



Pollution  
Prevention  
Institute

# KANSAS STATE PARKS

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## Company background

The Pollution Prevention Institute (PPI) collaborated with the state government agency, Kansas Department of Wildlife and Parks (KDWP) to focus on solid waste analysis and reduction in the state parks system. The selected partner facility for this project, Wilson Lake State Park (WLSP), is found in a very rural part of Kansas, ten miles north of Wilson (population 683) and 14 miles south of Lucas (population 395). WLSP's average weekly visitation during the summer while this project was conducted was 11,426.



## Project background

The COVID pandemic brought about countless unforeseen societal and infrastructure-related challenges. One such challenge occurred in the state park system. With the closing of many typical entertainment venues like movie theaters, restaurants, bars, and concert halls, many people turned to the one thing they could still do: enjoy the great outdoors. This led to an influx of people visiting state parks, which presented one of the only settings that people could still go to get out of the house with their family. In fact, 2020 was the first year that Kansas state park patronage surpassed 8 million visitors in a given year.<sup>1</sup> While increased park patronage is a good thing, the upsurge presented unique challenges especially for parks in very rural locations.

Parks filled to capacity also mean dumpsters filled to capacity. The increase in solid waste has a more significant effect on rural Kansas parks that oftentimes have minimal resources and have to transport their refuse further to reach one of the few operational landfills in Kansas. WLSP must transport all solid waste sixty miles away to the nearest operational landfill in Salina, Kansas. Due to the nature of the activities people at state parks participate in, such as camping, food waste may potentially make up a large percentage of the solid waste collected from state parks. From a purely procedural standpoint, food waste is problematic because it is made up of around seventy percent water on average, therefore requiring more resources in terms of fuel to haul it to the landfill.<sup>2</sup>

In addition to food waste, the solid waste in state parks could be a hot spot for wastes containing perfluoroalkyl and polyfluoroalkyl substances (PFAS), also known as 'forever chemicals' for their recalcitrance. PFAS are a group of over 4,700 different chemicals that originated in Teflon in the 1950s and are found in a wide variety of products today that repel water, grease, and oil including a variety of clothing, furniture, carpeting, non-stick cookware, firefighting foams, cosmetics, and food wrappers or containers. Components of these chemicals break down either very slowly, or not at all.

## Incentives to change

In addition to the resources required for the transportation of discarded food, food waste is a key contributor to greenhouse gas emissions. The effect of increased weight on the transportation process and the additional fuel requirements lead to an increase in carbon dioxide emissions. Furthermore, food waste rotting in landfills generates methane emissions. Overall, in the process of producing wasted food, disposing of discarded food, and the emissions from food in landfills, it is estimated that food waste contributes to approximately ten percent of all global greenhouse gas emissions.<sup>3</sup>

The persistence of PFAS, in combination with their extensive distribution, have caused them to be present at low levels worldwide in the blood of most people and animals, as well as in soil, water, air, and many different food products. Increased PFAS exposure in humans has been linked to a variety of health concerns such as kidney and testicular cancer, decreased vaccine response, pre-eclampsia in pregnant women, and more. Environmental PFAS contamination in wildlife poses a threat not just to their health directly, but to the health of humans that consume wildlife. States such as Michigan and Maine have recently found it necessary to issue 'do not eat' advisories for fish and deer harvested in parts of the states.<sup>4,5</sup>

State parks in Kansas receive no state general fund revenues and are almost entirely fee-funded. Little assistance from the state government shifts the burden of financial success and performance of state parks to the KDWP staff alone. Without the cushion provided by a reliable stream of incoming general fund revenues, the attraction and appeal of each park is mandatory to ensure patrons continue to visit – and parks continue to generate fees. WLSP in particular must run efficiently with only four to five full-time staff members year-round. Therefore, it is imperative that Kansas state parks are able to streamline their infrastructure processes to run smoothly so that the parks are pleasant and inviting places to visit.

## PROJECT PROCEDURE

The goals of this project were to reduce food waste in WLSP, gain knowledge about the potentially harmful PFAS chemicals, and to recommend minimization and diversion options to park patrons and staff. This project attempted to decrease the solid waste stream at WLSP by carrying out three separate education events. Two of these events were presented to WLSP patrons and one was presented to the KDWP staff stationed at WLSP. The staff education presentation was recorded and uploaded to YouTube, then shared with WLSP staff with the intention of being distributed to other rural Kansas state parks. The education events were bolstered by evidence collected during three separate solid waste audits at WLSP. One waste audit was conducted toward the beginning of the summer camping season (mid-May), one during the height of the season (mid-June), and one toward the end of the summer (late July). The waste audits were performed by removing bagged solid waste from a selection of dumpsters at WLSP, opening the bags, and filming the contents in slow-motion as they are sent down a chute.

## FINDINGS & RECOMMENDATIONS

In a time when information pertaining to PFAS environmental pollutants is largely still developing, any evidence about them is vital, especially evidence of their presence in a setting such as a state park, which should be a refuge of wildlife and environmental preservation. However, many vital details such as how to more accurately detect PFAS, how harmful they are to the environment, and how to correctly manage disposal of PFAS-containing products is still unknown. Due to the unquantifiable nature of the logistics surrounding PFAS, no immediate, tangible increased understanding could be gained at this time. There is potential to further analyze the existing waste audit footage in the future as more information pertaining to PFAS becomes available.

The majority of food waste present in WLSP's waste stream was plate waste or other inedible food waste in lieu of excess food that could be diverted through donation or otherwise repurposed. PPI participants recommended WLSP may find the most benefit in participating in an aluminum recycling program based on the surplus of aluminum cans found in the waste stream. Participation in such a program could generate a revenue of \$2,285 and a reduction of over 22 tons in solid waste tonnage fees on average during a 24-week busy season.

**\$2,285 in possible revenue & 45,704 lbs. (>22 tons) reduced  
in solid waste tonnage fees over a 24-week busy season**

**Assuming: \$0.05/lb. of aluminum, 24 cans/1 lb., 11,426 visitors/week  
creating an average of 4 cans/person**

<sup>1</sup> <https://www.cjonline.com/story/news/environment/2022/07/06/kansas-state-parks-see-record-visitation-climate-change-challenges/7584754001/>

<sup>2</sup> <https://www.waste360.com/food-waste/profiles-garbage-food-waste-0>

<sup>3</sup> <https://www.worldwildlife.org/press-releases/over-1-billion-tonnes-more-food-being-wasted-than-previously-estimated-contributing-10-of-all-greenhouse-gas-emissions>

<sup>4</sup> <https://www.maine.gov/dhhs/mecdc/>

<sup>5</sup> <https://www.michigan.gov/pfasresponse>