

12-1-2017

# Water Usage Reduction at Food Processing Facility

Derek LaPolice

*Iowa State University*, [lapolice@iastate.edu](mailto:lapolice@iastate.edu)

Mathew Bradley

*Iowa State University*, [mat1512@iastate.edu](mailto:mat1512@iastate.edu)

Christian Peterson

*Iowa State University*, [cjp@iastate.edu](mailto:cjp@iastate.edu)

Follow this and additional works at: <http://lib.dr.iastate.edu/tsm415>



Part of the [Bioresource and Agricultural Engineering Commons](#), and the [Industrial Technology Commons](#)

---

## Recommended Citation

LaPolice, Derek; Bradley, Mathew; and Peterson, Christian, "Water Usage Reduction at Food Processing Facility" (2017). *TSM 415 Technology Capstone Posters*. 2.  
<http://lib.dr.iastate.edu/tsm415/2>

This Poster is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in TSM 415 Technology Capstone Posters by an authorized administrator of Iowa State University Digital Repository. For more information, please contact [digirep@iastate.edu](mailto:digirep@iastate.edu).



Derek LaPolice, Mathew Bradley, Christian Peterson

## Water Usage Reduction at Food Processing Facility

Client: Burke Corporation, Nevada, IA

### Problem Statement

- Burke Corporation in Nevada, Iowa uses 25% of the city's fresh water supply
- The company spends \$875,000/yr and uses 65,385,000 gal of water
- Burke corporation wants to reduce these costs and in turn be more environmentally friendly

### Objectives

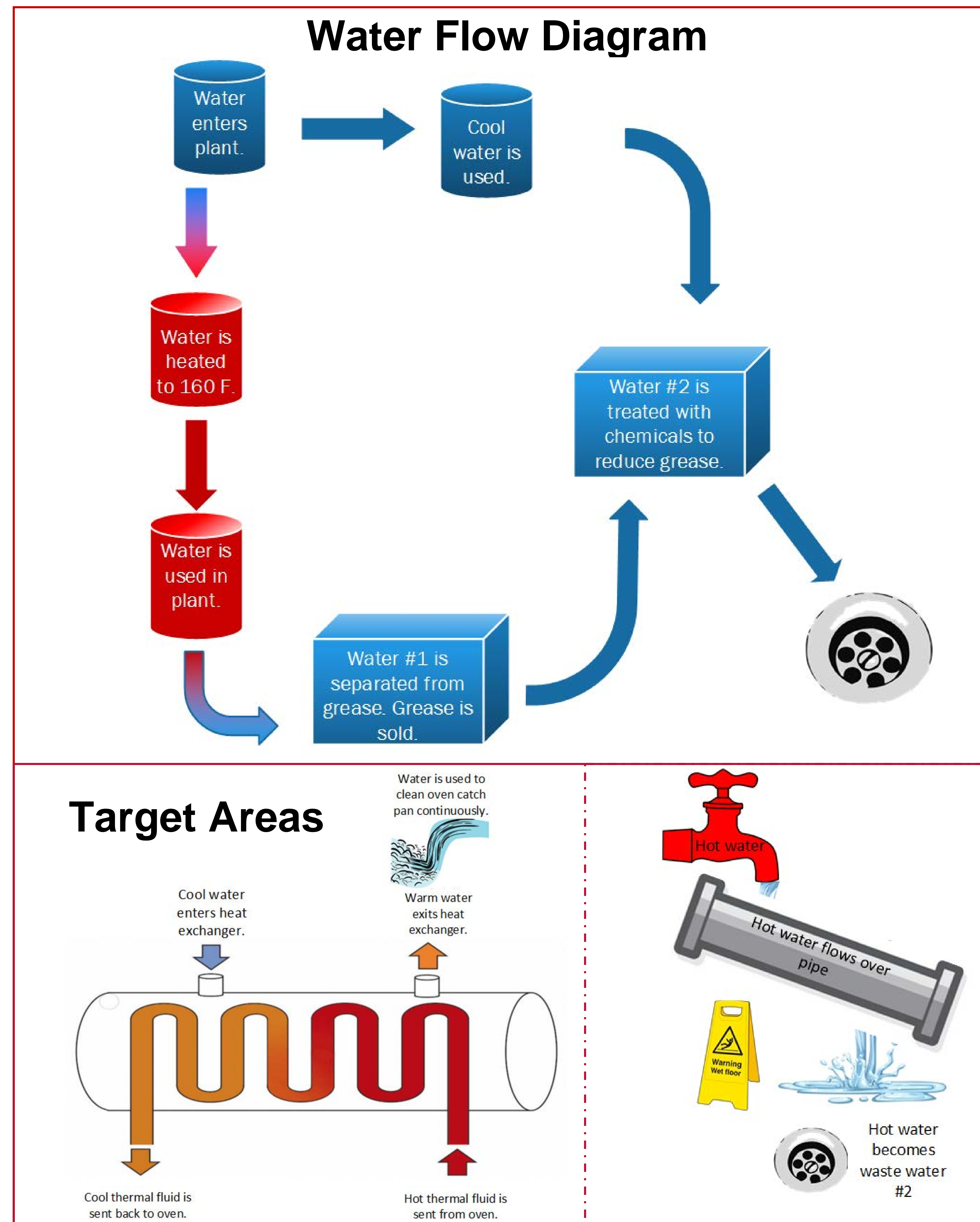
- Reduce overall water usage
- Reduce/remove water used to heat 4" sanitary piping
- Reduce costs associated with water consumption

### Constraints

- Operating cost of solution must be less than current condition
- 3 year payback or less
- Reliable solution that will not cause downtime
- Solution must not have a negative effect on production capacity
- Contaminants must be nonexistent for the food industry
- Temperature control is essential for pipes running process food

### Scope

- Hot water being used to heat 4" sanitary pipe
- Water used to cool and clean oven



### Methods

- Eliminate water usage by heating pipes up via electricity
- Cost analysis of solutions to fit into 3 years payback
- Design custom solutions

### Target Areas

- Pipe is being heated up via water being dumped onto the pipe.
- Ovens use water to heat up and cool down and also use grease
- Attempting to reroute water for other uses as opposed to recycling

### Major Outcomes

- Max. product throughput before and after (capacity increase if any)
- Estimated annual maintenance cost for solution
- Annual savings with solution(s)
- Sustainability analysis of solution
- LOTO write-up on any equipment
- Recommended spare parts list
- SOP
- Preventative maintenance tasks/frequency

### Benefit to Client

- Burke Corporation becomes more environmentally friendly
- Reduce freshwater burden on city of Nevada
- Reduced cost in water, gas and chemical usage
- Increased ergonomics of target area