



Dog Waste Pilot Study

Interlocal Stormwater Working Group

Summer 2021

About the Authors

Katie Caperton is a rising junior at Bates College from Berkeley Springs, West Virginia. She is studying environmental politics and earth & climate sciences and is interested in public policy and science communications. She was awarded a stipend through the Bates College Center for Purposeful Work to conduct this research during the summer of 2021.

John Clark is an AmeriCorps Environmental Steward serving with the Cumberland County Soil & Water Conservation District. He holds a degree in Parks, Recreation, and Tourism from the University of Maine, and has experience in environmental education and recreation-based social science studies.

Ridge Kelly is a rising junior at Bates College from Damariscotta, Maine. He is studying economics and geology and is interested in Maine's agriculture, aquaculture, energy, and climate sectors. He was awarded a stipend through the Bates College Center for Purposeful Work to conduct this research during the summer of 2021.

Acknowledgements

We would like to extend our gratitude to Ali Clift of the Cumberland County Soil & Water Conservation District and Martha Sheils of the New England Environmental Finance Center for their guidance and support throughout this project. We would also like to thank everyone at the July 2021 Interlocal Stormwater Working Group meeting who listened to and engaged with our research.

The Cumberland County Soil & Water Conservation District (District) works "to assist and educate the public to protect soil and water resources". Founded in 1946 and based in Windham, Maine, the District coordinates water quality improvement programs throughout the Southern Maine region. The District facilitates the Interlocal Stormwater Working Group (ISWG), a regional approach of 14 municipalities and two nested MS4 to implement stormwater permit requirements. In addition, the District implements Minimum Control Measures 1 and 2 requirements for ISWG.

Founded in 2001, New England Environmental Finance Center (NEEFC) is one of 10 national Environmental Finance Centers. It seeks to advance the shared goal of US EPA and the Edmund S. Muskie School of Public Service at the University of Southern Maine to research, publish, and extend creative approaches to environmental policy, protection and management, especially the associated questions of how to pay for needed environmental improvements. Under the Direction of Martha Sheils, the NEEFC engages in projects to provide innovative financing solutions to manage state, local and tribal environmental programs.



CUMBERLAND COUNTY
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Summary

The purpose of this project is to record and analyze the prevalence of dog waste pollution at parks, trails, and beaches in the fourteen Interlocal Stormwater Working Group (ISWG) communities in Cumberland and York Counties to establish a baseline and plan for future study in compliance with the 2022 MS4 Stormwater Permit regulations. For this study, improper disposal is defined as dog waste left at the site either bagged or unbagged. Data was collected at 34 locations through field work that examined weight and location of dog waste, park use, as well as presence of trash cans, restrooms, bag dispensers, and signage. All data was compiled and analyzed to assess the extent of improper dog waste disposal, both locally and regionally, to determine recommendations.

Methods

Field Methods

Thirty-four sites across Cumberland and York Counties were selected based on location, use, and previously reported dog waste issues by municipal officials. These sites were surveyed over the months of June and July 2021. At each site, every trail was walked with two or more observers, with each observer scanning a side of the trail for dog waste. For parks with open fields, observers were spaced out, walking cross sections across the field with the Avenza Maps app to track the route. When waste was found, a photo was taken using the Litterati app, recording its location. If not already bagged, the waste was bagged and added to a larger trash bag. At the end of each site survey, the large trash bag was weighed using a digital hanging scale and the total weight was recorded. Notes were also recorded on a map and datasheet on the presence and state of trash cans, restrooms, bag dispensers, and signage, as well as know clean-up schedules and leash laws. A more detailed procedure can be found in Appendix A.

Community Engagement Methods

While completing field work, observers wore reflective orange safety vests and carried field kits with dog waste bagging supplies, trash bags, and other equipment. The observers often attracted the attention of park-goers and dog owners. Field work was often paused to talk to community members about the project and the issue of dog waste pollution. Additionally, community members were asked about their observations and experiences with dogs and dog waste pollution at the site. Many of these conversations were noted in the datasheets and considered in analysis of the parks.

Analytical Methods

Litterati data was uploaded through the app and tagged under categories of “petwaste” if unbagged and “petwastebagged” if bagged when found. These, along with the geotagged locations of each collected deposit of dog waste, were downloaded from Litterati and used in ArcGIS to create the graphics in the later sections of this report. Other data from note sheets, site photographs, and paper maps were compiled and statistically analyzed.

Results

Individual Findings

Presented below are the findings, analysis, and recommendations for each individual surveyed site. Based on frequency of site cleanups, if any, total site dog waste weight can be impacted by the age of the waste and the size of dogs using the site. **Data is presented visually through maps, in which orange markers represent bagged dog waste and red markers represent unbagged dog waste. Some markers may overlap each other.** Municipalities are listed in alphabetical order. Additional information about each site can be found in Appendix B.

Biddeford

Rotary Park in Biddeford was surveyed on July 6, 2021. The Park contains a dog park, a beach, a disc golf course, and a loop trail around the park. Dogs are required to be leashed outside of the dog park and are not permitted on the beach in the summer season. There are trash cans and a bag dispenser located at the dog park entrance, along with several signs detailing harms of dog waste and information on leash laws. The exterior of the dog park and the perimeter loop trail were surveyed, with **10 deposits of dog waste found**, weighing a total of 0.5 pounds. Most of the dog waste was found outside the main entrance of the dog park and along the trail on the west side of the park, near the parking lot for the boat launch (Figure 1).

Recommendations: None.



Figure 1. Collected dog waste in Rotary Park.

Clifford Park in Biddeford was surveyed on July 6, 2021. Clifford Park is a large, wooded trail system with multiple offshoots and alternate routes. Dogs are required to be leashed throughout the park. There is only one trash can, located at the main entrance, along with several signs regarding dog waste, and no bag dispensers. A total of **eight deposits of dog waste were found**, weighing 2.5 pounds. All dog waste was found unbagged and mostly near the main trail entrance (Figure 2).

Recommendations: Add a bag dispenser at the entrance and more comprehensive signage both at the entrance and throughout the heavily used trails.



Figure 2. Collected dog waste in Clifford Park.

Eastern Trail in Biddeford was surveyed on July 6, 2021. The trail travels over 4 miles through Biddeford, however, a mile stretch between the Maine Health Center and the Arundel town line was used for this survey, as it was off-road and reported to be heavily used by dog-walkers. Dogs are required to be leashed but there were no signs regarding dog waste, trash cans, or bag dispensers found on the site. The observed users of the trail were mostly runners and bikers, with few dogs spotted. During the biking season (April to November), trail ambassadors check the trail two to three times a week to remove litter. A total of **four deposits of dog waste were found**, weighing 0.4 pounds. All dog waste was unbagged (Figure 3).

Recommendations: Add comprehensive signage at the entrance and along the trail.



Figure 3. Collected dog waste along the Eastern Trail in Biddeford.

Cape Elizabeth

Fort Williams Park in Cape Elizabeth was surveyed on July 8, 2021. Fort Williams is a popular park with open fields and large looping trails. There is an off-leash section of the park, but most of the space requires leashes. The Park has no trash cans and is a carry in-carry out facility, but there are two bag dispensers: one at the off-leash area and the other on the Pond Loop Trail. These stations have signage explaining the importance of their use, but there are no other signs concerning dog waste. A total of **14 deposits of dog waste were found**, weighing 1.5 pounds. Most dog waste was unbagged and concentrated along the main park roads (Figure 4).

Recommendations: Update existing signs and add more signs which communicate the park's carry in-carry out status and the importance of picking up dog waste.



Figure 4. Collected dog waste at Fort Williams Park.

Cumberland

Twin Brook Recreation Area in Cumberland was surveyed on June 23, 2021. Due to the size of the facility, the study focused primarily on the park accessed from Tuttle Road, covering the several open, mowed sports fields and large network of surrounding wooded trails. There is no formal leash law, though there is a voice control requirement. There are bag dispensers and trash cans at each parking area at the Tuttle Road entrance and at the parking area at the Greely Road entrance. Additional trash cans are located at the end of the trail into the sports fields and at the trail heads of the Paved Trail, Hill Trail, and Ravine Trail. Dog waste signage is located on information boards at each entrance. A total of **35 deposits of dog waste were found, with 20 located on the field areas and 15 on-trail**. Collected dog waste weighed 3.15 pounds. Dog waste was concentrated along the trail into the sports fields, around the edges of the fields, and at the trailheads without trash cans (Figure 5). Most of the collected dog waste was found unbagged.

Recommendations: Additional trash cans should be placed at heavily trafficked trailheads, along with more comprehensive signage throughout the park.



Figure 5. Collected dog waste at Twin Brook Recreation Area.

Knight's Pond Preserve in Cumberland was surveyed on June 18, 2021. The Preserve consists of a large network of wooded trails that are accessible through two parking lots on Greely Road and Pleasant Valley Road. These access points both have bag dispensers, trash cans, and signage encouraging picking up dog waste. The trash can at the main entrance on Greely Rd appeared full of bagged dog waste and was surrounded by several comprehensive signs. A total of **seven deposits of dog waste were found**, weighing 0.6 pounds. All the found dog waste was located along the entrance trail from the Greely Road parking lot (Figure 6). The existing signage is comprehensive and along with the bag dispenser and trash can, seems to be encouraging park users to pick up after their dogs.

Recommendations: None.



Figure 6. Collected dog waste at Knight's Pond Preserve.

Falmouth

Community Park in Falmouth was surveyed on June 18, 2021. Community Park consists of both recreational fields and trails in an adjacent meadow and does not have a leash requirement. Avenza Maps was used to transect the fields around the edges and through the middle. There are no bag dispensers or trash cans and one sign encouraging the cleanup of dog waste at the very entrance. Falmouth Parks Department staff conduct daily dog waste cleanups during the weekdays while mowing the fields. A total of **17 deposits of dog waste were found**, weighing 2.1 pounds, with heavy concentrations occurring near the parking lot and field perimeters (Figure 7).

Recommendations: Add a bag dispenser and trash can at the entrance and more comprehensive signage near areas of use. Implementing a leash law could also prove effective in keeping dogs closer to owners.



Figure 7. Collected dog waste at Falmouth Community Park.

Village Park in Falmouth was surveyed on June 18, 2021. The Park consists of one small field with a gazebo next to a recreation center. There were no trash cans, bag dispensers, or signs, and **no dog waste was found at the site**. This is likely not a commonly utilized park for dog walking.

Recommendations: None.

Freeport

Winslow Memorial Park in Freeport was surveyed on June 21, 2021. The Park consists of a large scenic campground with an entrance fee for camping and day use located on the mouth of the Harraseeket River. On both the east and west sides of the park there are stations with a bag dispenser, trash can, and signage explaining the importance of picking up dog waste. A total of **5 deposits of dog waste were found**, weighing 0.8 pounds. Most dog waste was found unbagged around the perimeter trail (Figure 8).

Recommendations: None.



Figure 8. Collected dog waste at Winslow Memorial Park.

Leon Gorman Park in Freeport was surveyed on June 21, 2021. The Park contains two small looping trails in the forest, close to downtown Freeport. The Park has trash cans, bag dispensers, and signs encouraging dog waste pickup at every entrance. **One dog waste deposit was found** in the park (Figure 9). This Park may indicate that these measures are highly effective in reducing dog waste, but while surveying, no other park users were observed. It is likely that in addition to having good preventative measures against dog waste, it is not a very popular spot for dog walking.

Recommendations: None.



Figure 9. Collected dog waste at Leon Gorman Park.

Gorham

Shaw Cherry Hill Farm in Gorham was surveyed on June 17, 2021. It consists of a large main trail running through farmland and into the forest with multiple side loops. There are no trash cans or bag dispensers, with one sign encouraging people to pick up dog waste at the entrance of the park, but none on the trails. A total of **17 deposits of dog waste were found**, weighing 1.75 pounds. A high concentration was found along the EcoMaine Trail (Figure 10).

Recommendations: Add a bag dispenser and trash can at the entrance and more comprehensive signage throughout the trails.

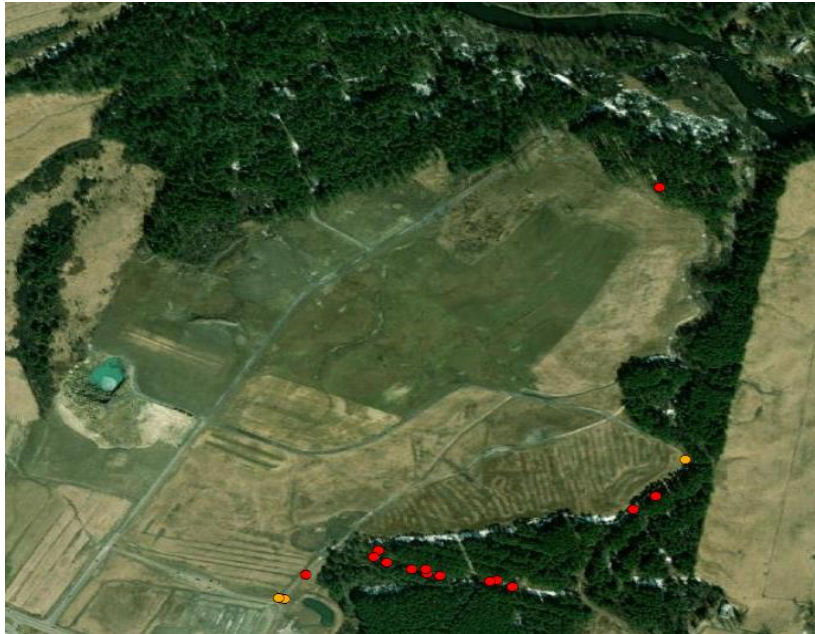


Figure 10. Collected dog waste at Shaw Cherry Hill Farm.

Claire Drew Trail in Gorham was surveyed on June 17, 2021. The Park consists of both open fields and forested trails. The fields were surveyed using Avenza Maps to track several paths through the middle and around the perimeter. There were no trash cans or bag dispensers, and only one handmade dog waste sign at the entrance to the wooded trail. A total of **20 deposits of dog waste were found**, weighing 2.3 pounds. Most of the waste was found unbagged on the forested trails (Figure 11). Little dog waste was observed around the perimeter of the fields, however significant quantities of litter was observed.

Recommendations: Add a bag dispenser and trash can at the entrance and more comprehensive signage throughout the trails.



Figure 11. Collected dog waste at Claire Drew Trail.

Old Orchard Beach

The **Seaside Ave & Ocean Park Beach** side of Old Orchard Beach was surveyed on July 20, 2021, around high tide and during allowed dog hours. The beach was surveyed between the pier and Ocean Park, with one person up by the dunes and another closer to the water and the majority of people. There were trash cans at every exit from the beach and several bag dispensers as well. Very little dog waste was found on the beach, however high quantities were found on Seaside Ave, which runs parallel to the beach (Figure 12). A total of **9 deposits of dog waste were found**, weighing 1.35 pounds. The Ocean Park Association has a very active volunteer litter cleanup group in this area, with cleanup walks occurring multiple days a week.

Recommendations: No changes needed on the beach, but the dog waste issue in the adjacent neighborhood needs further study.

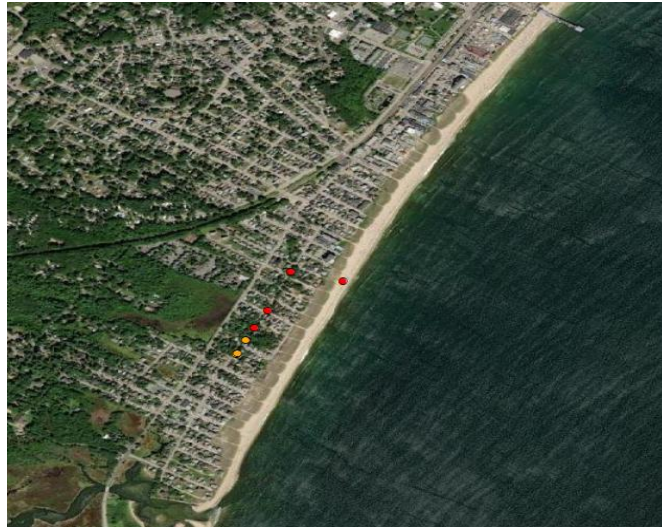


Figure 12. Collected dog waste at Old Orchard Beach.

Portland¹

Baxter Pines in Portland was surveyed on June 24, 2021. The Park is very small and consists of a few trails that intersect in the middle. Each trail was surveyed, as well as around the abutting baseball field, stormwater detention pond, and surrounding sidewalk. The city reported this area was improved in Spring 2021 and all dog waste was removed at that time, meaning any waste found would be recent. Only **one deposit of dog waste was found** along the side of the park by the pond and baseball field (Figure 13). There were no bag dispensers or signs at this park and there was only one trash can, located on the sidewalk on Ludlow Street.

Recommendations: None.



Figure 13. Collected dog waste at Baxter Pines.

¹ The site with the highest dog waste per mile in Portland was selected to continue with the ISWG surveying. Additional sites will be monitored by other City of Portland programs.

Mayor Baxter Woods in Portland was surveyed on June 28, 2021. The Park has several intersecting trails that appear to be popular for dog walking. The Park has a new leash requirement at this site, there are bag dispensers at the entrances on Stevens Avenue and Percival Street, and the park is well marked with comprehensive signs on dog waste and leash laws. Several dog owners were observed at this park during the survey. A total of **three deposits of dog waste were found**, weighing 0.5 pounds (Figure 14).

Recommendations: None.



Figure 14. Collected dog waste at Mayor Baxter Woods.

Canco Woods in Portland was surveyed on June 24, 2021. The Park has a dog leash requirement, but no bag dispensers or trash cans. There are informative signs on dog waste at the main entrance on Canco Road. A total of **19 deposits of dog waste were found**, weighing 2.6 pounds. The majority was found along the back offshoot leading to Murray Street (Figure 15).

Recommendations: Add a bag dispenser and more comprehensive signage throughout the park.



Figure 15. Collected dog waste at Canco Woods.

Evergreen Cemetery in Portland was surveyed on June 28, 2021. Evergreen Cemetery is a massive cemetery with trails that run through it and along its edge. There are two trash cans, one at the main entrance and another at a trail intersection deeper into the park. There are no bag dispensers and only one sign regarding dog waste at the entrance. The Park is frequently used for dog walking. A total of **19 deposits of dog waste were found**, weighing 2.45 pounds (Figure 16).

Recommendations: Add a bag dispenser and trash can at the entrance by the community garden, along with comprehensive signage.

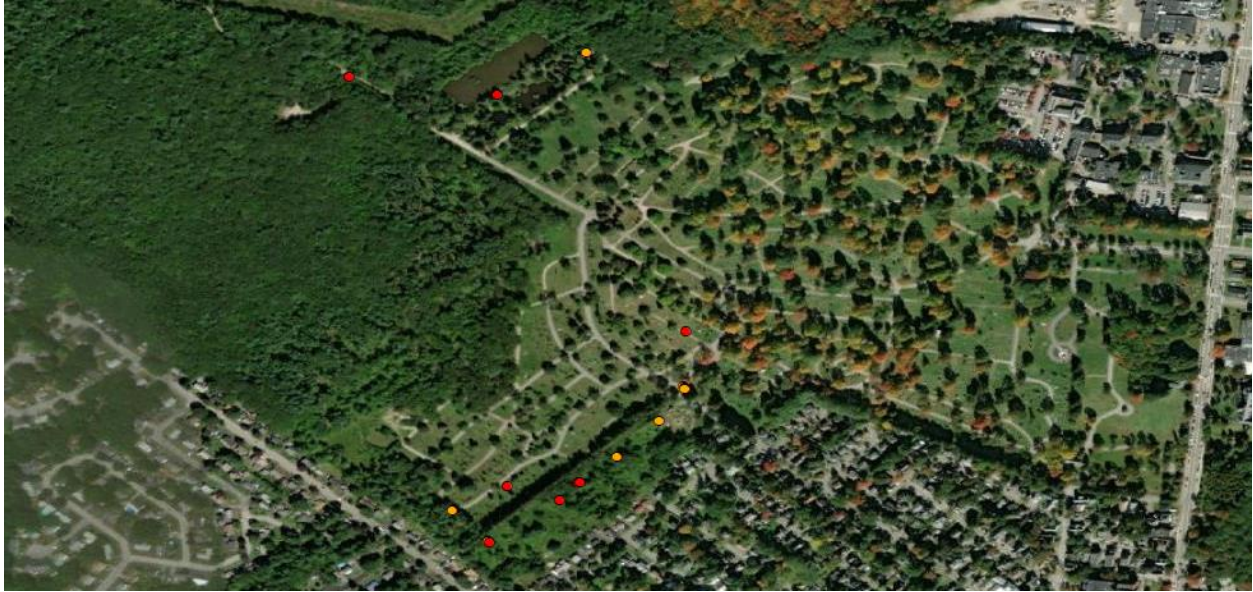


Figure 16. Collected dog waste at Evergreen Cemetery.

The **Ocean Ave. Recreation Area** was surveyed on June 24, 2021. The Park has a network of trails extending from Quarry Run Dog Park. The inside of the dog park was not surveyed. Dogs are allowed off-leash if under voice command on the trails. There was a trash can, bag dispenser, and signage at the entrance to the dog park, but none beyond that. A total of **48 deposits of dog waste were found**, weighing 5.5 pounds. Most dog waste was concentrated along the path leading from the parking lot and around the central loop (Figure 17).

Recommendations: Add a bag dispenser and trash can at the entrance to the trails (beyond the dog park) and more comprehensive signage throughout the trails, specifically around the central loop.



Figure 17. Collected dog waste in the Ocean Ave. Recreation Area.

The **Presumpscot River Preserve** was surveyed on June 23, 2021. The preserve contains 2.5 miles of trails along the river, as well as a 1-mile trail through neighboring Oat Nuts Park. There were no bag dispensers, signs, or trash cans, though there was a full trash bag with bagged dog waste left by a post at the Hope Avenue entrance. A total of **15 deposits of dog waste were found**, weighing 1.95 pounds.

Recommendations: Add a bag dispenser and trash can at the entrance to the trails and more comprehensive signage throughout the trails.

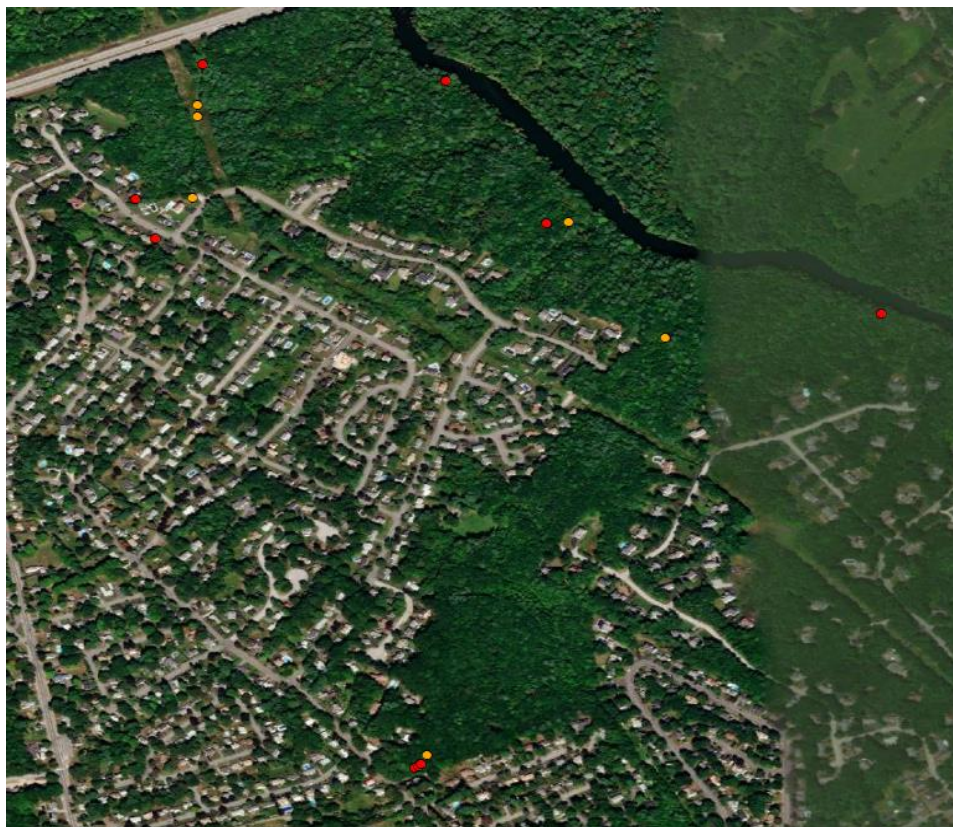


Figure 18. Collected dog waste at the Presumpscot River Preserve.

Saco

The **Boat Launch** in Saco was surveyed on July 6, 2021. The boat launch is directly off the road and there is a field owned by the Saco Yacht club directly next to it. There were no signs or bag dispensers, but one trash can. A total of **three deposits of dog waste were found** and the site did not appear set up for dog walking, rather for dog swimming (Figure 19).

Recommendations: None.

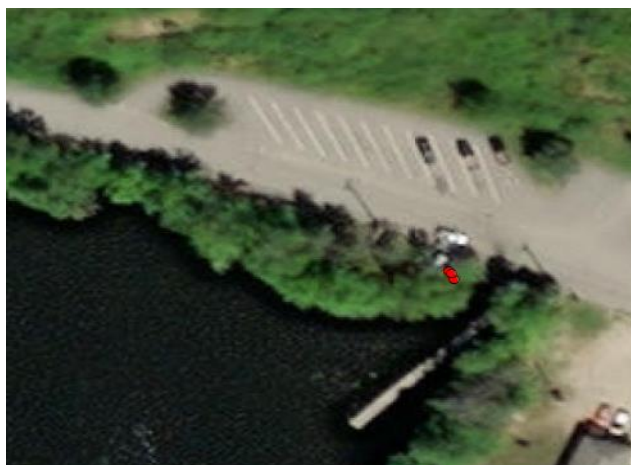


Figure 19. Collect dog waste at the Saco Boat Launch.

The **Saco Dog Park** in Saco was surveyed on July 6, 2021. It is a small fenced-in field that allows dogs to be off leash. There is one trash can and bag dispenser at the entrance with several signs about picking up dog waste. The small park was highly concentrated with dog waste, with a total of **24 deposits of dog waste being found**, weighing 2.8 pounds. This high concentration is likely a function of the off-leash policy that allows people to pay less attention to their dogs.

Recommendations: Add signage encouraging dog owners to keep a close eye on their dogs.



Figure 20. Collected dog waste at the Saco Dog Park.

Sandy Bottom in Saco was surveyed on July 20, 2021. Sandy Bottom is a small sandy path to the water in Saco. At the entrance to the walk, there is a trash can, bag dispenser, and “pick up after your pet” sign. **No dog waste was found** at the site.

Recommendations: None.

Scarborough

The **Eastern Trail** in Scarborough was surveyed on July 20, 2021. The trail travels for 6 miles through Scarborough, however, a two-mile section between Pine Point Road and Black Point Road was used for this survey due to the section being off-road and reported to have high visitation. The trail runs straight through a forested section and a brackish marsh. Bag dispensers, trash cans, and signs encouraging the cleanup of dog waste are located at parking lots accessed from both roads. Most users of the trail were biking, with very few dogs observed. During the biking season (April to November), trail ambassadors check the trail two times a week to remove litter. A total of **seven deposits of dog waste were found**, weighing 0.7 pounds (Figure 21).

Recommendations: None.

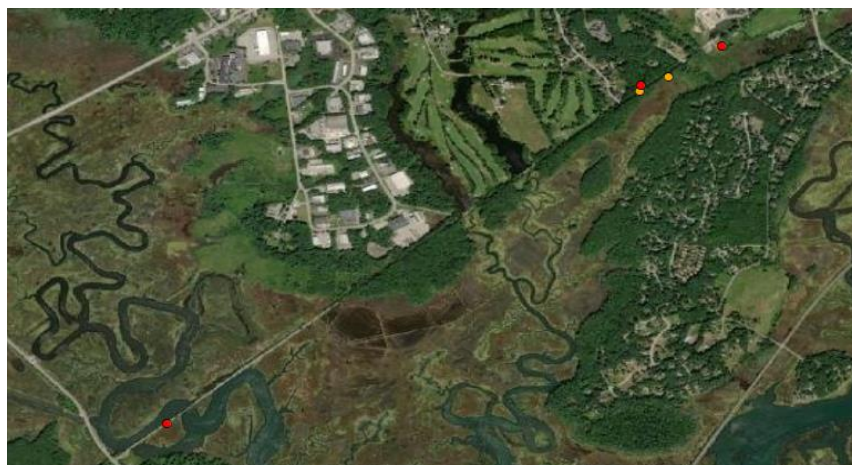


Figure 21. Collected dog waste along a section of the Eastern Trail in Scarborough.

South Portland

Hinckley Park in South Portland was surveyed on July 8, 2021. It is a large trail system circling two ponds with several offshoots, alternate routes, and access points. There is one bag dispenser and trash can at the main entrance and signage encouraging people to pick up after their dogs at the entrance and several junctures throughout the park. A temporary leash law was in effect during the survey period. Hinkley Pond has had multiple successive years of cyanobacteria blooms. A total of **five deposits of dog waste were found**, weighing 0.8 pounds. **Recommendations:** None.

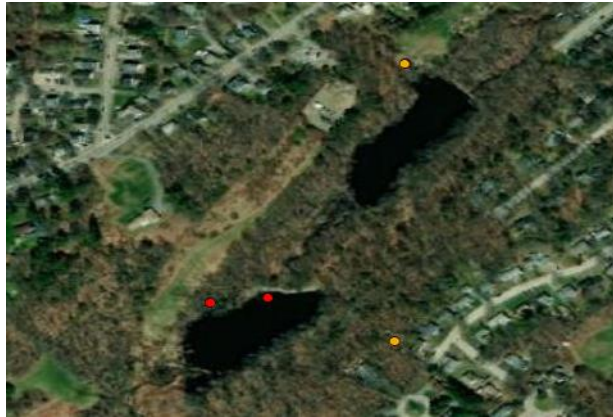


Figure 22. Collected dog waste in Hinckley Park.

Willard Beach and the Spring Point Shoreway Trail in South Portland were surveyed on July 8, 2021, at mid tide approaching high and during allowed dog hours. The park includes Willard Beach, which allows off-leash dogs from 7-9 AM and 7-9 PM, and a trail that runs along the beach and Fort Preble. At the access points on Willard Street and Beach Street, there are trash cans, by-donation bag dispensers, and signage encouraging the pickup of dog waste. **Three deposits of dog waste were found on the beach and six were found on the trail**, weighing a combined 1.6 pounds (Figure 23). Beach lifeguards pick up any dog waste they find on the beach each morning, so it is likely that this site amount was under reported.

Recommendations: Additional observations are needed to establish dog waste left behind after the morning and evening off-leash periods.

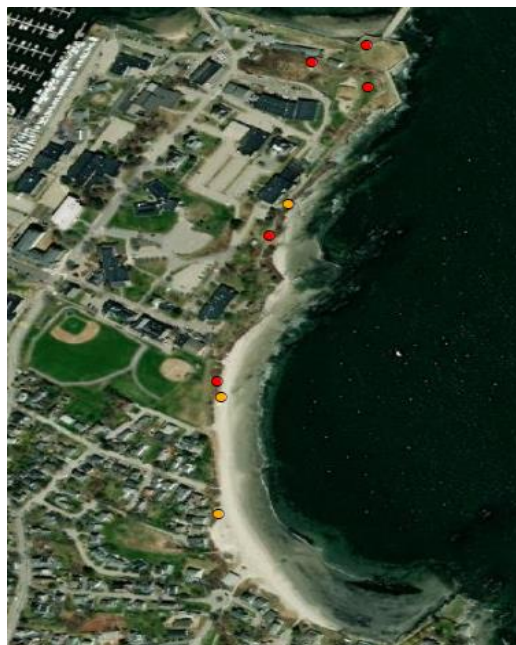


Figure 23. Collected dog waste at Willard Beach and Spring Point Shoreway Trail.

Westbrook

The **Riverwalk** in Westbrook was surveyed on June 17, 2021. The trail leads into downtown Westbrook along the Presumpscot River. There were several trash cans along the river in the section of the park closest to downtown, one sign about dog waste, and no bag dispensers. A trail along the railroad tracks spanning between Pierce Street and Lamb Street was also surveyed, but the path was littered heavily with trash and didn't appear to be commonly used by dog walkers (Figure 24). No dog walkers were observed on the trail during the study. A total of **four deposits of dog waste were found**, weighing 0.4 pounds.

Recommendations: None.



Figure 24. Collected dog waste on the Westbrook railroad tracks and Riverwalk.

The **Schools to Skatepark Trail** in Westbrook was surveyed on July 15, 2021. The trail begins at the dog park and skate park, goes along several roads, through the high school sports fields before weaving between several residential neighborhoods and behind the Greater Portland Animal Refuge League shelter. The path did not appear to be heavily used and there are several signs stating that dogs are not permitted on the sports fields, which are right in the middle of the trail. Dogs are required to be on leash, but there were no dog waste signs, bag dispensers, or trash cans. A total of **10 deposits of dog waste were found**, weighing 0.5 pounds. Most dog waste was found unbagged.

Recommendations: Add dog waste signs to the back section of the trail that goes through the neighborhoods.



Figure 25. Collected dog waste on the Schools to Skatepark Trail.

Windham

Donnabeth Lippman Park in Windham was surveyed on June 10, 2021. The Park consists of a main loop with several alternate loops circling Chaffin Pond. There are multiple signs at the entrance encouraging the removal and disposal of dog waste, as well as a trash can and a bag dispenser. A total of **49 deposits of dog waste were found**, weighing 5.95 pounds. Dog waste was heavily concentrated along the main trail in either direction from the main entrance (Figure 26).

Recommendation: Add comprehensive signs along the main trail around the pond.

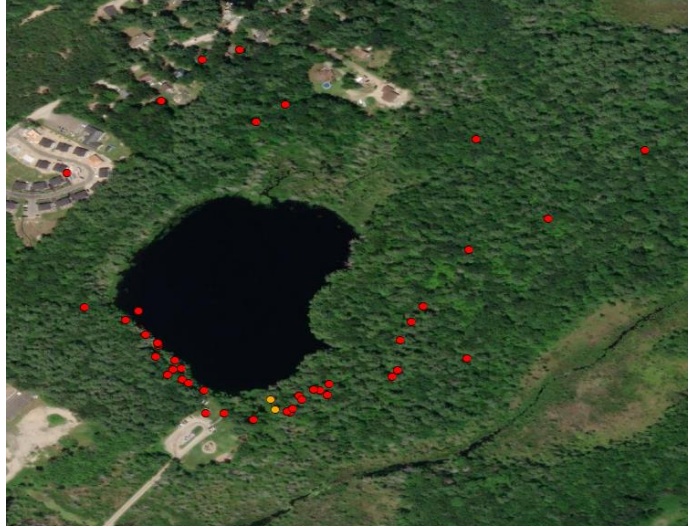


Figure 26. Collected dog waste at Donnabeth Lippman Park.

A three-mile portion of the **Mountain Division Trail** in Windham and Gorham was surveyed on June 10, 2021. There were multiple signs throughout the trail but only one bag dispenser and trash can located at the Windham Gambo parking lot. A total of **126 deposits of dog waste were found**, weighing 20.5 pounds, the highest of any site surveyed. Dog waste was concentrated by the three major access points: Route 202, the Windham Gambo parking lot, and the Gorham parking lot (Figure 27).

Recommendations: Add more comprehensive signage, bag dispensers, and trash cans at the entrances and along the trail.

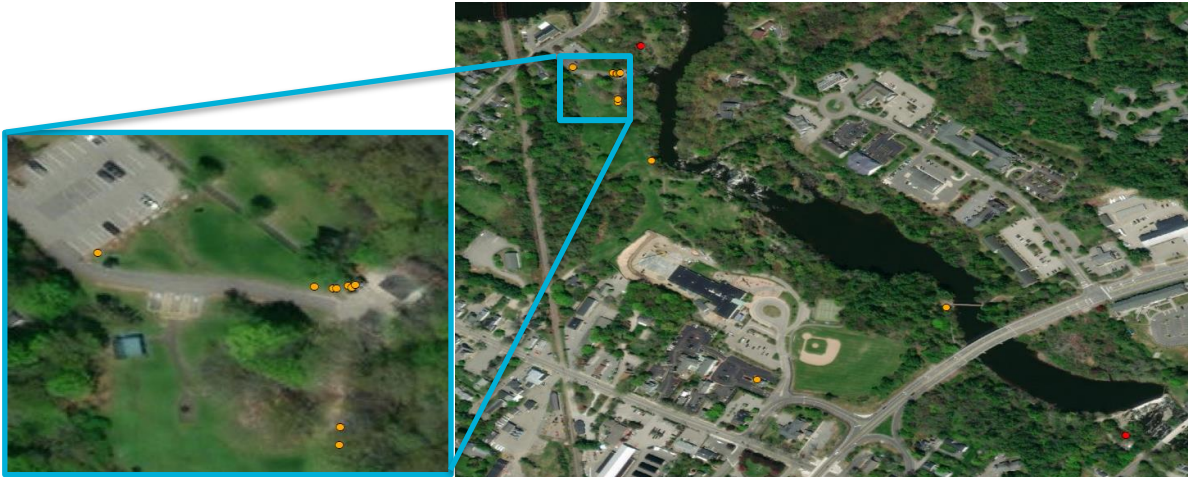


Figure 27. Collected dog waste on the Mountain Division Trail.

Yarmouth

Royal River Park in Yarmouth was surveyed on June 21, 2021. It is an urban park that loops alongside the west bank of the Royal River. There are multiple access points from the city and the park has a carry in-carry out policy. There were two bag dispensers on each end of the main trail with signage encouraging their use. A total of **16 deposits of dog waste were found**, weighing 2.45 pounds. A high concentration of dog waste was found bagged near the East Elm Street parking lot (Figure 28). The trail was busy during the survey period and the remaining dog waste improperly disposed of along the trail was a mix of bagged and unbagged dog waste (Figure 29).

Recommendations: Add trash cans at the bag dispensers by the parking lot. Add additional comprehensive signage along the trail.



Figures 28 & 29. Collected dog waste at Royal River Park.

Pratt's Brook Park in Yarmouth was surveyed on July 16, 2021. The Park consists of a large network of trails through the forest. Off-leash dogs are permitted on the trails and many were encountered during the survey. There were no bag dispensers or trash cans and the only signage against leaving dog waste was on a billboard at the entrance. A total of **13 deposits of dog waste were found**, weighing 4.0 pounds. All dog waste was observed on trails close to the entrance (Figure 31).

Recommendations: Implement a stricter leash law throughout the park and add more bag dispensers and signage around the more heavily trafficked areas of the park.



Figures 31. Collected dog waste at Pratt's Brook Park.

The **West Side Trail** in Yarmouth was surveyed on July 19, 2021. The trail currently runs over 5.5 miles from I-295 in Yarmouth to the end of Cousin’s Island, however, a 3-mile section between Tyler Technologies and Gilman Road was used for this survey as it was reported to see the highest use. The trail is straight and forested with several alternate routes that run parallel to the main trail. Dogs are permitted off-leash but very few were seen during the survey. There are no trash cans, bag dispensers, or dog waste signs throughout the entire length of the trail. The **one deposit of bagged dog waste found** weighed 0.2 pounds (Figure 30).

Recommendations: None.



Figure 30. Collected dog waste on the West Side Trail.

Regional Findings

Within the ISWG region, a wide variety of trail and park types were sampled from dog parks to beaches, forested trails, and open fields. This makes it difficult to test one variable, such as the presence of trash cans or bag dispensers for meaningful differences in how much dog waste is collected. After sampling 34 sites during the months of June and July 2021, 520 improperly disposed of deposits of dog waste were collected (Figure 32).

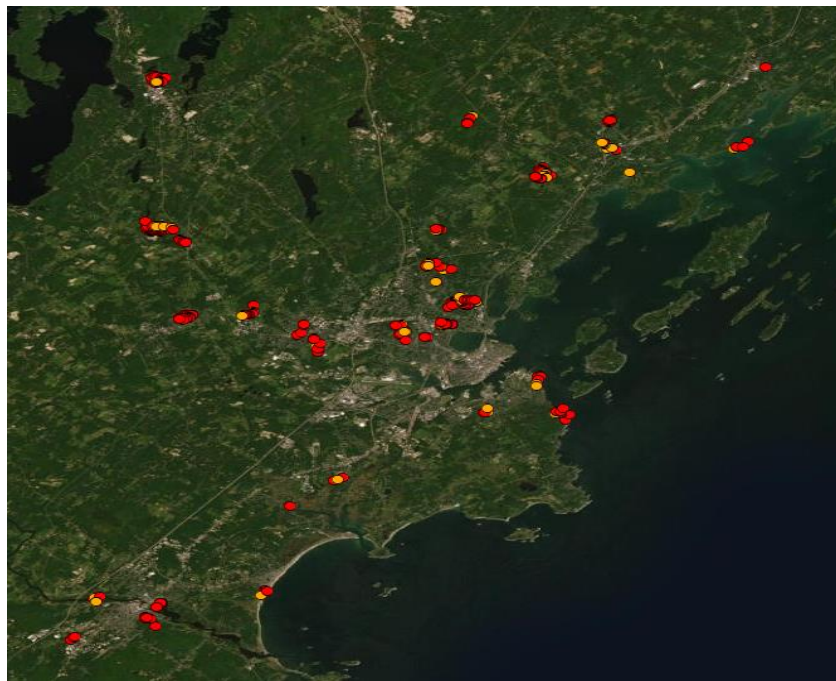


Figure 32. Map of dog waste found during the pilot dog waste study June and July 2021.

Most sites had fewer than 10 improperly disposed of dog waste deposits and an additional quarter of the sites had between 11 and 20 improperly disposed of dog waste deposits (Figure 33). Most improperly disposed of dog waste deposits were unbagged (Figure 34).

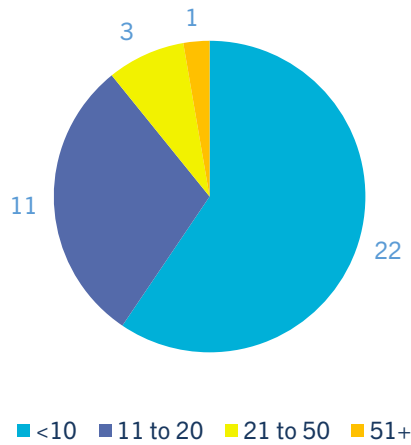


Figure 33. Range of dog waste deposits per site.

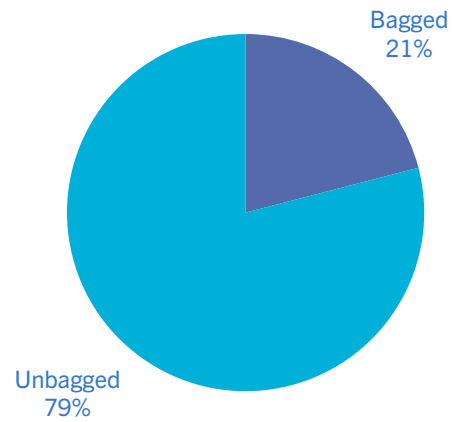


Figure 34. Comparison of bagged and unbagged dog waste deposits found.

As the sites surveyed varied in size and type, dog waste deposit per trail mile and dog waste deposit per acre for open space parks were calculated for comparison (Tables 1 and 2). The sites with the highest dog waste deposits generally matched the sites with the highest deposit per area unit, however, there were some sites with higher dog waste deposits which ended up having a low deposit per area unit due to being a large trail network or open space area. High deposits of dog waste at any site should be a concern but education efforts should also be focused on sites with a higher density of dog waste deposits.

Table 1. Top ten dog waste deposits per mile at sites with trails.

Site Name	Location	Mileage Observed	Dog Waste per Mile
Mountain Division Trail	Windham and Gorham	3.1	40.65
Donnabeth Lippman Park	Windham	2	24.50
Ocean Ave Recreation Area	Portland	3	16.00
Royal River Park	Yarmouth	1	16.00
Claire Drew Trail	Gorham	1.5	13.33
Canco Woods	Portland ²	1.5	12.67
Spring Point Shoreway Trail	South Portland/SMCC	0.5	12.00
Cherry Hill Park	Gorham	1.7	10.00
Fort Williams	Cape Elizabeth	2	7.00
Evergreen Cemetery	Portland	2.75	6.91

Table 2. Top five dog waste deposits per acre at sites with open space.

Site Name	Location	Open Space (acres)	Dog Waste per Acre
Dog Park	Saco	0.3	80
Rotary Park Dog Park	Biddeford	0.8	6.25
Boat Launch	Saco	1.2	2.5
Willard Beach	South Portland/SMCC	2.3	1.30
Community Park	Falmouth	25	0.76

² The site with the highest dog waste per mile in Portland was selected to continue with the ISWG surveying. Additional sites will be monitored by other City of Portland programs.

Trash Cans and Bag Dispensers

The average number of dog waste deposits collected at sites with trash cans was slightly higher than without, with an average of 10.61 deposits being found per site at sites with trash cans and 11.54 deposits at sites without. A similar result was found for sites with bag dispensers, with an average of 12.06 deposits found per site at sites with bag dispensers and 9.83 deposits found at sites without dispensers (Figures 35-38) (*The Gorham/Windham Mountain Division Trail was excluded from these averages due to being an outlier in quantity of dog waste found. With the MDT included, 15.4 deposits were found per site at sites with trash cans and 18.05 deposits were found per site at sites with bag dispensers.*)

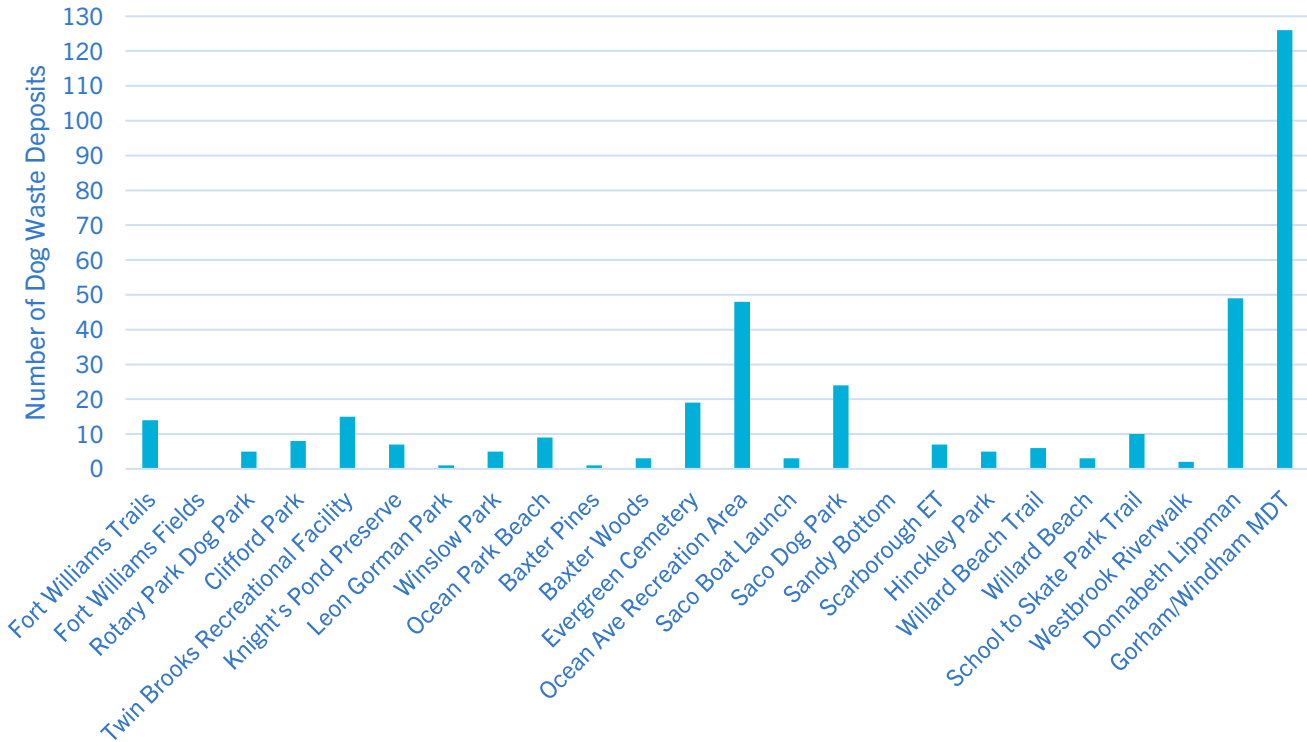


Figure 35. Dog waste deposits found at sites with trash cans.

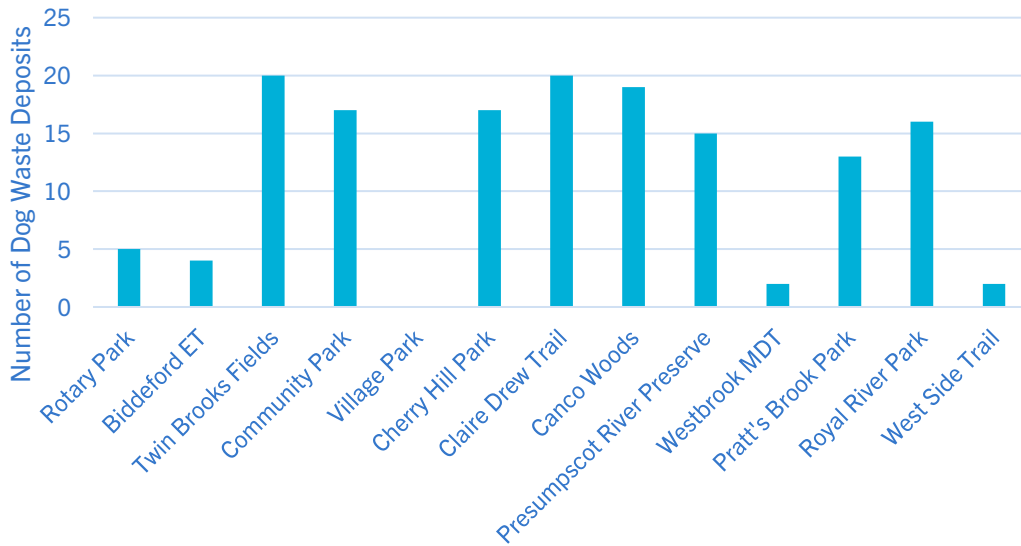


Figure 36. Dog waste deposits found at sites without trash cans.

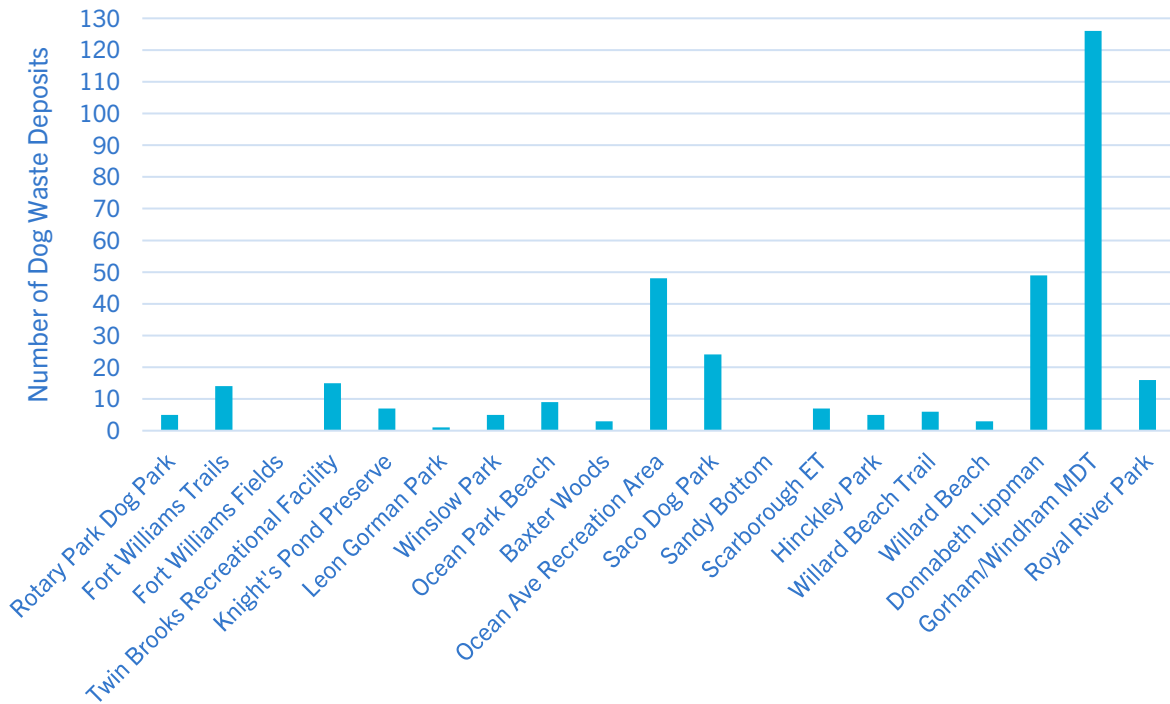


Figure 37. Dog waste deposits found at sites with bag dispensers.

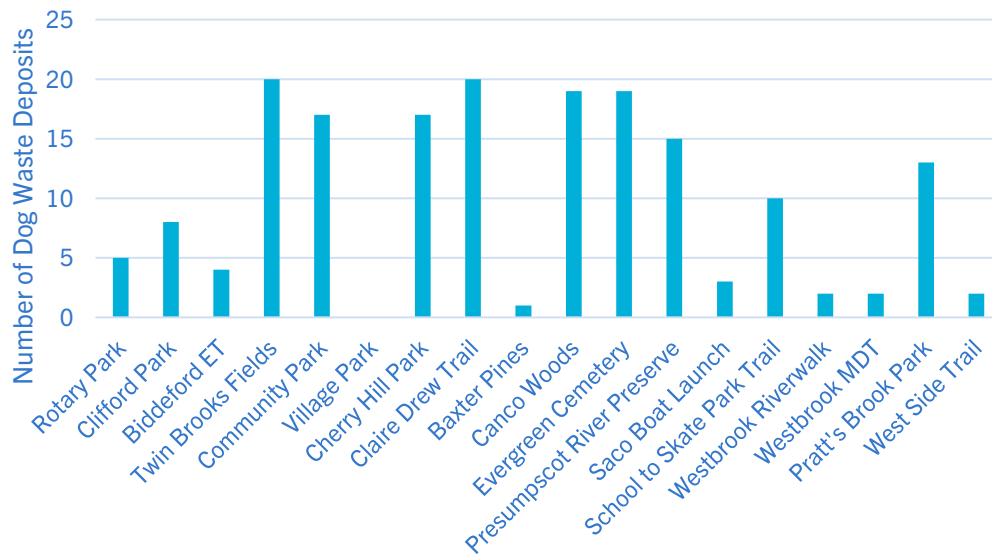


Figure 38. Dog waste deposits found at sites without bag dispensers.

As the differences between sites with and without trash cans and bag dispensers are relatively small, no conclusive data can be determined about the effectiveness of these two components of dog waste reduction infrastructure from these averages. However, surveys of dog walkers have shown lack of dedicated dog waste bins is the most important factor in respondents not properly disposing of their dog waste³. These averages also do not consider visitor use at these sites, as it may be the case that some sites with trash cans and waste bag dispensers see more use, leading to more dog waste.

³ Lowe, C. N., Williams, K. S., Jenkinson, S., & Toogood, M. (2014). Environmental and social impacts of domestic dog waste in the UK: investigating barriers to behavioral change in dog walkers. *International Journal of Environment and Waste Management*, 13(4), 344-345.

Additional dog owner behavior observed during the study included people properly bagging their dog's waste but then leaving it on the side of the trail or at the trailhead. This suggests that these dog owners know that it's wrong to not pick up the dog waste, but the carry in-carry out policy of the park is too inconvenient. Similarly, at some sites, "community established" trash receptacles were observed in response to a lack of trash cans or having a carry-out policy (Figure 39). This results in high densities of bagged dog waste concentrated at trailheads, often overflowing due to a lack of a cleanup schedule.



Figure 39. A community-established trash receptacle full of dog waste. Presumpscot River Preserve, Portland.

Parks with frequent bag dispenser stations should consider making trash cans more accessible from the trail. The bag shows that people are observing their dog and taking the time to deal with the waste, so it is very likely that they would also dispose of it if a trash can was nearby. Some sites, such as Royal River Park, had bag dispensers with no trash cans on-site, while others had bag dispensers with few trash cans, resulting in increased plastic litter with barriers to proper disposal. It is important that sites utilize both trash cans and bag dispensers.

The data about the existence of trash cans and bag dispensers also does not account for their location. An important tool for diagnosing the dog waste problem at ISWG regional parks, notably ones with especially high amounts of dog waste, like the Mountain Division Trail, Donnabeth Lippman Park, Twin Brook Recreation Area, Canco Woods, Ocean Ave Recreational Area, the Saco Dog Park, and Pratt's Brook Park, are the observations of the unique situation at each of these parks from field work. Some parks might have signage and bag dispensers at the very entrance to the trail but none throughout the trail system that could have multiple access points. Therefore, the individual site recommendations should be used to determine if dog waste infrastructure is necessary and how to locate the infrastructure as close as possible to dog waste hotspots.

Signage

Signage that educated park goers on the underlying issues of dog waste appeared more effective than signs that simply pointed out the illegality of leaving dog waste. Signage varied between parks but generally focused on requests to keep parks and the community clean (Figure 40), the fact that not picking up dog waste is illegal and carries a fine (Figure 41), or education surrounding the stormwater impacts of dog waste (Figure 42).



Figure 40. Examples of “keep community clean” dog waste signage.



Figure 41. Examples of dog waste signage focused on the illegality of not cleaning up.



Figure 42. Examples of dog waste signage which explain the impacts of dog waste.

Field observations found sites with trails which had signage focused on the illegality of leaving behind dog waste had the highest average dog waste concentration by mile by a large margin, with sites with stormwater-focused educational signage having an average of 56% less dog waste per mile. These findings show signage solely focused on the punishment associated with leaving behind dog waste is the least effective type. Signage focused on local ordinances and fines have little impact on dog owner behavior if ordinance enforcement is perceived to be low. It is recommended sites use a combination of signs with “keep community clean” requests to pick up litter or “carry in-carry out” along with educational signs which discuss the stormwater impacts of dog waste.

Leash Laws

Another important factor of improper dog waste disposal is the leash laws at a park. Sixty-five percent of sites surveyed required dogs to be on-leash, with the remaining 35% either having no leash law or allowing dogs to be off-leash if they are under “voice control”. The data collected found sites which allow off-leash dogs had higher densities of dog waste than sites that require leashes (Figure 43). It’s more difficult to keep track of an off-leash dog, so even if the person generally picks up dog waste, they could miss it when their dog is off-leash.

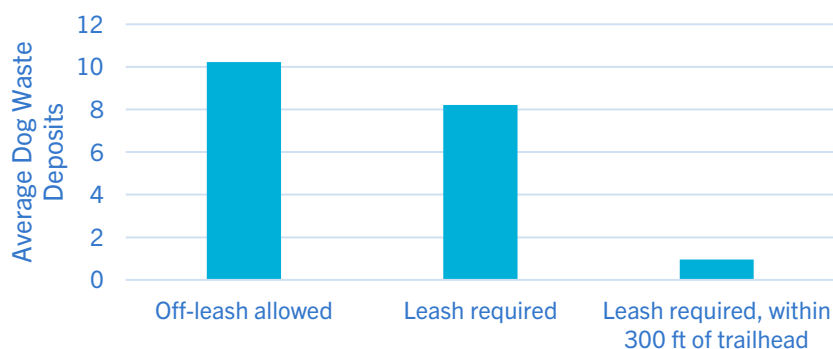


Figure 43. Average dog waste deposits found per area unit by site leash law.

While only four sites had leash requirements within 300 ft of a trailhead, these sites had over ten times less dog waste deposit density than off-leash sites. This statistic shows the effectiveness of these leash policies. Dog waste deposit hotspots at many parks, such as Twin Brook and Ocean Ave Recreation Areas, were located near trailheads, something which may be able to be mitigated by instituting leash requirements near trailheads. This information, along with the finding that dogs are most likely to defecate within the first quarter mile of a trail⁴, show that in sites where voice control may be feasible, leash requirements within a certain distance of a trailhead would help ensure dog owners observe their dog defecate, making them more likely to properly dispose of the waste.

Some parks in ISWG communities have recently enacted leash requirements for environmental and safety reasons, such as Mayor Baxter Woods in Portland and Hinckley Park in South Portland. Since being enacted, these ordinances have been frequently enforced by municipal staff. While enacting these ordinances was not solely caused due to perceived dog waste issues, they seem to have helped reduced improper dog waste disposal, with both parks being in the bottom third of dog waste deposit densities of surveyed parks. This information concludes that leash requirements are effective in preventing improper dog waste disposal, even if only within the radius of a trailhead.

⁴ Blenderman, A., Taff, B. D., Schwartz, F., & Lawhon, B. (2018). Dog Guardian’s Perceptions and Behaviors Related to the Disposal of Pet Waste in City of Boulder Open Space and Mountain Parks. Final Report prepared for City of Boulder, Colorado, Open Space and Mountain Parks by Pennsylvania State University and the Leave No Trace Center for Outdoor Ethics. pp.11-12

Additional Considerations

This project and report are just the beginning of what is necessary to respond to improper dog waste disposal behavior in the ISWG communities. Several additional variables may have affected findings from this study, such as unknown municipal or volunteer cleanup schedules, poor weather, and leash laws allowing dogs to defecate off-trail in an area surveyors could not observe. These factors could mean some areas have a higher number of users who improperly dispose of dog waste than was captured in these observations. In future studies, further outreach should be performed to determine if each area has a cleanup schedule (municipal or volunteer) and usage patterns should be observed.

Future studies should also incorporate visitor use demographics and trends. Sites were selected for observation based on a perceived dog waste issue, however after observing some sites, it was clear this was not the case. For many sites, it is unclear how many dog walkers use many of the trails. This information would help determine the percentage of users who do not pick up after their dog, putting lesser-used and heavily used trails on an even playing field. Additionally, knowing the age range of users, as well as if they are local residents using the area or people who travelled to use the site would help determine if any specific groups of users are improperly disposing of dog waste more than others, allowing a more targeted education plan. Age of users in correlation to their behavior will be observed at some sites in the future through an observational study (Appendix A), however, usage demographics and statistics would likely need to be obtained in collaboration with the municipality or organization managing the area.

Each site was surveyed one time, meaning the study was just a snapshot of the site at that date and time. In future studies, it is recommended sites are surveyed multiple times throughout the year to better correlate the quantity found to the time frame in which the behavior occurred. For example, it is recommended each site is surveyed at the beginning of the season to remove all dog waste left behind throughout the fall and winter, establishing a baseline. Multiple, set increments should be established at which the sites will be surveyed to determine average dog waste accrual. Frequent surveying and cleanup would also lead to cleaner sites, ideally giving users an additional psychological motivation to clean up after their dog.

Conclusions & Recommendations

Given the varying type, terrain, and usage patterns of the 34 sites visited in each of the ISWG communities, preventing improper dog waste disposal behavior is not a one-size-fits-all approach. While this study was intended to set a baseline for dog waste quantities and infrastructure at parks in each community, it also allowed trends to be observed and discover what should be incorporated into future studies.

Trash cans can be highly effective at taking away the inconvenience of carrying out dog waste, a major barrier to proper dog waste disposal. However, their maintenance requires resources that not every park can get or need. If this research continues to show high amounts of dog waste at parks without trash cans, such as Donnabeth Lippman Park or Royal River Park, trash cans could prove worth their cost. The harms of dog waste are not isolated to the aesthetics of a particular park, the damages are felt in the entire ecosystem.

Along with trash cans, bag dispensers are an important additional piece of infrastructure to minimize dog waste being left behind. It is important that if bags are offered to users, there are adequate trash cans to avoid users leaving bagged dog waste behind. Both trash cans and bag dispensers should be placed in areas determined to be hotspots for dog waste to minimize reluctance to properly dispose of dog waste by visitors.

While installation and maintenance costs can be a prohibitive factor for these being installed, collaboration with interagency partners should be considered to maximize impact of dog waste prevention efforts. Many parks have

multiple organizations who play a part in management, including “Friends” groups in some cases. Collaboration on infrastructure installation and maintenance, as well as volunteer cleanups, would be beneficial in reducing the municipal burden, while also providing a source of community pride.

The following sites are recommended for further study: Rotary Park (including dog park), Fort Williams, Twin Brook Recreation Area, Falmouth Community Park, Shaw Cherry Hill Farm, Seaside Ave & Ocean Park Beach, Ocean Ave Recreation Area (including Quarry Run Dog Park), Saco Dog Park, Willard Beach & Spring Point Shoreway Trail, Westbrook Schools to Skatepark Trail, Donnabeth Lippman Park, Mountain Division Trail (Gorham & Windham), Pratt’s Brook Park, and Royal River Park.

One of the most important takeaways gained from this project is the value of community engagement and education. Educating dog owners and park goers on the importance of picking up dog waste is potentially the most impactful way to address the issue. There are many ways to work towards better community education, ranging from more comprehensive signage explaining the environmental impacts of dog waste in parks, to social media outreach, to citizen science apps like Litterati. As community members become more aware of the issue and how they can help, the responsibility is shared by a larger group which can often better address the issue.

Appendix A. Procedure Document

There are two components to the behavior change study as it relates to dog waste; performing a survey of 14 trails in ISWG communities to inventory dog waste deposit quantities and performing observations at five sites to determine age group behavior regarding dog waste disposal.

Site Walk Surveys

To determine if behavior change is occurring, baseline data of dog waste quantities and locations will occur each year from Permit Year 1 through Permit Year 5. The purpose of collecting this data is to track the amount of dog waste not being properly disposed of along public trails and parks. This data allows trends to be identified, as well as management practices to be recommended to increase dog owner compliance.

During the 2021 pilot project, 34 sites were identified by municipal staff as locations perceived to have issues with dog waste. These trails were surveyed using the procedure detailed in this document, and the results were used to ground truth these perceptions. Based on data collected from the pilot project, 14 sites were selected for site walks each year of the permit. Sites with low quantities of dog waste were not selected to continue surveying as part of this permit to allow surveyor efforts to be concentrated on collecting two observations from each site. The sites selected are included in Table 1.

Table 1. Sites Selected for Site Walks

Site Name	Location	Site Type
Rotary Park (and dog park)	Biddeford	Dog park and walking trails around park perimeter
Fort Williams	Cape Elizabeth	Tourist-oriented park with popular paved walking paths and off-leash fields
Twin Brook Recreation Area	Cumberland	Sports fields surrounded by forested trail network
Falmouth Community Park	Falmouth	Sports fields and adjacent paths through forest/field
Shaw Cherry Hill Farm	Gorham	Combination of wooded trails and gravel trails through farmland
Seaside Ave & Ocean Park Beach	Old Orchard Beach	Beach and adjacent neighborhood street
Ocean Ave Recreation Area (and dog park)	Portland ⁵	Dog park and adjacent gravel walking path
Saco Dog Park	Saco	Small, grassy dog park
Willard Beach & Spring Point Shoreway Trail	South Portland	Beach and adjacent paved trail
Schools to Skatepark Trail	Westbrook	Neighborhood connector path, multiple trail surfaces
Donnabeth Lippman Park	Windham	Forested trail network around a pond
Mountain Division Trail	Windham/Gorham	Paved, multi-use path used by residents and neighboring communities
Pratt's Brook Park	Yarmouth	Forested trail network, very popular for off-leash dog walking
Royal River Park	Yarmouth	Paved path along river

Sites were selected to ensure diversity in location throughout the region, trail surface, site type, and use patterns. Some communities in the region have fewer public trails and parks for people to access with their dog which may

⁵ The site with the highest dog waste per mile in Portland was selected to continue with the ISWG surveying. Additional sites will be monitored by other City of Portland programs.

result in certain communities having more people walking their dog along neighborhood streets. This hypothesis will be tracked using the presence of dog waste in catch basin cleaning in those communities. Site walks should be performed between July 1 and September 30. Each site walk survey should have two surveyors to ensure both sides of trails are checked for dog waste, as well as for efficiency.

Paper maps of each site will be provided for notes and orientation. These maps include area trails, as well as locations of dog waste and litter infrastructure. When in the field, surveyors should take note of any of the following updates which need to be made to the map:

- Trash can locations
- Bag dispenser locations
- Dog waste signage locations (photograph the sign as well)
- Littering signage locations
- Locations of restrooms and port-a-potties
- New or recently closed trails or entrances to the area

In addition to recording findings on the site map, surveyors should also complete the “Dog Waste Site Inventory Data Sheet” while completing the site walk. This data sheet is used to record cleanup schedules, leash requirements, identified areas with large concentrations of dog waste, and any additional notes. Surveyors should begin their site walk at the parking area designated on the map. While on a site walk, surveyors will use the [Litterati](#) app on their smartphone to record locations of dog waste.

Litterati

Litterati is a citizen science-based app used globally to track litter locations and trends. The app allows users to take a picture of litter when found, which will automatically geo-tag the location of the litter. From there, the user can add tags to the photo to identify the type of litter. The photo and location information are made available to be included in collated data from other app users to determine hotspots and trends.

Setting up the App: Litterati will be used to tag dog waste locations. Before getting started, surveyors should create an account using their email (not signing in with Facebook or Apple ID) and are logged in. Surveyors should check the app settings in their phone to ensure that location data is turned on when using the app and join the challenge for the area they are performing the site walk in.

In the Field: When dog waste is found (loose on ground or bagged), a photo should be captured using the app’s camera function. The app will automatically record the location and add the piece of litter to the appropriate challenge.

Back at the Office: When finished in the field and connected to Wi-Fi, surveyors can use the “Activity” tab to view untagged photos. Photos can be individually tagged or tagged in bulk. Unbagged dog waste should be tagged with “petwaste” and dog waste which was bagged and left behind should be tagged with “petwastebagged”. Consistency in tagging helps data analysis go smoother.

Surveyors will follow the track designated on the map, with one checking the left side of trail while the other checks the right side. Sides off-trail should be inspected as far out as can be reasonably observed from the trail (about 6’, the standard length of a leash). When dog waste is spotted, it should first be photographed with the Litterati app to tag its location, then picked up using a plastic bag (wearing disposable gloves is highly recommended). The plastic bag should then be deposited in a larger trash bag to be weighed at the end of the trail. If already-bagged dog waste is found, the bag should also be deposited into the larger trash bag after a picture is captured with Litterati.

In some cases, surveyors may split up to cover diverging trails more efficiently. When this is required, surveyors should check both sides of the trail and edges for dog waste as they walk, as opposed to just one side. This method would also be used if only one surveyor were available for a site. Splitting up may also be required when checking large open fields. In this case, surveyors should travel on transects 30 feet apart to maximize line of sight.

When the site walk is complete, surveyors should use a hanging scale to weigh the large trash bag of dog waste and record the result on the “Dog Waste Site Inventory Data Sheet”. If any locations were found to have high concentrations of dog waste, this information should also be recorded on the Data Sheet. Trash bags should be disposed of either on-site or at a nearby pre-determined location.

When surveyors have returned to a Wi-Fi network, Litterati photos should be uploaded and tagged. Any notes and observations of the site should be included in the overall sites spreadsheet and map updates submitted to District staff.

Owner Observations

To determine if behavior change is occurring in age groups 25-34 and 35-55, observations will be performed at multiple popular dog-walking locations during Permit Year 1 and Permit Year 5. These observations will be performed unobtrusively during high-traffic times to observe if dog owners are properly cleaning up their dog’s waste.

Based on dog waste quantities found in the 2021 study, along with feasibility of observation, the following sites were identified as observation locations (Table 2). Each site should be observed two times between July 1 and September 30.

Table 2. Site selected for age group observations.

Site	Location	Popular Day of Week ⁶	Time	Number of Observers	Observation Locations
Willard Beach	South Portland	Friday	7-9 AM and 7-9 PM	2	Each end of beach
Royal River	Yarmouth	Saturday	9 AM – 12 PM	1	Fields near East Elm Street entrance
Ocean Ave Recreation Area	Portland	Saturday	9 AM – 12 PM	2	Points around gravel path loop
Mountain Division Trail	Windham/Gorham	Saturday	9 AM – 12 PM	2-3	Trail entrances at Route 202, Windham parking, and Gorham parking
Dog Park	Saco	Saturday	9 AM – 12 PM	1	Dog park

Surveyors should be at the designated observation location at the start time of the observation window. At the beginning of the observation period, the date, time, weather, and specific observation station should be recorded on the “Dog Waste Site Observations” data sheet.

All dog owners who enter the line of sight of an observer should be recorded as a tally in “Total Number of Dogs Observed” for the age group pertinent to the owner, and if the owner is noticeably carrying dog waste bags, a tally

⁶ Day of week observation is made may vary due to weather conditions.

should be added to the pertinent box as well. Each dog owner in the two target age groups should be observed to determine if their dog defecates while in sight. If the dog does defecate, the owner will be observed to determine if they properly dispose of the dog waste. **For this study, “Proper Disposal” is defined as bagging the dog waste and carrying the bag out as the walk is continued.** Owners who do not bag their dog’s waste or who bag the waste but leave the bag on the ground will be counted as improper disposal. A tally should be added to the “Yes” or “No” column of the relevant age group based on the owners’ actions.

To not affect dog owner behavior, surveyors should wear plain clothes and perform actions to appear inconspicuous to visitors, such as reading a book or field guide or sketching in a sketchbook. If improper disposal is observed, a tally should be recorded, and the waste should be properly disposed of by the surveyor at the end of the observation period. After the observation period, surveyors should input data from the observation data sheet into the observation spreadsheet.

Appendix B. Sites Surveyed

Site Name	Location	Site Type	Area Surveyed	Leash Requirement	Bag Dispenser	Trash Cans	Signage
Clifford Park	Biddeford	Forested trail network	5.1 miles	Yes	No	Yes	Educational
Eastern Trail	Biddeford	Wide, flat forest trail	1 mile	Yes	No	No	Community
Rotary Park	Biddeford	Shoreline park with trails, dog park, and fields	1.3 miles	Yes, on trails. Off-leash in dog park allowed	Yes, at dog park gate	Yes, at dog park	Educational
Fort Williams	Cape Elizabeth	Park with popular paved walking paths and off-leash field	2 miles	Yes, except in designated off-leash areas	Yes, one by off-leash area, one by pond on Pond Loop	Yes	Community
Knight's Pond Preserve	Cumberland	Wooded trail network	3.25 miles	Yes	Yes, in parking lot	Yes, one at entrance	Ordinance-Based
Twin Brook Recreation Area	Cumberland	Sports fields surrounded by forested trail network	3.3 miles of trail, 35 acres of fields	No, voice control required	Yes, at parking areas of Tuttle Road and Greeley Road entrances	Yes, at multiple trailheads	Ordinance-Based
Community Park	Falmouth	Sports fields and adjacent paths through forest/field	25 acres	Yes, within 300 feet of trailheads	No	No	Community
Village Park	Falmouth	Small open field	12 acres	Yes, within 300 feet of trailheads	No	No	No signage observed
Leon Gorman Park	Freeport	Forested loop trail just outside of downtown	0.5 miles	Yes	Yes, multiple stations	Yes, near bag dispensers	Community
Winslow Park	Freeport	Coastal park with shoreline trail and campsites	1.6 miles	Yes	Yes, two stations	Yes, near bag dispensers	Ordinance-Based
Claire Drew Trail	Gorham	Sports fields and forested trail network	1.5 miles	Unknown	No	No	Community
Shaw Cherry Hill Park	Gorham	Combination of wooded and field trails	1.7 miles	Yes	No	No	Community
Ocean Park Beach	Old Orchard Beach	Beach and adjacent neighborhood street	40 acres (beach and street)	No, voice control required	Yes, at pier entrance	Yes, at each road entrance	Community
Baxter Pines	Portland	Small neighborhood park with two wooded trails	0.5 miles	Yes	No	Yes	Ordinance-Based
Mayor Baxter Woods	Portland	Forested trails in an urban setting	1.2 miles	Yes, from April 1-July 31. Voice control from 5-9 AM and 3-10 PM from Aug 1-Mar 31.	Yes, at multiple neighborhood entrances	Yes, at main entrance on Stevens Ave	Ordinance-Based
Canco Woods	Portland	Forested trails in an urban setting	1.5 miles	No, voice control required	No	No	Educational

Site Name	Location	Site Type	Area Surveyed	Leash Requirement	Bag Dispenser	Trash Cans	Signage
Evergreen Cemetery	Portland	Cemetery with paved walkways, forested trails behind cemetery	2.75 miles	Yes in cemetery, voice control allowed in wooded area	No	Yes, at cemetery entrance and by ponds	Ordinance-Based
Ocean Ave. Recreation Area	Portland	Dog-park-adjacent walking paths	3 miles	No, voice control required	Yes, at dog park entrance	Yes, at dog park	Ordinance-Based
Presumpscot River Preserve	Portland	Forested trails in an urban setting	3.5 miles	No, voice control required	No	No.	No signage observed
Boat Launch	Saco	Grassy/paved area used as boat launch	1.2 acres	No, voice control required	No	Yes	No signage observed
Saco Dog Park	Saco	Dog Park	0.3 acres	No	Yes	Yes	Educational
Sandy Bottom	Saco	Beach area, one trail to coast	3.3 acres	No, voice control required	Yes, at entrance	Yes	Community
Eastern Trail	Scarborough	Wide, flat trail through marsh	2 miles	Yes	Yes, one at each end	Yes, one at each parking lot	Community
Hinckley Park	South Portland	Forested trail network	2.6 miles	Yes	Yes	Yes, at main parking lot	Educational
Willard Beach	South Portland	Beach, parallel paved trail	2.3 acres of beach, 0.5 miles of trail	Not required on beach from 7-9 AM and PM, always required on paved trail	Yes, donation bag stations at many beach entrances	Yes, at Willow Street and Beach Street entrances	Ordinance-Based
High School and Neighborhood Trail	Westbrook	Neighborhood connector path, varied surfaces	1.5 miles	Yes	No	Yes, at skate park and WHS fields	Community
Riverwalk	Westbrook	Paved trail along river	0.75 miles	Yes	No	Yes	Educational
Westbrook MDT	Westbrook	Former railroad bed	0.5 miles	No, voice control required	No	No	No signage observed
Donnabeth Lippman	Windham	Forested trail network around a pond	2 miles	Yes	Yes	Yes	Ordinance-Based
Mountain Division Trail	Windham /Gorham	Paved, multi-use path	3.1 miles	Yes	Yes, in Windham parking lot	Yes, part of bag dispenser	Ordinance-Based
Pratt's Brook Park	Yarmouth	Forested trail network, very popular for off-leash dogs	5.4 miles	No, except within 300 ft of roads and trailhead	No	No	Community
Royal River Park	Yarmouth	Paved path along river	1 mile	Yes	Yes, one at each end of trail	No	Ordinance-Based
West Side Trail	Yarmouth	Forested trail, mixed surfaces	3 miles	No, except within 300 ft of roads and trailhead	No	No	Community