------|
| Area (acres) | 182.1 | 83.7 | 246.2 | 27.7 | 28.5 | 568.2 | acres |
| Surface Water (acre-ft) | 36.0 | 6.6 | 46.5 | 0.1 | 0.2 | 89.4 | Surface Water |
| Total ET (acre-ft) | 456.8 | 198.3 | 567.4 | 71.6 | 74.1 | 1368.0 | ET |
| <u>Total Infiltration (acre-ft)</u> | <u>114.2</u> | <u>74.1</u> | <u>206.8</u> | <u>20.7</u> | <u>20.7</u> | <u>436.5</u> | <u>Infiltration</u> |
| Total Water (acre-ft) | 607.0 | 279.0 | 820.7 | 92.3 | 95.0 | 1894.0 | TOTAL |