Welcome!
Community Listening Sessions
RiverRenew
AlexRenew treats wastewater for over 300,000 people.

AlexRenew is a public wastewater agency that was created in 1952 by City Council and is an independent operation.

AlexRenew collects and treats over 13 billion gallons of wastewater each year at its Water Resource Recovery Facility.

AlexRenew provides wastewater services for most of Alexandria and parts of Fairfax County.

AlexRenew is committed to protecting the environment and our thriving local community.

AlexRenew is led by a five-member citizen board appointed by City Council.

AlexRenew employs over 100 people, including plant operators, lab technicians, and engineers, who are all essential to running the plant efficiently.
There are four types of underground pipes in Alexandria’s water system.

**WATER PIPES**
Bring clean drinking water to your faucet. Virginia American Water operates Alexandria’s drinking water system.

**STORM SEWER PIPES**
Take rainwater that lands on roofs, sidewalks, and streets and discharge it to our waterways. The City of Alexandria manages Alexandria’s storm sewer system.

**SANITARY SEWER PIPES**
Carry sewage from buildings. The City of Alexandria operates the sanitary sewers, and Alexandria Renew Enterprises cleans the sewage at its Water Resource Recovery Facility.

**COMBINED SEWER PIPES**
Carry a mixture of both sewage and rainwater.
Both of Alexandria’s sewer systems have issues that pollute our waterways when it rains.

<table>
<thead>
<tr>
<th>ALEXANDRIA AND FAIRFAX COUNTY-OWNED</th>
<th>ALEXANDRIA-OWNED</th>
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</thead>
<tbody>
<tr>
<td><strong>SEPARATE SANITARY SEWER SYSTEM</strong></td>
<td><strong>COMBINED SEWER SYSTEM</strong></td>
</tr>
<tr>
<td>Two-pipe system: One for sewage and one for rainwater.</td>
<td>One-pipe system: Carries both sewage and rainwater.</td>
</tr>
<tr>
<td>ISSUES</td>
<td>ISSUES</td>
</tr>
<tr>
<td>During rain events, rainwater can get into sewer pipes through gaps, overwhelming the system and causing overflows.</td>
<td>During rain events, the capacity of the sewer pipes is often exceeded, resulting in overflows into local waterways.</td>
</tr>
<tr>
<td>CHALLENGES</td>
<td>CHALLENGES</td>
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</tbody>
</table>
| This can cause:  
  • Sewer backups into basements  
  • Overflows into waterbodies  
  • Public health risks | This can cause:  
  • Overflows of sewage mixed with rainwater into waterbodies via four outfall sites  
  • Trash and other pollutants in waterways  
  • Public health risks |

In 2016, the Department of Environmental Quality required a plan to eliminate sanitary sewer system overflows in the AlexRenew system. In 2017, Virginia passed a law requiring Alexandria to remediate these combined sewer outfalls by July 1, 2025; outfalls are now owned by AlexRenew.
In 2017, Virginia passed a law requiring Alexandria to remediate its sewer system by July 1, 2025.

Average Overflow Volume and Events per year (2000-2016):

<table>
<thead>
<tr>
<th>Outfall</th>
<th>Overflow Volume (million gallons)</th>
<th>Events (per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTFALL 001</td>
<td>63</td>
<td>37</td>
</tr>
<tr>
<td>OUTFALL 002</td>
<td>38</td>
<td>46</td>
</tr>
<tr>
<td>OUTFALL 003</td>
<td>31</td>
<td>70</td>
</tr>
<tr>
<td>OUTFALL 004</td>
<td>8</td>
<td>44</td>
</tr>
</tbody>
</table>

**TOTAL:** 140 million gallons from all outfalls
RiverRenew is a major initiative in response to the 2017 Virginia law to achieve cleaner, healthier waterways in Alexandria.

AlexRenew, with support from the City of Alexandria, will implement RiverRenew.

RiverRenew includes the following major components:

- A two-mile-long, 100-foot-deep tunnel system
- New sewer infrastructure
- Upgrades to the processes for debris and pollutant removal, like trash and bacteria, at AlexRenew
- Relocation and modification of facilities at AlexRenew

### Estimated Program Cost:
$370M–$555M

### After RiverRenew

**Anticipated Volume & Frequency**
(based on averages from 2000-2016)

<table>
<thead>
<tr>
<th>Outfall</th>
<th>Overflow Volume (million gallons)</th>
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</thead>
<tbody>
<tr>
<td>OUTFALL 001</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>OUTFALL 002</td>
<td>5.5</td>
<td>2</td>
</tr>
<tr>
<td>OUTFALL 003</td>
<td>0.7</td>
<td>2</td>
</tr>
<tr>
<td>OUTFALL 004</td>
<td>1.5</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

**Total:** 16.7 million gallons from all outfalls

98% capture of combined sewer flows
We have worked with the National Park Service to complete an Environmental Assessment.

An Environmental Assessment is a pathway to comply with the National Environmental Policy Act. The National Park Service is the federal agency for the Environmental Assessment because the proposed action will require permits for activities on lands managed by the National Park Service.

What does the Environmental Assessment cover?

1. **NATURAL RESOURCES**
2. **CULTURAL RESOURCES**
3. **THE COMMUNITY**

What happens next?

1. The Environmental Assessment was published on June 19, 2019.
2. The 30-day public comment period closes on July 19, 2019.
3. Together with the National Park Service, we will respond to substantive comments and conclude the National Environmental Policy Act process by documenting a decision.

To view the Environmental Assessment and submit comments, visit riverrenew.com/community.

Or visit parkplanning.nps.gov/alexrenew and click on “Open for Comment.”
The Environmental Assessment process ensures natural and cultural resources are carefully considered.

**WATER QUALITY**
- Temporary water quality impacts related to construction
- Implementation of strict erosion and sediment controls to minimize impacts

**WETLANDS**
- Temporary and permanent wetland/stream impacts anticipated
- Mitigation through NPS and Clean Water Act permitting

**VISITOR USE AND EXPERIENCE**
- Temporary road/trail detours, tree clearing and construction noise anticipated
- Implementation of mitigation measures to minimize impacts

**HISTORIC STRUCTURES AND DISTRICTS**
- Below-ground infrastructure minimizes potential viewshed impacts
- Contractor will be required to take steps to protect existing structures

**ARCHAEOLOGICAL RESOURCES**
- Documentary Study identified potential resources within areas of surface disturbance
- Investigations prior to and monitoring during construction

**CULTURAL LANDSCAPES**
- Construction activities would modify landscape features and add new surface elements
- Restoration plans would be developed with NPS and City, as appropriate
The Section 106 process ensures historic resources are carefully considered.

**Oronoco Bay (Outfall 001) Study Area**

- Preliminary Findings
  - Land filling in Oronoco Bay from 18th – early 20th centuries
  - Potential for ship hulls and/or wharf cribbage

**Jones Point (Outfall 002) Study Area**

- Preliminary Findings
  - Largely undeveloped up through early 20th century
  - Potential for tanyard ditch
  - Located near historic shoreline
  - Potential for prehistoric material along western edge (proximity to site 44AX015)

**Hooffs Run (Outfalls 003/4) Study Area**

- Preliminary Findings
  - Potential for intact 19th century archeological deposits near Duke Street
  - 20th-century utility installation limits potential for archeological deposits along Hooffs Run
Where are the existing Combined Sewer Outfalls?

**Outfall 001**
Pendleton and Union Streets

**Outfall 002**
S Royal Street

**Outfalls 003/004**
Duke Street and Daingerfield Road
Diversion facilities will direct millions of gallons of combined sewage into the new tunnel system.

The construction of these structures, which will be mainly below ground when complete, requires surface and ground disturbance.
To build the Waterfront Tunnel, RiverRenew will use a state-of-the-art tunnel boring machine.

Our TBM will move at about 40 feet per day, on average. The TBM’s front face is called the cutterhead, its body is called the shield, and the equipment is called the trailing gear.

1. The TBM is lowered into a shaft at AlexRenew.
2. The cutterhead rotates, loosening the ground, while hydraulic jacks push the machine forward. Soil, aka “muck,” is pulled into the openings of the cutterhead and deposited to a conveyor belt.
3. The TBM balances the external soil and groundwater by pressurizing a soil paste behind the cutterhead, significantly minimizing the potential for ground movement.
4. A ring of segments is brought from AlexRenew to the front of the tunnel on a locomotive, or “loki.”
5. The segments are lifted into position with a vacuum, creating a tunnel “ring.”
6. The TBM uses its hydraulic jacks to push off the newly installed ring and moves forward in approximately 6-foot increments, leaving a new concrete tunnel behind it.
Waterfront Tunnel
Preferred Alternative

LEGEND
- Existing Outfall
- Mining Shaft/Pumping Station
- Diversion Facility
- Historic District
- 12-foot diameter Waterfront Tunnel

Map showing the Waterfront Tunnel Preferred Alternative with key features and locations labeled.
Outfall 001 Diversion Facility
Preferred Alternative – Robinson Terminal North

Site Plan

Conceptual Site Restoration

Illustrative Landscaping Plan

Rendering, looking west at Robinson Terminal North

Rendering, looking east at Robinson Terminal North

Technically Preferred Alternative. Note that the selection of the final location will be accomplished through the Environmental Assessment process.
Outfall 002 Diversion Facility
Preferred Alternative – Royal Street North*

Note: National Park Service Jurisdiction

*Immediately south of Jones Point Drive

Rendering, looking south along South Royal Street

Illustrative Landscaping Plan

Rendering, looking south along South Royal Street

Note: National Park Service Jurisdiction
**Hooffs Run Tunnel**

**Preferred Alternative**

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**Hooffs Run Interceptor**

*Also referred to as “Hooffs Run Diversion Sewer” in the Environmental Assessment*

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**Hooffs Run Stream Restoration**

Illustrative Landscaping Plan
New Facilities at AlexRenew

Facilities Layout at AlexRenew

Tunnel Dewatering and Wet Weather Pumping Station

Tunnel Dewatering and Wet Weather Pumping Station Superstructure
What might happen during construction?

Key to Potential Construction Impacts

1. Traffic disruptions
2. Noise and vibrations
3. Potential impacts to National Park Service lands
4. Soil disturbance
5. Removal of impacted soil and groundwater
6. Utility disruptions
7. Potential impacts to historic or cultural resources

Phase 1: Site Mobilization
(3 months)

Note: Durations are estimated.

Phase 2: Shaft Construction
(10 months)

Phase 3: Near Surface Structures
(9 months)

Phase 4: TBM Removal & Shaft Fit-Out
(4 months)

Phase 5: Site Restoration
(2 months)
Proposed Haul Routes for All Construction Sites

Outfalls 003/4 - Estimated Trucks/Day During Construction

Water Resource Recovery Facility - Estimated Trucks/Day During Construction

Outfall 001 - Estimated Trucks/Day During Construction

Outfall 002 - Estimated Trucks/Day During Construction

Note: Haul routes have been reviewed with the City of Alexandria and will be at the discretion of Transportation & Environmental Services.
RiverRenew’s Community Impact Mitigation Toolbox

Contractor Rules of Engagement
- Contract milestones
- Extensive collaboration
- Reward innovation
- Protocols for handling impacted soil and groundwater
- Manage protection of structures risk from planning through construction
- Investigate, characterize, and monitor archaeological resources
- Site-specific health and safety plans

Connect and Give Back
- TBM engagement
- Tunnel tours when work complete
- Artist in Residence
- Stream cleanup
- Ceremonies
- Educational installation
- Enhanced restoration

Quality of Life
- Maintain access and services
- 24/7 RiverRenew hotline
- Dedicated outreach
- Site security
- Street cleaning
- Noise and vibration control
- Safe corridors for vehicles, pedestrians, and bicyclists
- Robust soil management plan
- Minimize utility disruptions
- Scrim
- Contractors restricted from parking on streets
RiverRenew will achieve significant benefits for Alexandria.

**Anticipated Combined Sewer Overflow Reduction**

<table>
<thead>
<tr>
<th>Outfall</th>
<th>Before RiverRenew</th>
<th>After RiverRenew</th>
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<tr>
<td>OUTFALL 004</td>
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<td>44</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140</strong></td>
<td><strong>70</strong></td>
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</table>


- **98%** capture of combined sewer flows
- A **cleaner community** for future generations
- Mitigation of sewer overflows and basement backups
- A **safer environment** for wildlife
- Significant reduction of debris and pollutants, like trash and bacteria, discharged to our waterways
- Updated and new infrastructure to create and maintain **healthier waterways** for our community
Schedule to complete RiverRenew by July 1, 2025:

<table>
<thead>
<tr>
<th>PLANNING AND PRELIMINARY DESIGN</th>
<th>FINAL DESIGN/CONSTRUCTION</th>
<th>CLOSEOUT</th>
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<tbody>
<tr>
<td>Planning</td>
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<tr>
<td>Permitting</td>
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<td>Preliminary Design</td>
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<td>Design-Build Procurement</td>
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<tr>
<td>Final Design</td>
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<tr>
<td>Mining Shaft and Launch of Tunnel Boring Machine</td>
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<td>Waterfront Tunnel Mining Operations</td>
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<tr>
<td>Tunnel Dewatering and Wet Weather Pumping Station</td>
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<td>Outfall 002 Activities</td>
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<tr>
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<tr>
<td>Hooffs Run Interceptor</td>
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<tr>
<td>Start-up and Commissioning</td>
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<td></td>
<td></td>
<td>Place into operation</td>
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</table>
RiverRenew has made significant progress in the last year.

<table>
<thead>
<tr>
<th>Third Party Coordination</th>
<th>Planning &amp; Design</th>
<th>Community Engagement</th>
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<tbody>
<tr>
<td>10 Permits Approved</td>
<td>Long Term Control Plan Update</td>
<td>20 Events Hosted</td>
</tr>
<tr>
<td>15 Permits Underway</td>
<td>Ownership of Outfalls Transferred</td>
<td>40 Community Presentations</td>
</tr>
<tr>
<td>10 Easements Underway</td>
<td>Preliminary Engineering Report</td>
<td></td>
</tr>
<tr>
<td>Environmental Assessment Released</td>
<td>Tunnel System Request for Proposal Documents</td>
<td></td>
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<tr>
<td>VPDES Permit Issued September 2018</td>
<td>Soil Borings Completed</td>
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<td>RiverRenew.com Launched July 2018</td>
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<tr>
<td></td>
<td></td>
<td>University Partnerships George Mason University and University of Iowa</td>
</tr>
</tbody>
</table>

What can you do to stay informed?

- Join the RiverRenew email list
- Visit RiverRenew.com for program updates and events
- Subscribe to City eNews announcements
- Check calendar listings in local newspapers
- Read the local news for RiverRenew news advisories
- Attend Council/Board Workgroup and Stakeholder Advisory Group meetings
- Invite RiverRenew to attend your community event
What happens next?

To view the Environmental Assessment and submit comments, visit riverrenew.com/community.

Or visit parkplanning.nps.gov/alexrenew and click on “Open for Comment.”

The Environmental Assessment public comment period ends July 19, 2019.

STAY IN TOUCH

Stay informed by visiting riverrenew.com
Sign up for email updates at riverrenew.com/contact-us/

EA Released
June 19, 2019

Public Comment Period
June 19 – July 19, 2019

Decision Document Issuance
Anticipated August 2019

Development Special Use Permits

- Tunnel System DSUP
  City Council Public Hearing
  July 9, 2019

- Pumping Station DSUP
  City Council Public Hearing
  September 14, 2019
Studied Waterfront Tunnel Routes

Legend
- Existing Outfall
- Mining Shaft
- Potential Diversion Facility Location
- Potential Tunnel Alignment
- Historic District
- NPS Property
Outfall 001 Diversion Facility: Alternatives Analyzed

Robinson Terminal North

Oronoco Bay Park East

Oronoco Bay Park North

Oronoco Bay Park South
Outfall 002 Diversion Facility: Alternatives Analyzed

Green Street

Royal Street North

Royal Street South
Hooffs Run Tunnel: Alternatives Analyzed

LEGEND
- Manhole
- Existing Outfall
- Tunnel / Microtunnel / Sewer Alignment
- Shaft

Tunnel (100-ft deep)

Microtunnel (40-ft deep)

Open-cut (10 to 20-ft deep)