



Pilot Study Report:
Chateau at Incline Village Restaurant
Removal of Fat, Oil, and Grease Buildup From Grease Interceptor

Executive Summary

From June 19 to September 19 of 2014, Protein Matrix LLC conducted a pilot study in cooperation with the public works department of Incline Village, NV (Incline Village General Improvement District (IVGID)). Upon recommendation from the town's wastewater treatment officials, Protein Matrix Industrial Grease Remediation was introduced to a local restaurant with a history of FOG compliance issues in the hopes of eliminating the problem at its source. As a result, this restaurant's release of FOG into the local sewer system was dramatically reduced, demonstrating that restaurants can eliminate FOG buildup in grease traps and reduce the number of cleanouts through the use of Protein Matrix Industrial Grease Remediation.

Protein Matrix Industrial Grease Remediation Technology

Protein Matrix Industrial Grease Remediation (IGR) safely and irreversibly transforms fats, oils and grease (FOG) into a highly digestible product, eliminating FOG buildup and saving restaurants from expensive grease trap maintenance or an extensive compliance program. When the plant-based material reacts with FOG, the final result is a flowable liquid soap that does not re-agglomerate due to the presence of natural products in solution.

The natural amino acids, peptides, and proteins in Protein Matrix IGR formula help to mitigate the effects of high pH and reduce the amount of airborne caustic when the solution is sprayed. Those same amino acids, peptides, and proteins accelerate the removal of FOG, making Protein Matrix IGR not only safer, but more effective than traditional degreasing products.



Overview: Chateau at Incline Village Restaurant

To protect sewers and prevent overflows, local governments regulate fat, oil, and grease discharge into municipal sewers. Therefore, it is necessary for food service establishments to not only maintain grease traps and interceptors, which must be cleaned out on a regular basis, but also establish and maintain a FOG monitoring program in order to remain in compliance. Failure on either point can result in significant fines.

Based on the impressive results of a FOG removal study at a local wastewater treatment plant local officials proposed a pilot study at a local restaurant. This restaurant, The Chateau at Incline Village, overlooks a championship golf course, includes a 5200-sq. ft. ballroom, and specializes in weddings and other events. As such, it produces large volumes of food and correspondingly elevated FOG output into local sewer systems - in the past, the Chateau's 750-gallon interceptor has required a cleanout every 90-120 days. To this end, the Protein Matrix team was invited to perform an additional study to assess whether the use of our Industrial Grease Remediation product could reduce the amount of solid FOG released into lateral piping and sewer lines.

Restaurant Grease Interceptor Pilot Study

For two weeks prior to the commencement of the pilot study, the Chateau's effluent pH, BOD, and FOG was monitored by a contract laboratory. On September 9, 2014, the interceptor was cleaned out and a Protein Matrix Industrial Grease Remediation treatment was initiated. Protein Matrix IGR was applied to various drains within the main kitchen at a rate of 36-72 oz./day. To prevent FOG buildup at its source, Protein Matrix IGR was dosed into the washbasin at the same time as the restaurant's dishwashing detergent, allowing it to react with FOG immediately upon its release into the Chateau's outgoing water. Throughout this dosing period, the abovementioned third-party lab measured the effluent's pH, BOD, and FOG on a weekly basis.

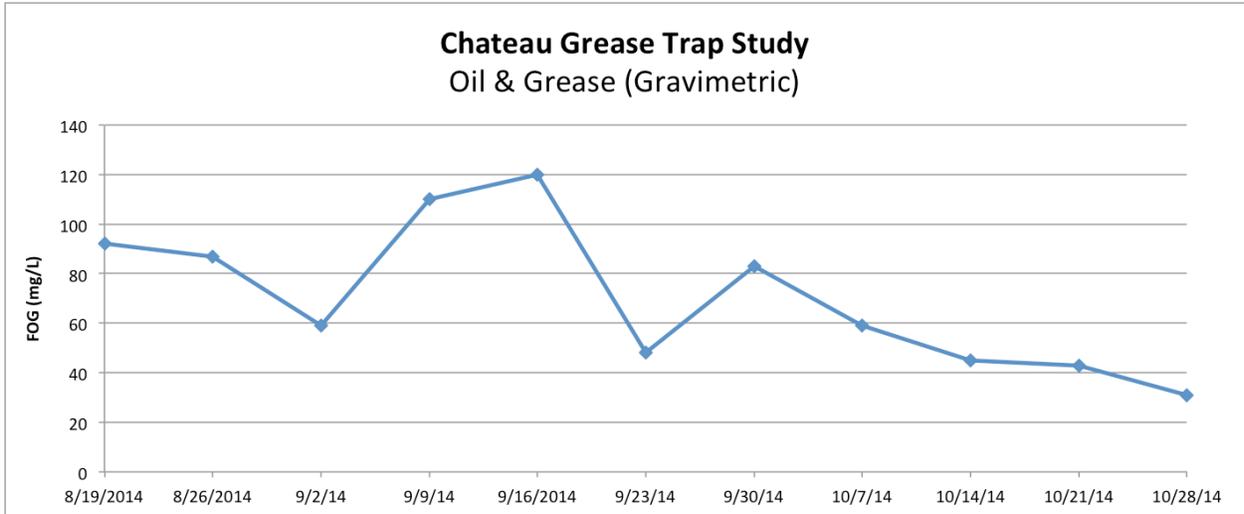


Figure 1. Effluent FOG levels throughout pilot study

As seen in Figure 1, a graph of the fat, oil, and grease throughout the pilot study, the FOG level at the start of the pilot was ~90 mg/L. Next, one notes an initial period in which the peptides and amino acids found in Protein Matrix IGR reacted with fat molecules, breaking down solidified fat and converting it into fatty acid salts, therefore increasing the FOG output. After this two-week period, however, the level of fat, oil, and grease being released from the interceptor was greatly reduced (by 66%, to 31 mg/L) by the end of the pilot. In addition, it must be noted that at this point in the study, the FOG buildup in the interceptor had nearly disappeared. Throughout the two months of this pilot, no cleanouts were required (as opposed to the quarterly maintenance events required before the application of Protein Matrix IGR). In this way, the use of Protein Matrix Industrial Grease Remediation can greatly reduce, if not eliminate entirely, the need for grease trap and interceptor cleanouts.

While reducing these cleanout events (and the corresponding costs and labor-hours), the use of Protein Matrix IGR does not adversely affect effluent as it reaches lift stations and WWTP. As seen in Figures 2 and 3, effluent pH was not affected by the application of Protein Matrix IGR while BOD was reduced significantly. In this way, the use of Protein Matrix IGR is mutually beneficial: the reduced FOG reaching the WWTP has improved plant efficiency by markedly lightening their BOD load, while at the same time, the restaurant can remain within compliance limits and avoid fines and other, more serious, health and welfare repercussions.

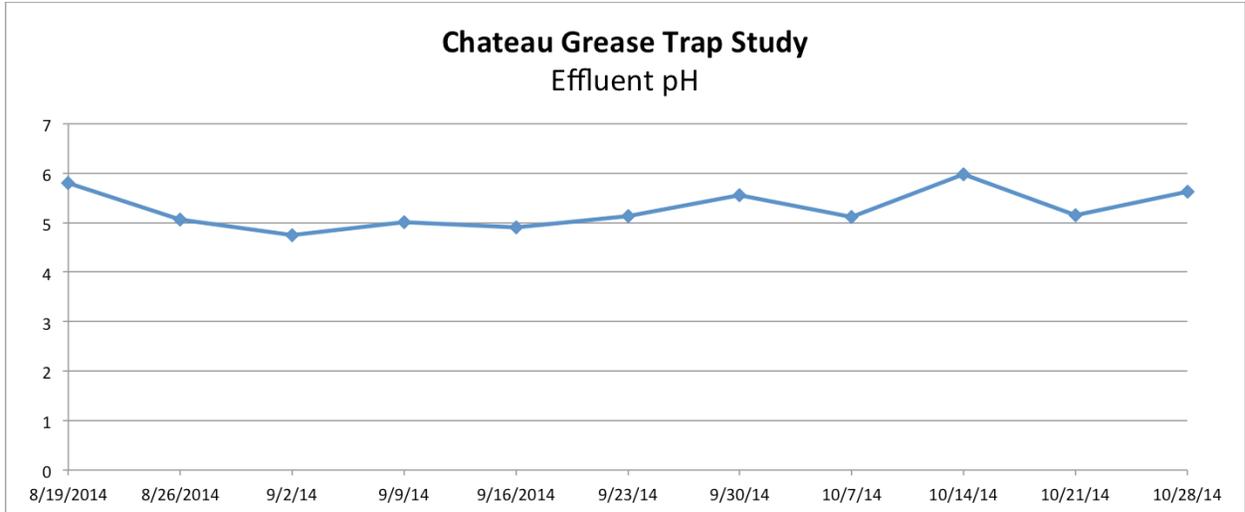


Figure 2. Effluent pH throughout Chateau pilot study

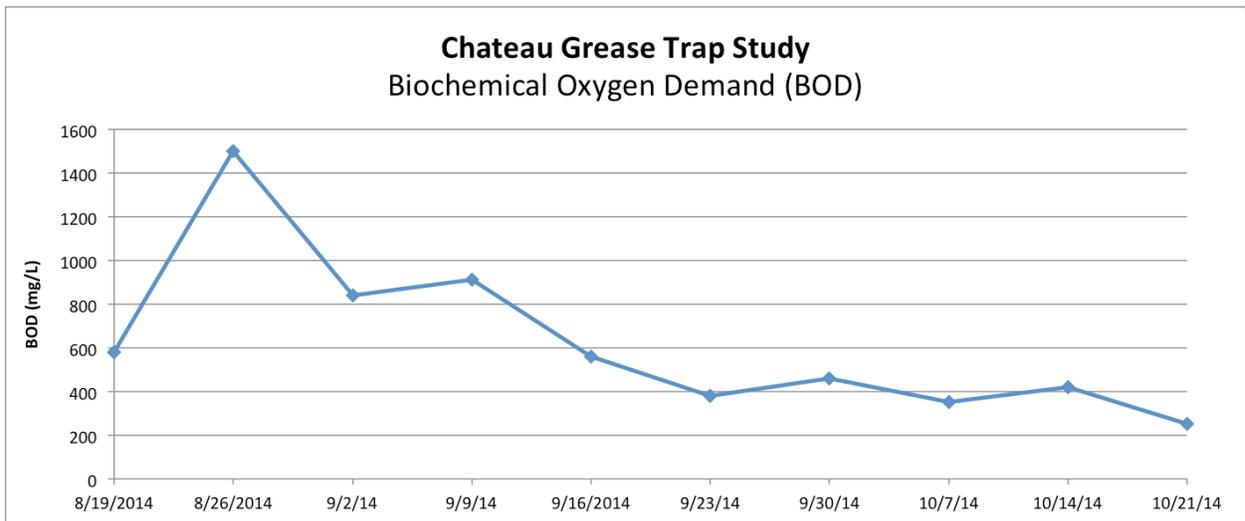


Figure 3. Effluent BOD throughout Chateau pilot study



Restaurant Grease Interceptor Pilot Study Recommendations

The build-up of fat, oil, and grease within grease traps can result in overflows and release of toxic, infectious, and/or other hazardous materials into the environment. This, in turn, leads to excessive maintenance of wastewater collection and treatment systems, extensive fines from municipalities and water authorities, and increased insurance premiums. But even ignoring the risk of overflows, FOG buildup in traps and interceptors requires costly trap cleanouts on a regular basis, for fear of noncompliance and the ensuing fines.

Over the course of three months, Protein Matrix Industrial Grease Remediation eliminated the fat buildup in the Chateau and Incline Village's interceptor, which prior to the pilot study had required cleanouts on a quarterly basis, and significantly reduced the amount of FOG being released into municipal sewers. The restaurant continues to use Protein Matrix IGR and has not required a cleanout since the start of the pilot, nearly 6 months ago. In all, through the use of Protein Matrix Industrial Grease Remediation to eliminate FOG buildup, any eatery can lower maintenance costs, prevent trap overflows, and avoid noncompliance and fines.

PREPARED BY

Peter Rehage, Protein Matrix LLC
Patrick Antle, Tufts University
299 Broadway : Suite 203 : New York, NY : 10007
info@proteinmatrixllc.com
847.902.4229