LITTLETON/ENGLEWOOD KNOWLEDGE MANAGEMENT INITIATIVE:

STANDARD OPERATING PROCEDURES
BUILDING BLOCKS FOR STAFF PREPAREDNESS

By Cindy Goodburn, Business Services Manager
Littleton/Englewood Wastewater Treatment Plant
THE CHALLENGE

Retiring Employees

Transfer Knowledge

Train All

Retain Knowledge

Recruit Employees
THE REAL CHALLENGE

- Retiring Employees
- Retain Knowledge
- Train All
- Recruit Employees
- Build New Facilities
- Re-Train All
- Re-Retain Knowledge
- Transfer Knowledge

Retiring Employees

Retain Knowledge

Train All

Recruit Employees

Build New Facilities

Re-Train All

Re-Retain Knowledge

Transfer Knowledge
KNOWLEDGE MANAGEMENT IS

A combination of:
people, processes, and
technologies.
KNOWLEDGE IS AN ASSET

Assets must be maintained, improved upon, and tracked.
HOW TO ADDRESS THE PROBLEM

Littleton/Englewood Wastewater Treatment Plant Knowledge Management Initiative: ‘InfoNet’

• Using an Online Manual to Capture Knowledge
• Using Asset Management System to track and review SOP’s
• Using Computerized Systems to Store and Retrieve Information
PEOPLE
KNOWLEDGE MANAGEMENT
TEAM WORKFLOW CHART
KNOWLEDGE MANAGEMENT TOOLS

INFONET

OMS Connect Software

Plant-wide Intranet site containing
- Plant O&M Manual
- Electronic SOP’s, SMP’s
- Design drawings, Equipment manuals
- All things safety related
  - MSDS, confined space, arc flash, LO/TO, emergency response, etc.
- Policies
- Permits – discharge, air, biosolids
- Training Materials

CMMS

Infor EAM Enterprise

Knowledge Assets
- Assign Document #
- Create Work order
- Annual PM work order

Track changes
Track revisions
Track costs
STORE AND RETRIEVE

INFONET

Stores knowledge in a tangible, retrievable format

- All facility information available from one source
- Information is accurate and complete
- End users have feedback
- Ease of access and use
- Ensure consistent look, feel
- Access throughout the plant

![Image of equipment setup and instruction]

**Step:** Place the instrument in OFF LINE Mode

**Response:** Press the CLEAR key on the keypad. After a few moments the following message will appear.

![Image of display screen]

**CAUTION:** Failure to place the instrument in the OFF LINE mode will result in the pump starting without warning. This could cause injury to the person changing the pump tubing.

**Step:** Release tube pressure

**Response:** Release the pump tube pressure shoe by pivoting the shoe adjustment shaft out of the slot in the shoe.

![Image of hand adjusting a screw]

**NOTE:** Adjustment of the knob and lock nut should not be necessary in normal operation. These are adjusted and locked in place at the factory to reduce field maintenance time.
CONTENT CREATION

Author
- Interviews SME
- Collects information
  - Photos
  - Videos
- Enters information into InfoNet Template
  - Step by step instructions
  - Associated documents and links
- Document field tested
- Schedule for KMT Review
CONTENT CREATION

Author
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Schedule for KMT Review
FINAL PRODUCT: STANDARD OPERATING PROCEDURES

Final SOP

Upper portion of SOP includes

- Description
- Photo
- Resources required
- Links to other documents
Review new SOP at KMT meeting
- Approve or reject

Set initial one year review
- Create / schedule PM work order

Promulgate
- Internal newsletter, front page of InfoNet

Provide / track training

![DAFT FLOAT SLUDGE SAMPLE PROCEDURE]

The master document resides on the secure InfoNet drive. Printed copies are uncontrolled copies.

<table>
<thead>
<tr>
<th>Document Number:</th>
<th>DAF_SOP_001</th>
<th>Revision Number:</th>
<th>01</th>
<th>WO</th>
<th>163489</th>
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<tbody>
<tr>
<td>Effective Date:</td>
<td>02/12</td>
<td>Last Revision Date:</td>
<td>02/12</td>
<td>Next Review Date:</td>
<td>02/13</td>
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<tr>
<td>Prepared by:</td>
<td>J. Wright</td>
<td>S.M.E.</td>
<td>J. Grengs</td>
<td>Approved by:</td>
<td>KMT</td>
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</table>
PM issued for review by SME/Author

- Review any Notes
- If major changes made, place on KMT agenda, if not, set new renewal period

- Permit, policy, safety stay at 1 year review interval
CONTENT MANAGEMENT

PM issued for review by SME/Author

Review any Notes

If major changes made, place on KMT agenda, if not, set new renewal period

- Permit, policy, safety stay at 1 year review interval

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<table>
<thead>
<tr>
<th>Agenda Topics</th>
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<tbody>
<tr>
<td>1. LAST MONTH MTG</td>
</tr>
<tr>
<td>Weight Under Development: SOP V1: Elliot Breier After Filter Location. Leonard noted that Mike Boyett has removed this existing PD.</td>
</tr>
<tr>
<td>Sampling: Final Effluent Sample Room: Cleaning Final Effluent Sample Room. Note for facility team: if you are cleaning equipment, do this daily? Need to put original size valve to drain. Everyone does this differently so modify to clear around only.</td>
</tr>
<tr>
<td>Permit Manual Backwash w/ SLM</td>
</tr>
<tr>
<td>W&amp;W Dressed Oxygen Probe Calibration Missing Videos on Step 2 and 4</td>
</tr>
<tr>
<td>Spill Trailer New SOP for Spill Mgmt Annual PM</td>
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3. Review completed SOPs and O&M: Greg Farmer

- Time Pulsed Automatic Sampler (ISCO 3700), Added a section on sample pumps, test new pumps etc. |
- TT Flood Procedure, WO 131551, made corrections to section 3.3 drain sequence. We now have the 12-in drain valve to use on TT 1 & 2 & changed the SOP to indicate this as in the proper procedure. |
- Spill Trailer Quarterly PM, WO 13148 |

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JWR/SC:

- DAFT Hex Sledge Sample Procedure, WO 13099: SOP was released in Feb due to limited NBR audit need. SOP was reviewed by management and operators prior to release. GMENT to review and comment as necessary. |
- SBI Pump Hours Logbook, WO 131752: Step 2.2 How to replace the lead detector, issue with NBL. |
- Line Writing, Map Changes |

Distributor Arm Lubrication, WO 131744: Would not recommend flush and brush being performed at the same time. Discuss with KMT. Step 1.3 Location Drawing Link is not working. Description: The IPTs typically occur a cumulative error of 1.5% change, this affects step 1.0. Also made changes to the PD and finish SOP to match. (See Notes)
Infor EAM – Asset Management System

Using the theory that knowledge is an asset, the KMT Team determined the best way to track SOP development, staff involvement, and SOP review, is to use the Enterprise Asset Management System

• Report staff time and costs
• Ensure regular Review
• Track continuous improvement
• Report asset costs
TRACING / REPORTS

Asset Costs

Labor
## SOP REVIEW HOURS

### KMT HOURS

<table>
<thead>
<tr>
<th>WO DESCRIPTION</th>
<th>WO#</th>
<th>DATE WORKED</th>
<th>EMPLOYEE</th>
<th>HOURS WORKED</th>
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<tbody>
<tr>
<td>KMT - Annual Review SOP Sodium Bisulfite Chemical tanks P-trap Fill Procedure</td>
<td>79462</td>
<td>1/7/10</td>
<td>GFARMER</td>
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<td>KMT - Annual Review Taking Barscreen Offline SOP in new Infonet</td>
<td>75004</td>
<td>11/18/09</td>
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### BUILDING 06 HEADWORKS Total Hours 0.75

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<td>77234</td>
<td>12/2/09</td>
<td>KBISH</td>
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### BUILDING 06 Headworks Total Hours 0.75

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<td>KMT - Annual Review SOP Filters Manual Backwash with HMI</td>
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<tr>
<td>KMT - Annual Review SOP for Hibon Blower Inlet Filter Differential</td>
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<td>JWRIGHT</td>
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### BUILDING 08 BLOWER BLDG Total Hours 1.83

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</thead>
<tbody>
<tr>
<td>KMT - Annual Review SOP for Odor Control System Sample Ports</td>
<td>77232</td>
<td>1/7/10</td>
<td>MTRUSTY</td>
<td>0.75</td>
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### BUILDING 09 SSPS Total Hours 0.75
Training
- Formal training for New SOP’s
- Training on use of InfoNet
CONTINUOUS IMPROVEMENT

Recent Innovations
Revised SOP templates to conform with ISO standards
Vendor Address Book
Readings and Rounds
Process Objectives
TAKE AWAYS

• Defined Systems and Procedures – Clearly defined processes and systems
• Assigned roles and responsibilities
• Relevance – Information must be relevant, pertinent, up-to-date and accessible
• Organizational knowledge is an asset
• Asset management software can be used to manage knowledge assets
• If not maintained knowledge will breakdown due to inaccuracy and missing information.
• Management Support – Ensure commitment to an on-going process
• Keep it Simple
QUESTIONS?

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jwright@englewoodgov.org
www.lewwtp.org