2014.10.09- Schedule - Realistic Case

Making Fuel

2014: JAN FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC | 2015: JAN FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC

- **Permitting - all (around target)**
- CD - EDOP Finalized - work final
- CD - Legal Review and add comments
- CD - Submital to City for review
- CD - Submital to state for review
- CD - Completeness review (CDPHE)
- CD -Technical Review (CDPHE/City) - Target
- CD - Question and Answer - City and CDPHE
- CD- City Council review
- Air permit "draft" received and approved by DZF
- Air permit public comment
- Air Permit Issued
- Provide notice of start-up to State
- **Special Projects**
- New staff hired and trained - need to get boots for them and uniforms - also need to make sure we have enough gloves, glasses, hard hats, etc.
- Development of training and qualification for operators of equipment. Training staff on equipment and record keeping.
- Rentech procurment of parts - contract/agreement
- **Waste Sorting - working toward collection**
- *Determination of recycling waste stream and future handling*
- *Updated methodology for collection of data on waste stream*
- *Changing out existing black waste bin lids throughout the zoo - discuss updated sticker/testing of alternatives*
- *Collection of waste stream data methodology established and utilized*
- *Retraining staff on use of waste sorting/collection*
- *Developing a strategy for grounds crew to evaluate dumpsters*
- *Finalize procedures for handling of waste streams*
- *Training departments (marketing and KM) on sorting*
- *Training program for grounds crew- to be handled by grounds manager*
- **Equipment testing and development (processing)**
- *Equipment #3 - Dryer and associated equipment*
- *Equipment #4 - Replacement of chain with cable and testing*
- *New program for conveyor cabinet installed with new drawings*
- *Conveyors (Tube conveyors) - reworking all conveyors for operation up to #7*
- *Pellet cooler - development of sealing/etc for unit*
- *Dry sound enclosure - installation and testing*
- *Pelletizer and feed system- evalution of steam generation-exhaust*
- *Metals separation and diversion components above #5*
- **Code and safety evaluation of equipment (delayed - but ready to go!)**
- *Pellet bin and Pelletizer*
- *Ventilation of gasifier area- design and engineering*
- *Dryer equipment and ventilation- moved/delayed to WM Building*
- *Pellet cooler*
- *Syngas*
- *Tars and handling of tars*
- *Generator and high pressure natural gas*
- *Gycol storage and handling*
- **Move Material Processing Equipment (front end equipment - up to gasifier)**
- *Disassemble and paint #4 and other associated conveyors surrounding.*
- *Disassemble and paint #7 including storage bin*
- Unistall electrical panels at BEEDL -
- Generate Electrical updated schematics/drawings for each cabinet
- Oneline electrical drawings for permitting
- Submit permit to city for electrical equipment operation approval (fuel making)
- Install Electrical Panels at WM Building and wire
- *Other parts not assembled - painted (hopper above mini shredder, shredder conveyor, etc.)*
- *Load #3-1,#3-2,#4, #15, # 18 on flatbed truck prepared for move*
- *Unload #3-1,#3-2,#4, #15, # 18 first truck load of material and stage for assembly/begin assembly*
- *Second load of #5, #6, #7 on truck for move*
- *Unload second truck load of material and stage for assembly/begin assembly*
- **Equipment Testing/Installation- WM building**
- *Installation of scale and weighing system - staff testing with existing dumpsters for operation.*
- *Addition to conveyor and installation at WM Building*
- *Prepare front end equipment with Eurohansa*
- *Installation/ordering/placement of office supplies in WM Building.*
- **Master controls center and data collection/database construction, etc.**
- *Test/Run Eurohansa + all processing equipment*

Gasifier + Flare

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- **Gasifier and Structure**
- *Remove parts and pieces from gasifier*
- *Design and construct table jig for gasifier parts*
- *Stage parts for machining and start machining smaller parts*
- *Framework for Mill - increase height/construct platform*
- *Machine larger gasifier components*
- *Remove electrical control panels and wires from Gasifier and Structure- palletize*
- *Disassemble #8 structure*
- *Prep and paint #8 structure*
- *Disassemble and stage #8-1 for delivery to be coated (send for coating)*
- *Load and move all #8 structure to WM building*
- *Install #8 structure at WM building-*
- *Assembly and testing of Nitrogen Generator and compressor (move and install)*
- *Pick-up completed/coated gasifier for delivery to WM Building- stage near tanks*
- *Reactor feed and operation- also installing panel #8 and wiring equipment #7*
- Install Gasifier and gasifier feed/thermocouples/sensors/etc.
- *Electrical Permit drawing for submittal to city (Flare + Gasifier + venilation)*
- *Electrical Permit drawings approved by city*
- *Air line assembly with nitrogen generator and air heaters*
- *Installation of Ventilation system for gasifiers*
- *Initial run-tests with gasifier*
- *All Components installed and operating - testing all together (fuel + gasifier)*
- **Flare Design/installation and associated piping plan (DELAYED - AIR PERMIT)**
- New flare/thermal oxidizer design/research/engineering
- Manufacturer Drawings for Flare/platform/access/etc.
- HAZOP Study
- Design of piping plan for Flare, gas clean-up, and sampling
- Electrical and controls drawing created for flare
- Procurement of Parts- ordering parts
- Installation of internal exhaust piping for gasifiers and associated sensors/components
- Manufacture the Flare burner - performed by SAS
- Welding of platform and main body
- Assembly of all main flare components
- Electrical and controls work on flare components - flow sensors, Btu sensors, etc.
- Submission of NG drawings and scheduling work to be performed
- Running NG piping and installation of NG components
- Emission stack sampling per permit requirements (Flare and processing equipment)
- **Tar sampling system set up and operational (delayed - permitting)**
- tar sampling system engineering/research
- tar knock-out drum design for flare line
- fabrication drawings of tar knock out
- tar sampling system parts ordering - mechanical drawings
- tar sampling fabrication and assembly on-site
- test/run operation of tar sampling system
- analysis of tars, particulates and gasses

Making Energy

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- **Gas Clean-up**
- Research and development
- Develop list of permit requirements for OSWI operation - must monitor certain aspects.
- Assessment of tar and particulate data
- Use of prototype unit and assessment of operation
- Development of concept clean-up system
- Engineering calculations and consulting assistance
- Hazop assessment development of handling/management
- Design of Gas Clean-up
- Generation of drawings for gas clean-up
- BOM generation/order materials
- Fabrication of gas clean-up system
- Installation of gas clean-up at WM building
- **Micro-Turbine**
- Removal and storage of Micro-turbines at BEEDL
- Evaluation/disassembly/repair of micro-turbines
- Evaluation/repair/disassembly of compressors
- Controls/grid syncing and operation
- Engineering selection/engineering drawgings. purchase of grid connection syncing gear.
- Xcel approval of grid connection
- Installation of microturbine at WM Building
- Natural gas operation of microturbine at WM Building
- **ORC Installation (delayed)**

contractor

- Electrical Engineering assistance and installation
- Controls/Programming
- Chemical Engineering
- Intern project assistance
- Mechanical Engineering Consultant- Code analysis
- Flaring Consulting - Engineering
- Welding/Fabrication