Condition Assessment Manual

Flumes & Open Channels Inspection Form and Checklist

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Prepared by

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Flumes/Open Channels – Inspection Form

General Information:

Date of Site Visit: _____

Plant Name: _____

Source(s) of Data: _____

Channel or Flume Inspected: _____

Description of General Arrangement: _____
_____
_____

General Construction Description: _____
_____
_____

Age of Conveyance: _____

Length of Conveyance (ft):_____

Accessibility for Visual Inspection: _____
_____
_____

Previous Condition Assessment Date(s): _____
_____

Chronic Issues or Maintenance (Routine and Corrective): _____
_____
_____

Description of Liners (if applicable): _____
_____
_____

Age of Liner [Yrs]: _____

Liner Material: _____

Liner Application Process: _____
_____
_____

Previous Maintenance Issues with Liners [If yes, describe]:_____
_____
_____

Estimated Life Remaining for Liner [Yrs]: _____

Flumes:

_____
_____
_____
_____

Open Channels:

_____
_____
_____

Forebay Structure:

_____
_____
_____
_____

De-Silting Chamber:

_____
_____
_____

Channel Liner:

_____
_____
_____

Foundation and Supports:

_____
_____
_____

Joints and Couplings:

_____
_____
_____

Flumes/Open Channels Check List				
Topic	**Yes**	**No**	**N/A**	**Comments/Details**
A. General Information				
What are the plant specific life and serviceability needs for the water conveyance? *[How long will the conveyance system be required, are there any future plans for facility decommissioning, are there future plans for part/item replacement or upgrade, etc.?]*				
Have all accessibility issues been addressed and discussed with plant personnel prior site visit? *[Determine which parts/items require access for inspection, which parts/items will not be available for visual inspection, alternative means of collecting data (i.e. interviews with plant personnel), etc.]*				
Identify the appropriate testing techniques to be used. *[Depends on accessibility, construction materials, plant requirements, safety restrictions, etc.]*				
Identify any special equipment required for the plant walk down. *[Depends on accessibility, construction materials, plant requirements, safety restrictions, etc.]*				
Have all plant records regarding maintenance, repairs, operating conditions, performance data, etc. been gathered or requested?				

Flumes/Open Channels Check List - Continued				
Topic	**Yes**	**No**	**N/A**	**Comments/Details**
B. Liner Condition				
Is the water conveyance (flumes or channels) lined? If yes, describe the liner material and application process. *[If unlined, describe the natural liner (i.e., rock, sand, excavated soil, etc) or interior surface]*				
Is the liner or interior surface accessible for visual inspection? *[Is the conveyance currently dewatered? If no, then interview operating staff, review maintenance records, review previous repair records, etc., to determine the liner condition.]*				
Is there evidence of any previous liner repair work (visual observation or maintenance records)? *[If so, document type of repair, location, reason for repairs, when repair was done, and effectiveness of repair work.]*				
Is there evidence of liner damage or deterioration? *[Look for buildup of eroded materials, concrete spalling, steel corrosion, vegetation (i.e., weeds) perforating the liner, significant water loss due to seepage, puncturing or tearing of geomembranes, adhesion loss, debris damage, etc.]*				
Is material buildup or debris present? If yes, what is the extent and severity of the problem? *[What is the type and apparent source of the buildup (ice accumulation, tree limbs, organic growth, liner degradation, sedimentation).]*				

Flumes/Open Channels Check List - Continued				
Topic	**Yes**	**No**	**N/A**	**Comments/Details**
C. Structural Integrity				
For structural concrete, is there evidence of deterioration or damage? If so, record location, severity, and apparent cause. *[Look for concrete cracking, spalling, erosion, cavitation, exposed rebar, etc.]*				
For structural steel, is the evidence of deterioration or damage? Is so, record location, severity, and apparent cause. *[Look for corrosion or rust stains, fatigue, warping, cavitation or abrasions, displacement, etc.]*				
Is there evidence of foundation movement? *[Possible causes can include settlement, erosion of supporting soil, slope instabilities, or errors in the original design. Look for cracking, eroded soil or displaced rock at base of slope, deformation or leaning of supports, misalignment, etc.]*				
Is there evidence of joint deterioration? *[Look for soil fines seeping through joints, vegetation in joints, leakage or seepage, missing or damaged sealant, missing or loose fasteners, etc.]*				
Has the facility experienced any slope stability issues in the past (i.e. mudslides) of both supporting and adjacent slopes? *[If yes, when and what repair was done to remedy the problem? If no, is there evidence that slope stability might be an issue in the future (i.e. displaced rock or movement)?]*				

Flumes/Open Channels Check List - Continued				
Topic	**Yes**	**No**	**N/A**	**Comments/Details**
D. Miscellaneous				
Has ice, debris, or sedimentation buildup been an issue in water conveyances at the facility? If yes, are there any measures in place to control the accumulations and are these measures effective? *[Examples include trash/ice booms, desilting chambers, routine dredging, vacuum extraction, etc.]*				
Is there apparent erosion of channel embankment slopes? *[Look for accumulations of eroded material in channel.]*				
Is the facility experiencing significant water loss due to seepage or leakage in water conveyances such as flumes or open channels. *[What is the apparent cause of the leakage or seepage? Have any attempts to limit the water loss been implemented, if so what has been done and has it been successful?]*				
Does the facility have a routine inspection and maintenance plan for flumes and open channels currently in place? *[If yes, what is the frequency and extent of inspections? What type of maintenance is routinely performed and how often?]*				
Have there been any operational changes to the original design? *[This can include changes in the Probable Maximum Flood (PMF), flow requirements due to unit upgrades, seismic criteria, operational regimes, limitations due to severe degradation, etc.]*				

Flumes/Open Channels

Assessment Conclusions and Recommendations:

For overall questions
please contact:

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