

## ECM 6 – Steam Traps

### Existing Conditions

Steam is the primary source of heating for the BSB, LAC, SAC and SOL. Steam is produced at a central plant and delivered to each of the buildings. The steam pressure is then reduced and distributed to coils, heat exchangers and process loads. The steam system utilizes steam traps to return condensate to the boiler plant.

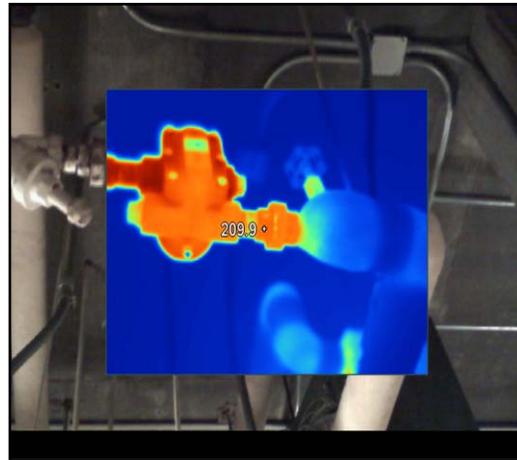
Currently there is no steam trap maintenance program at the Veterinary Medicine Complex. Steam traps are typically replaced when a problem is detected. The building utilizes bucket-type and float-and-thermostatic traps.

### Recommendations

When steam traps fail, steam is wasted thereby reducing overall efficiencies, increasing operating costs, and chemical treatment costs. ESG performed a steam trap survey and tested all accessible traps. Methods of testing included ultrasonic testing and/or IR thermal scans. Many traps were not activated during the testing because the steam to them was valved out. Since these traps have been valved out, no savings can be attributed to them. By testing each trap ESG was able to determine the exact quantity of failed traps and potential energy savings. ESG recommends replacing the failed traps at the buildings.



*Existing Steam Trap*



*Thermal Image of Same Trap (Operable)*

Below is a summary of the trap survey.

Building	Failed Traps	Operable Traps	Traps Not Activated During Survey
BSB	9	41	17
LAC	6	12	30
SAC	5	23	9
SOL	1	5	7
<b>Total</b>	<b>21</b>	<b>81</b>	<b>63</b>

## ECM 6A – Alternate to Steam Traps (Replace all Traps)

As an option the University may want to consider replacing *all* steam traps as part of this project. Replacing all traps at this time would eliminate future maintenance on traps for years to come.

### Benefits

- A. *Energy Efficiency* – The new steam traps would reduce the steam usage in their respective buildings.
- B. *Reduced Maintenance* – This retrofit will result in a reduction in the amount of maintenance associated with replacing the failed traps.

### Energy Savings

The energy savings associated with this ECM are based on the reduction in steam waste associated with the new traps. Savings are based on the actual and expected failed traps based on the survey performed.

The savings were determined by performing engineering calculations for the steam loss associated with the various sized traps. Steam pressure, orifice size and operating hours were taken into account when calculating the savings. The costs in the ECM summary below are for replacing only the failed traps. Additional costs would need to be accounted for if the University elects to replace all the traps.

The recommended M&V protocol for this ECM is Option D. Additional protocols can include Options B and C.

### ECM Summary

Building	Cost	Potential Grants	Energy Savings	Payback (yrs)
<b>Total (All Bldgs)</b>	<b>\$26,600</b>	<b>NA</b>	<b>\$17,956</b>	<b>1.5</b>