

NWWOA Spring Meeting  
Rolling Oaks-Barron WI.  
April 17, 2009

Chairman Katie opened the meeting with a welcome and a brief introduction of herself and her wastewater career. Chairman Katie then introduced Rick Jari, Utilities manager. Rick welcomed the group to the City of Barron, with as few words as possible as Rick is a man of few words. Chairman Katie gave the floor to Secretary Thom who cleared up some agenda issues and mailing issues along the significant of being a state member and Thom also passed around the directory for any operator, and plant changes. Chairman Katie then introduced the first presenter. Steve Seigfried from Henkel Corp. Steve discussed bolt thread assembly failures. A thread locker product can fill voids between the nut and bolt which is 85% air. This is where most corrosion starts. Even with thread locker you can still remove the nut. Steve briefly discussed anti-siege products which make disassembly much easier. Steve discussed freeze and release product which is a product that lowers the surface temperature of a nut and bolt 80 degrees instantly and fractures the rust bond. This is not as affective in below zero weather where the temperature is not that different from the bolt and nut. Steve then discussed the advantages of ceramic coatings which are life extension and a rust prohibiter. Steve then discussed the different types of anti slip flooring and the proper applications for non slip surfaces.

Chairman Katie introduced the next presenter Neil Swenson from Chemtreat. Neil outlined the phosphorus removal methods most common which are Chemical precipitation, Biological, and Chemical followed by biological. Biological phosphorus removal will convert for every 100 ppm of BOD, 1 pound of Phosphorus. This can be improved by controlling aeration rates/M ratios, and residence time in of activated sludge in secondary clarifiers. Chemical precipitation of phosphorus can be done by precipitation of orthophosphate with metal salts; the three metal ions used to precipitate phosphorus are Aluminum Compounds, Iron compounds, and Calcium (lime). Aluminum compounds are Alum, Sodium aluminate, Aluminum chloride, Poly aluminum chloride, and Aluminum chlorohydrate. Phosphorus removal can be done with the following iron compounds as well, Ferric Sulfate, Ferric Chloride, and Ferrous Sulfate. Phosphorus removal with lime poses a few problems in that you need to raise the ph up so high to be affective only to adjust the ph down again before discharge and most polymers don't work will under higher ph's. In addition to the chemistry lesson we received Neil then discussed the coagulant characteristics. Inorganic coagulants (add to sludge volume) such as Alum, Aluminum Chlorohydrate, ferric Chloride, Ferric Sulfate, Sodium Aluminute. Organic coagulants do not add to sludge volume such as Polyamines and polydadmac.

Chairman Katie introduced the next presenters, Rob Conney and Bill Shuttle from General repair services. The boys discussed the dynamics of centrifugal pumps, both horizontal and vertical, and the importance of proper troubleshooting. A good troubleshooting kit should consist of mechanical or strobe tachometer, amp meter, manufactures performance pump curve, owner's manual and a high grade set of pressure gages. Pump noises can be attributed to mechanical or hydraulic issues, most often the mechanical problem is the bearings. Consider running pump briefly to pin point noise. Mechanical noises could also be debris in the impeller, impeller rubbing, alignment, or impeller out of balance. Hydraulic noises could be cavitations, vortexing, surging or water hammer, and excessive velocity of the fluid. Liquid coming into the pump needs to be flowing at the same velocity as it is flowing out of the pump. If you have lower suction velocity than discharge velocity vaporizing can occur in the liquid forming bubbles and then the bubbles clasps in the discharge side of the pump thus producing a noise. Another good maintenance idea is to use gauges on both suction and discharge side of a pump with initial installation. Record the information and if either pressure diminishes greatly then

you have a direction to start with. Some other problems that create pump problems are chemical attack, abrasive water, discharge cavitations, suction cavitations, shaft breakage, radial twist in shaft and too much torque. If submersible pumps are used, be aware of inlet flow drops into wet well so as not to cause air entrapment in the pump. Also be aware of your pump sizing so you do not put in bigger pumps than the design was for. Last but not least, keep good records, be proactive and your pumps will have a longer life.

Chairman Katie introduced the next presenter Dave Fenten. Let's talk **vibration** for a minute. Dave discussed the importance of vibration analysis. One advantage of this kind of test is that it is trendable. Different load factors can cause you to look at other factors such as using time waves and ODS – operating deflections signals. This test can uncover problems like, bearing deflections, belt drive, bent shaft, electrical motor problems, gear wear, loose bearing fit, pump cavitations and resonance. When anything is running in its resonance, all components have a natural frequency. Vibration testing can save on warranty work and prevent catastrophic failure. Vibration testing can also identify electrical fluting. This is where microscopic pitting occurs on bearings when electrical current travels through lubricant to ground. Another maintenance activity that is very worthwhile is Ultrasound Dilution. This activity can determine air leaks, vacuum leaks, electrical arcing, wind and water leaks, steam traps and underground leaks. Bottom line, all these tools and techniques are valuable in the fight against preserving the capital budget.

Chairman Katie introduced the following presenter Joe Kniseley from H-D Supply. Since this was after a great lunch we took the presentation outside to the parking lot where Joe did the presentation off the tail gate of his truck. It was a beautiful day in the neighborhood. Joe started with HDEP manhole adjusting rings. Demonstrated the light weight of them and discussed the ease of handling. They are affordable, will not break if you drop it, rated for traffic, comes in tapered edges and range in size from 1-1/4 inch up to 4 inch. This product also is available for storm catch basins. Joe then went into Restraints (MEGA LUGS) for ductile and PVC. Joe discussed proper installation procedures and how to identify the difference between PVC and ductile restraints. Joe discussed the latest in MJ and flanged gaskets. The new version has a lip that fits over the pipe end and will not slip out of the way when assembling a connection. With the new code changes in locating, Joe showed the latest items for tracer wire connections for water and sanitary connections. Joe's last show and tell item was a Hymax couplings. Two bolt vs. the old four bolt design. One size fits all types of pipe.

Chairman Katie introduced the next presenter Bernie Hangels from Great lakes Underground Equip. Co. Bernie main focus was to train us on proper use and care of jetter hose for your jet-vac truck. To start, Bernie commented that all hose has a pressure rating and are color coded to reflect that. Yellow color represents 2000 PSI-no longer manufactured. Orange color which represents 2500 PSI, Blue color which represents 3000 PSI, and Green which represents 4000 PSI. On your jetter truck, you need to know your pump capacity in order to size the hose. The newest hose size out there is 1-1/2. Water capacities for hose sizes are 1/2 inch is 35 gpm, 3/4 inch is 53 gpm, 1 inch is 85 gpm and the new 1-1/2 inch is 125 gpm which will require an auxiliary water supply if you do any amount of cleaning. To know who manufactured the hose on your truck, look into the cut off end of the hose, the company name will be printed on the inside. To extend the life of your hose use a fined extension (something like a skid on a camera) a tiger tail, and a lap manhole roller. When splicing, never use two different manufacturer hoses and always use the splice kit from the manufacturer. When you remove the old hose, through it away. A quick and dirty way to extend the life of your jetter hose is when it is getting worn on the end by the nozzle, unroll the entire hose off the reel and put the hose on backwards. You will get double the life. Never push, pull or move the truck when hose is in sewer. Some proper hose use and safety ideas

are, never use hydraulic fittings for splicing, watch your pressure on the gauge, when the hose is above ground, never use more than 100 PSI on hose and never bend hose in a tight radius. Be sure to look at hose for cuts, kinks, blisters and scrapes. All these issues can cause premature failure.

Chairman Katie introduces the final presentation on community digesters presented by Cory Davis (DPW of Turtle Lake) and Mark Proses (S.E.H.) The duo teamed up to present the Collaborative digester feasibility study for the Village of Turtle Lake. The study focused on combining organic waste streams from cheese factories, dairy farms, egg layers and the municipal contribution. The study looked at types of waste treatment, bio-gas energy opportunities and financing options for public and private sectors. The new digester need concept came about as a result of Turtle Lake having difficulty handling industrial waste and slug loading along with the industries having difficulty meeting DNR requirements in land applying high strength waste. This digester project could address both problems. A focus on energy grant was secured to do a feasibility study along with participants picking up difference with matching funds. The core participants are Lake County Dairy, Kerry Foods, Northern Liquid Waste Management, Village of Turtle Lake and focus on Energy. Other study participants include Barron and Polk Counties, UW Extension, Turtle Lake School, other food industries and large dairy farm operations. A background on some of the players,

- **Lake County Dairy**- currently makes 70,000 lbs of cheese/day
  - Utilizes 800,000 lbs of milk /day
  - Land spreads 11 million gallons /year
  - Planning to have significant growth in near future
- **Kerry Foods**-separates soy flour and removes protein for human consumption
  - Sell to Nestle and Kellogg's
  - Land spreads 30 million gallons of waste/year
  - Produces 7 million lbs of product/year
  - Estimating 10 million pounds of product in 2009
  - Planning for significant growth in the near future
- **Northern Liquid Waste Management**- Hauls the industrial waste and land applies from these companies
- **Village of Turtle Lake**- New plant in 2003
  - Design flow of .546 mgd—current flow is .514 mgd
  - Design BOD is 2,464 #/day—as of March 2009 BOD loading was 2,958 #/day
  - SS design is 2,407 #/day —current SS is 1,762 #/day

The project looked at waste streams as far as 100 mile radius to be processed at a single location to produce biogas and a reusable solids bi-product. The goal of the facility is to produce enough biogas that if it were to be used to generate electricity, could produce up to 4 MW of energy.

The scope of the study will be in 4 phases

Phase 1-digester preliminary evaluation—Phase 2-Digester final feasibility and business plan—Phase 3-Construction plans and specs,—and Phase 4-Construction. Much work needs to be done and these are always the issue of the **HOT Buttons**. Specifically —Traffic, Traffic, Traffic; Odor, Odor, Odor; Noise and local participation.

Chairman Katie called the business meeting to order with a few comment on the district, Chairman Katie turned the floor over to Wally –District secretary who brought the group up to speed on state programs and the benefits of becoming a state member. The minutes of the fall meeting were approved and a treasures report was given and approved. The meeting was adorned.