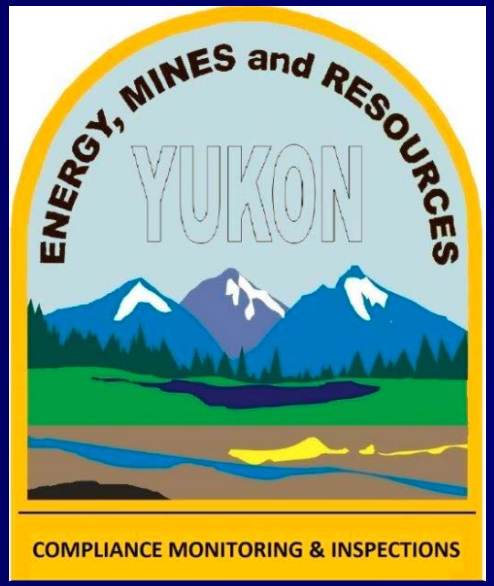
Compliance Monitoring and Inspections Branch

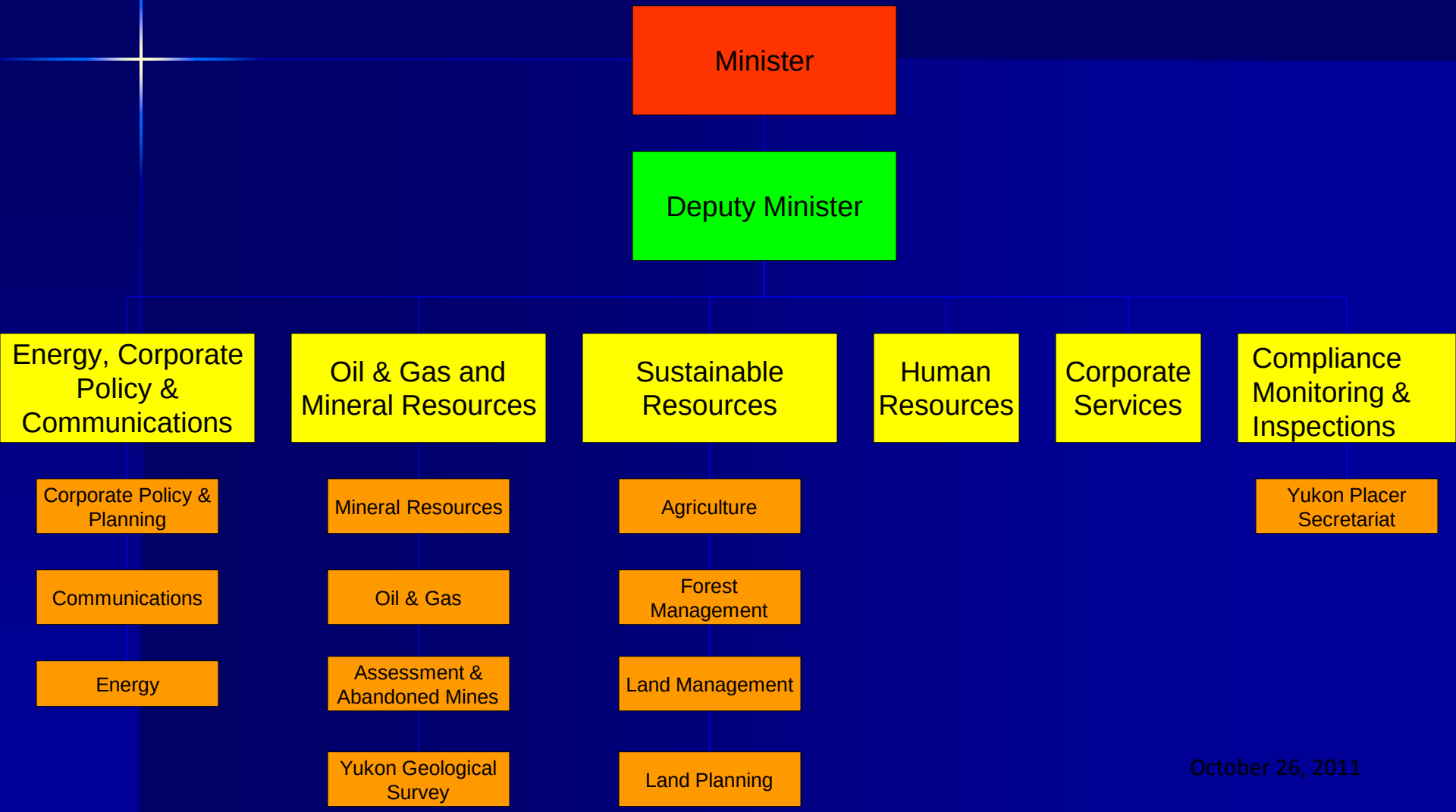


Prepared for the Dawson Regional Land Use Planning Commission

April 15, 2014

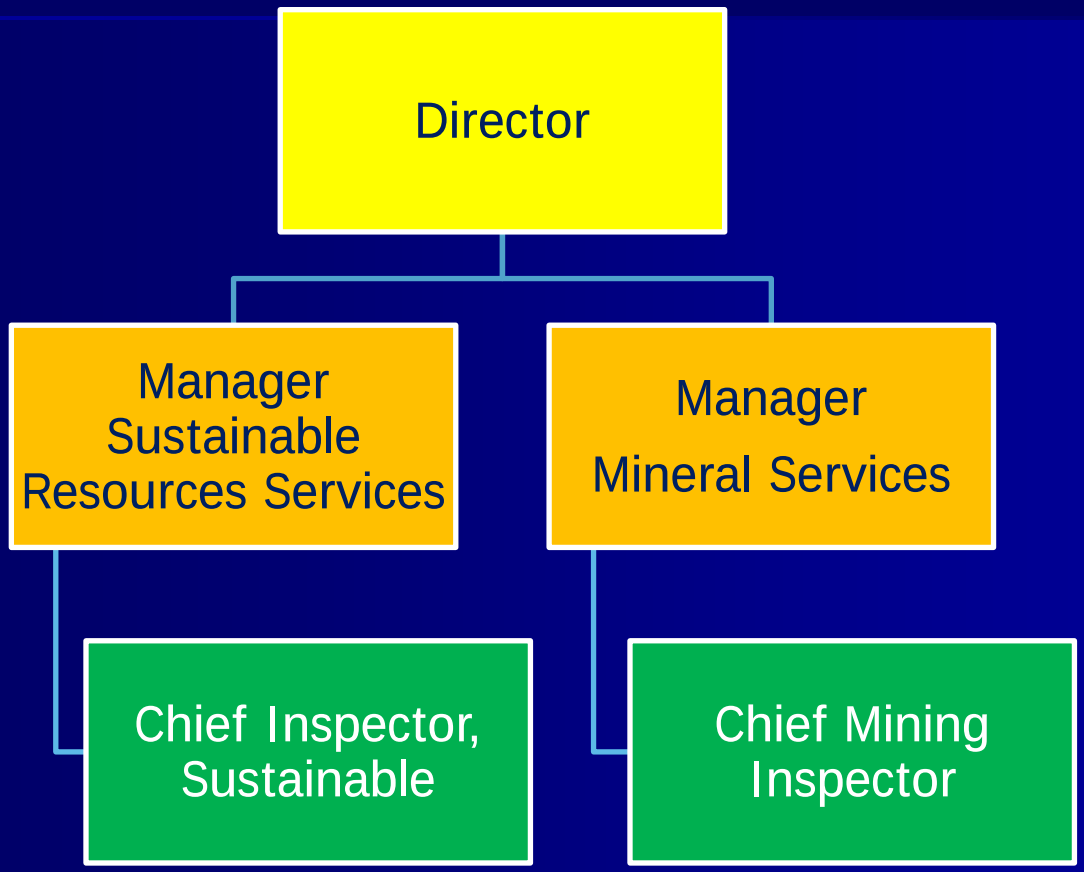
Yukon
Energy, Mines and Resources

EMR Organization

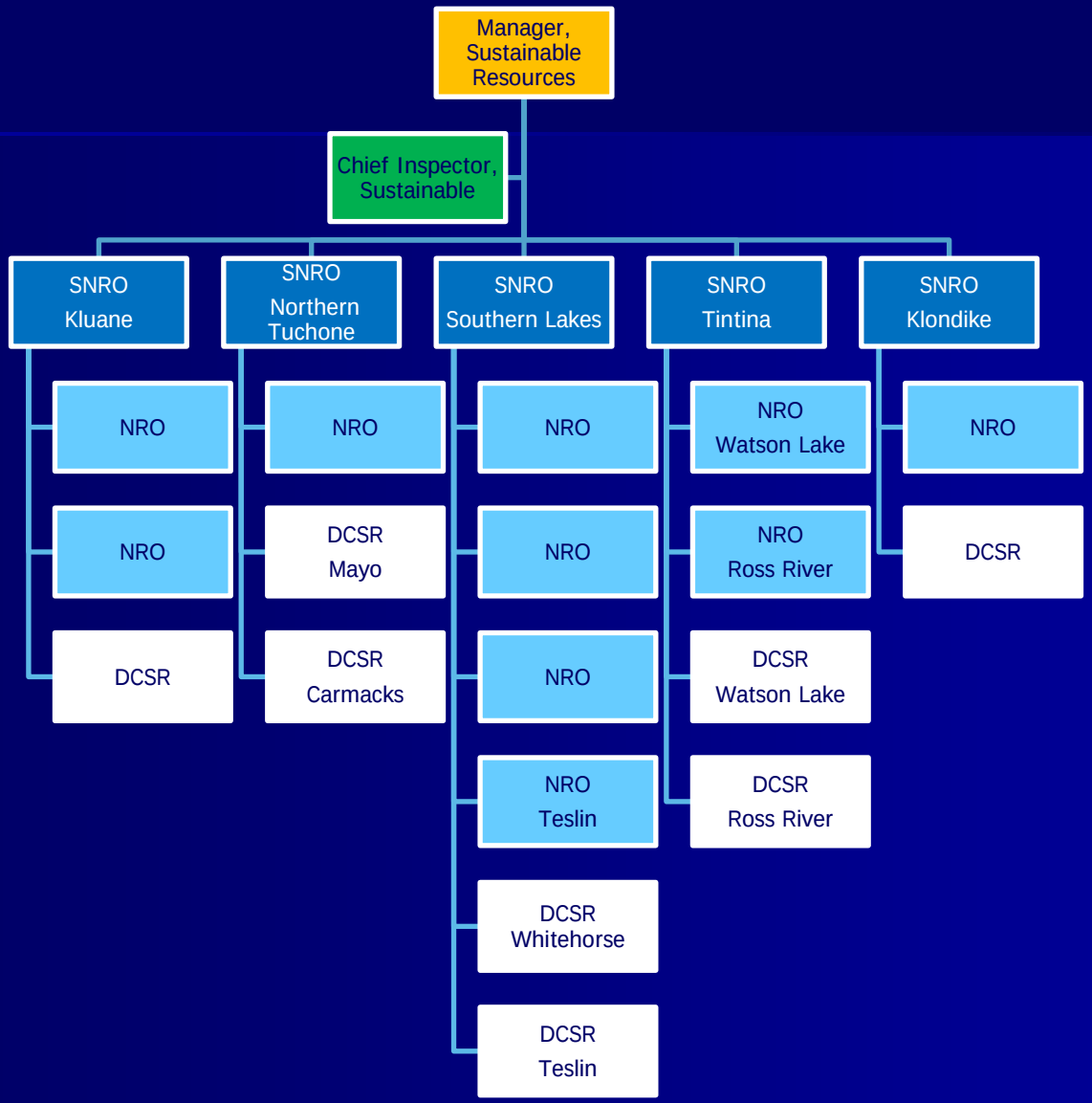


October 26, 2011

CMI Organization

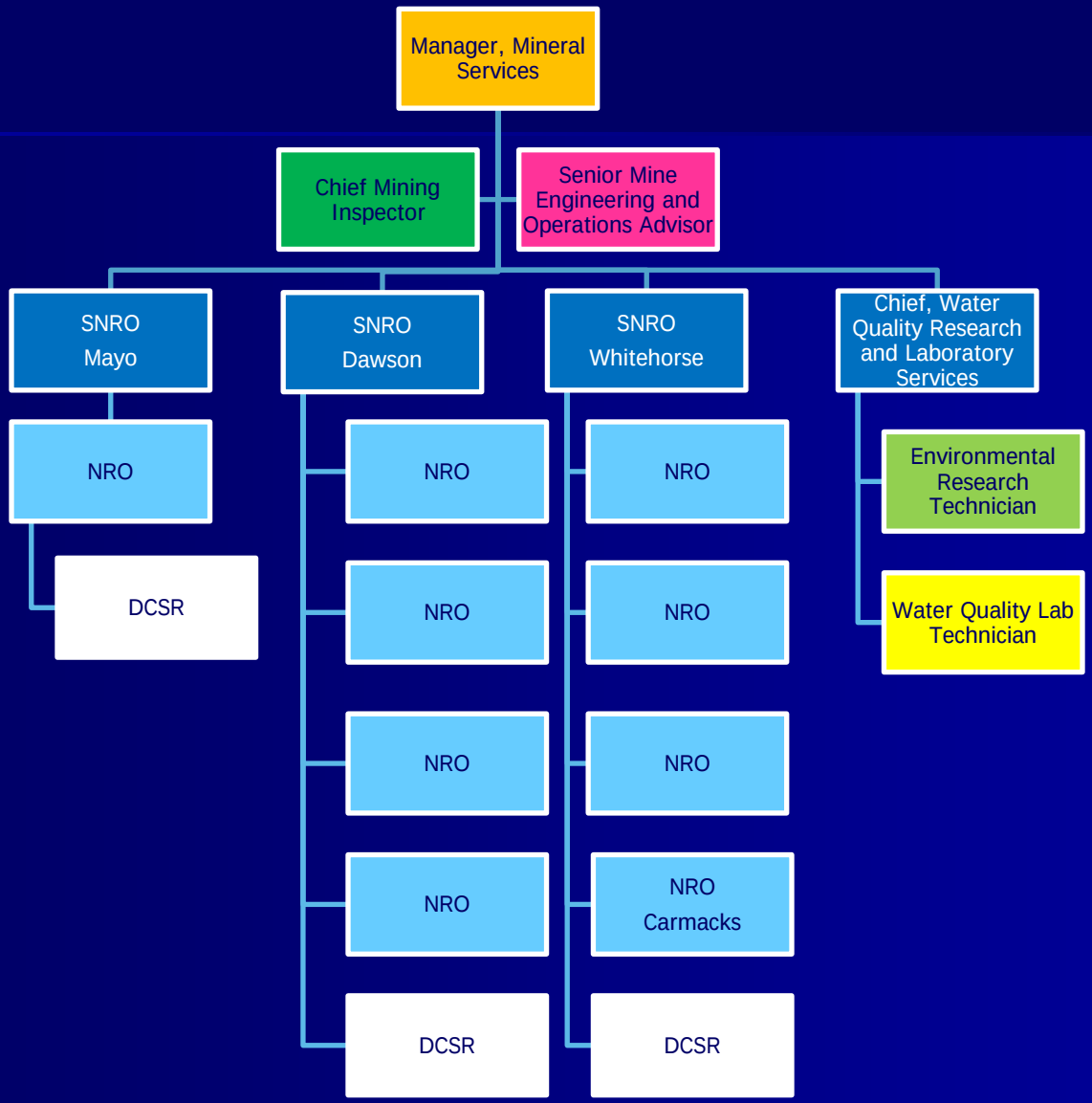


Sustainable Resources Services

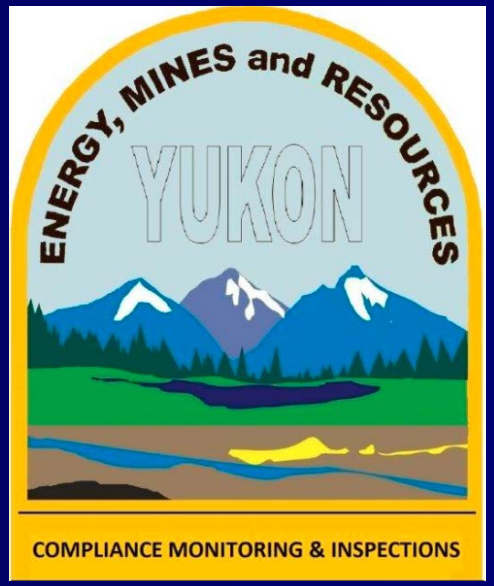


October 26, 2011

Mineral Services



Compliance Monitoring and Inspections Branch



- CMI is the field services arm of EMR
- CMI provides services and expertise to many agencies and industries in the Yukon

Yukon
Energy, Mines and Resources

NROs provide inspection, monitoring, enforcement, and community support services related to natural resources.

CMI provides services to:

Mineral Resources Branch, Land Management Branch, Forest Management Branch, Oil and Gas Branch, Environmental Programs Branch, Parks Branch, Water Resources Branch, Highways and Public Works, Community Services and Fisheries and Oceans Canada.

client support and inspection services include:

- mining and water related information and inspections
- fish habitat inspections related to placer mining
- land suitability and land use
- forestry information and inspections
- oil and gas related land use inspections and environmental site assessments
- highways access issues and inspections
- emergency response and incident management

Client support services also include:

- assistance with the permitting process
- project planning assistance
- industry and client education
- providing technical advice and information
- ensuring development activities comply with laws, regulations, and permit conditions

Regulatory Development

- Water Resources
  - Northern Inland Waters Act
  - Yukon Waters Act (1993)
  - Waters Act (2003)
- Mineral Resources
  - QMLUR and PMLUR (1998)
  - Yukon Mine Site Closure and Reclamation Policy (2006)

Regulatory Development

- Aquatic Resources
  - Fisheries Act
    - Yukon Fisheries Protection Authorization (1988)
    - Yukon Placer Authorization (1993)
    - Fish Habitat Management System (2008)
  - Fisheries Protection Program (2013)
- Forest Resources
  - Lands Act and Timber Regulation
  - Forest Resources Act (2009)

Regulatory Development

- Environmental Assessment
  - EARPGO (1984)
  - CEAA (1995)
  - EAA(2003)
  - YESAA (2005)
- Devolution
  - Responsibility for management of lands, water, timber and minerals transferred to Yukon government
  - Environment Act applies to former federal land

Responsible Resource Development

Responsible Resource Development

Compliance Monitoring and Enforcement Policy

- NROs foster voluntary compliance
- Education, Encouragement and Enforcement
  - Ensure operators understand the rules
  - Encourage operators to comply with the law and the terms and conditions of permits
  - Match enforcement response to circumstances

Compliance Monitoring and Enforcement Policy

- Education
  - promoting awareness of environmental concerns
  - promoting best practises
  - verbal and written explanations
  - ongoing dialogue between NRO and operators
  - written comments on inspection reports
  - explanatory letters
  - other forms of technical assistance

Compliance Monitoring and Enforcement Policy

- Encouragement
  - employing tolerance and patience in communications
  - providing timely reminders
  - readiness to acknowledge a job well done
  - showing understanding of an operator's aims and working conditions
  - seeking input from operators regarding solutions to potential issues
  - involving operators in decisions affecting their activities
  - maintaining an effective field presence

Compliance Monitoring and Enforcement Policy

NROs take enforcement action when:

- voluntary compliance is not achieved
- non-compliance results in significant environmental harm
- there is a potential for significant harm to persons, property or the environment
- the operator refuses to cooperate
- there is evidence of persistent negligence

Compliance Monitoring and Enforcement Policy

- Enforcement
  - verbal and written warnings
  - inspectors' directions
  - Protection Orders
  - warning tickets
  - summary conviction tickets
  - prosecution
  - civil suits to recover costs if measures must be taken

Compliance Monitoring and Enforcement Policy

Factors related to nature of non-compliance may include:

- The factual circumstances of the alleged offence
- The severity of actual or potential environmental effects
- Human health and safety concerns
- Evidence of corrective action already taken
- The person's willingness to co-operate with officials

Compliance Monitoring and Enforcement Policy

Factors related to the operator may include:

- the standard of care exercised by the operator (due diligence)
- whether it was a repeat occurrence
- whether the non-compliance was intentional
- whether monetary gain resulted from the non-compliance
- whether there were attempts to conceal information
- the operator's compliance history

Management Tools and Strategies

Management tools and strategies employed by EMR include:

- Inter-agency agreements
- Internal versatility
- Risk Assessment
- Watershed Sensitivity Classification
- Water quality objectives
- Adaptive Management

Management Tools and Strategies

CMI has formal agreements regarding inspections or technical support with:

- Fisheries and Oceans Canada
- Highways and Public Works
- Yukon Workers' Compensation Health and Safety Board
- Environment Yukon
  - Parks
  - Water Resources
  - Environmental Programs Branch

CMI cooperates extensively with Community Services and Tourism and Culture (Heritage Branch)

Management Tools and Strategies

Risk Assessment

The goal of risk assessment is to identify hazards and reduce or eliminate their likelihood of occurrence by conducting an inspection program designed to ensure appropriate mitigation measures and other controls have been implemented.

Management Tools and Strategies

Risk Assessment

- Systematic method of determining risk (i.e. risk = severity of hazard x probability)
- Solid tool for prioritizing inspections in face of excessive file load
- Rational approach to estimating budgetary requirements
- Excellent way to foster inter-agency cooperation through jury process

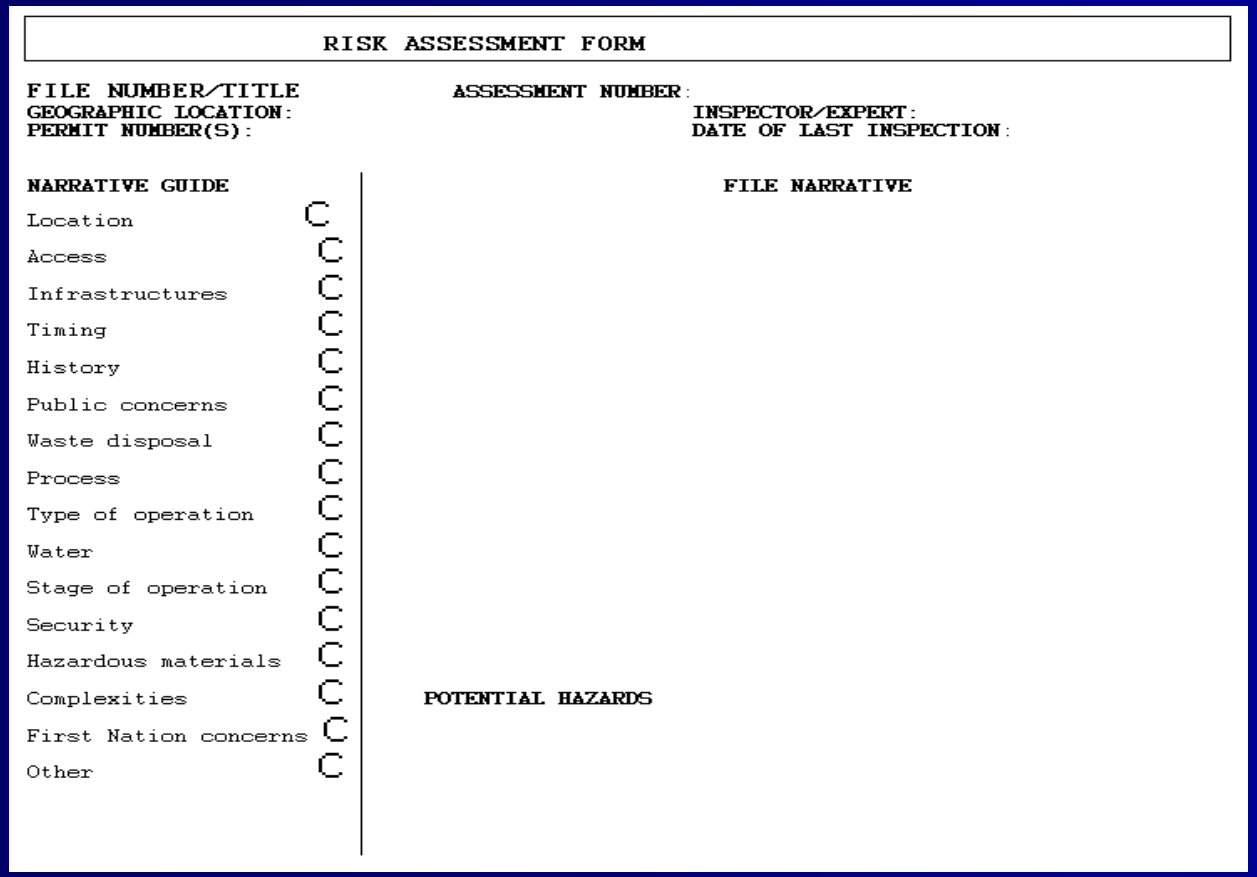
Management Tools and Strategies

Risk Assessment

- Identify hazards
- Determine severity of potential impact
- Determine the probability of occurrence
- Develop and implement inspection plan

Management Tools and Strategies

Identification of hazards



RISK ASSESSMENT FORM

FILE NUMBER/TITLE
GEOGRAPHIC LOCATION:
PERMIT NUMBER(S):

ASSESSMENT NUMBER:
INSPECTOR/EXPERT:
DATE OF LAST INSPECTION:

NARRATIVE GUIDE	
Location	C
Access	C
Infrastructures	C
Timing	C
History	C
Public concerns	C
Waste disposal	C
Process	C
Type of operation	C
Water	C
Stage of operation	C
Security	C
Hazardous materials	C
Complexities	C
First Nation concerns	C
Other	C

FILE NARRATIVE

POTENTIAL HAZARDS

Management Tools and Strategies

Table I
IMPACT/SEVERITY CATEGORIES GUIDE

AND/OR

AND/OR

CODE	WEIGHT	IMPACT/SEVERITY LEVEL	IMPACT ON THE ENVIRONMENT	IMPACT ON PROPERTY	IMPACT ON PEOPLE*
A	6	CATASTROPHIC	Significant permanent loss beyond the scope of authorizations	Non mitigable adverse impact of substantive value beyond the scope of authorities	Significant physical or other impact on people beyond the scope of the authorities
B	5	CRITICAL	Substantive long term impact beyond the scope of authorizations	Partially mitigable adverse impact of substantive value beyond the scope of authorities	Substantial physical or other impact on people beyond the scope of the authorities
C	4	SERIOUS	Serious short term impact beyond the scope of authorizations	Serious mitigable adverse impact beyond the scope of authorities	Serious physical or other impact on people beyond the scope of the authorities
D	3	MODERATE	Moderate short term impact beyond the scope of authorizations	Moderate mitigable adverse impact beyond the scope of authorities	Moderate physical or other impact on people beyond the scope of the authorities
E	2	MINOR	Minor short term impact beyond the scope of authorizations	Minor mitigable adverse impact beyond the scope of authorities	Minor physical or other impact on people beyond the scope of the authorities
F	1	NONE	No impact beyond the scope of authorizations	No damage beyond the authorizations	No physical or other impact on people beyond the scope of the authorities

* NOTE:Only includes those impacts that can be mitigated through mandated inspections.

Management Tools and Strategies

Table II
PROBABILITY/FREQUENCY CATEGORIES

CODE	WEIGHT	PROB/ FREQ	EXAMPLES OF PROBABILITY/FREQUENCY
K	5	VERY HIGH	A hazard event(s) is estimated to occur at least monthly.
L	4	HIGH	A hazard event(s) is estimated to occur at least yearly, but less often than monthly.
M	3	INTERME DIATE	A hazard event(s) is estimated to occur at least once every five years, but less often than yearly.
N	2	LOW	A hazard event(s) is estimated to occur at least once every ten years, but less often than every five years.
O	1	VERY LOW	The average time between the occurrence of the hazard event(s) is estimated to be greater than ten years.

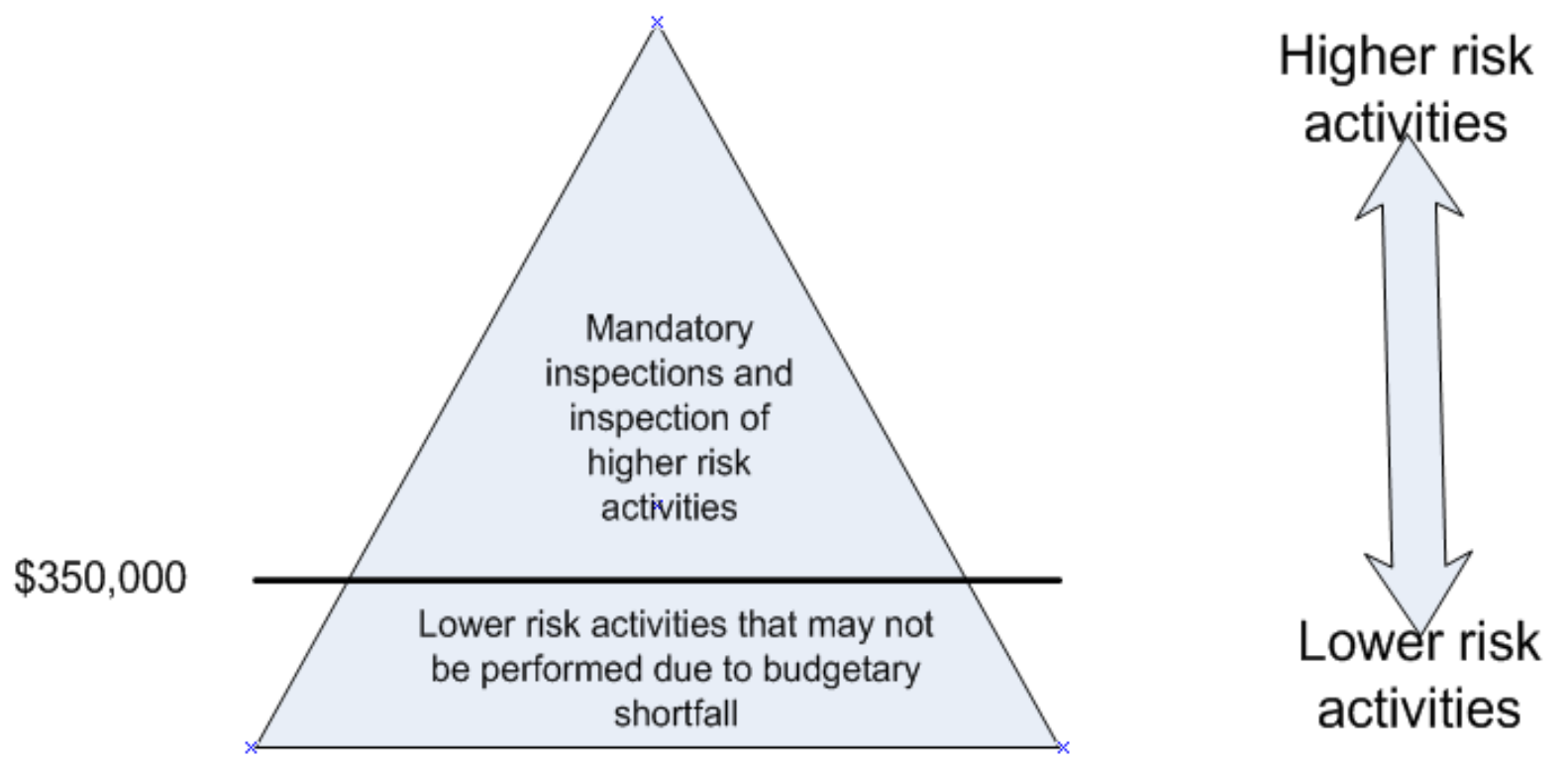
Management Tools and Strategies

An Inspector:

- completes the risk assessment form
- consults established benchmarks
- convenes risk assessment jury
- adjusts inspection plan if necessary
- implements plan
- reviews and revises assessment and plan annually or when warranted by inspection results

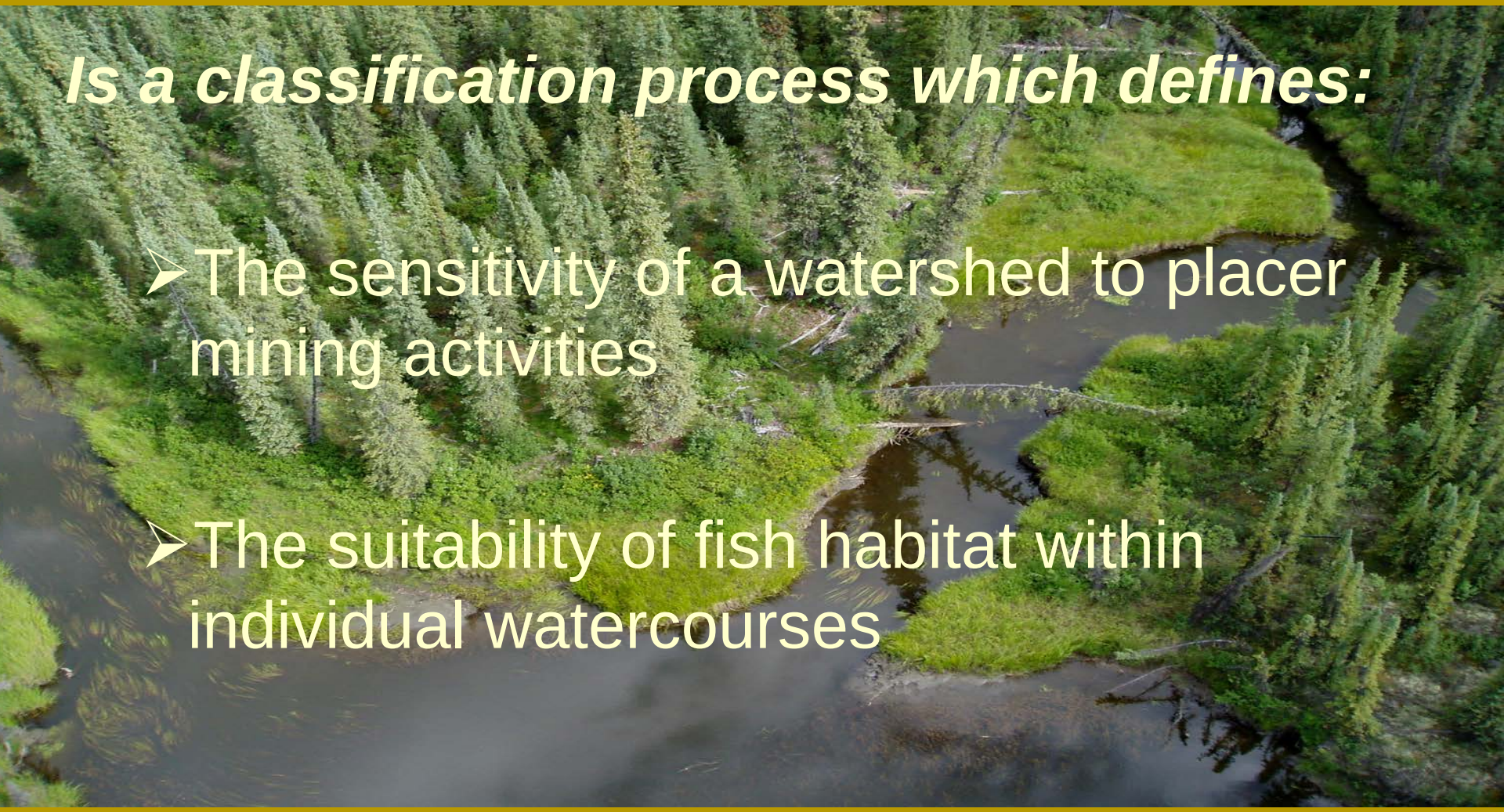
Management Tools and Strategies

Risk Assessment Pyramid



Watershed Sensitivity and Fish Habitat Suitability Classification Methodology

YUKON PLACER SECRETARIAT



Is a classification process which defines:

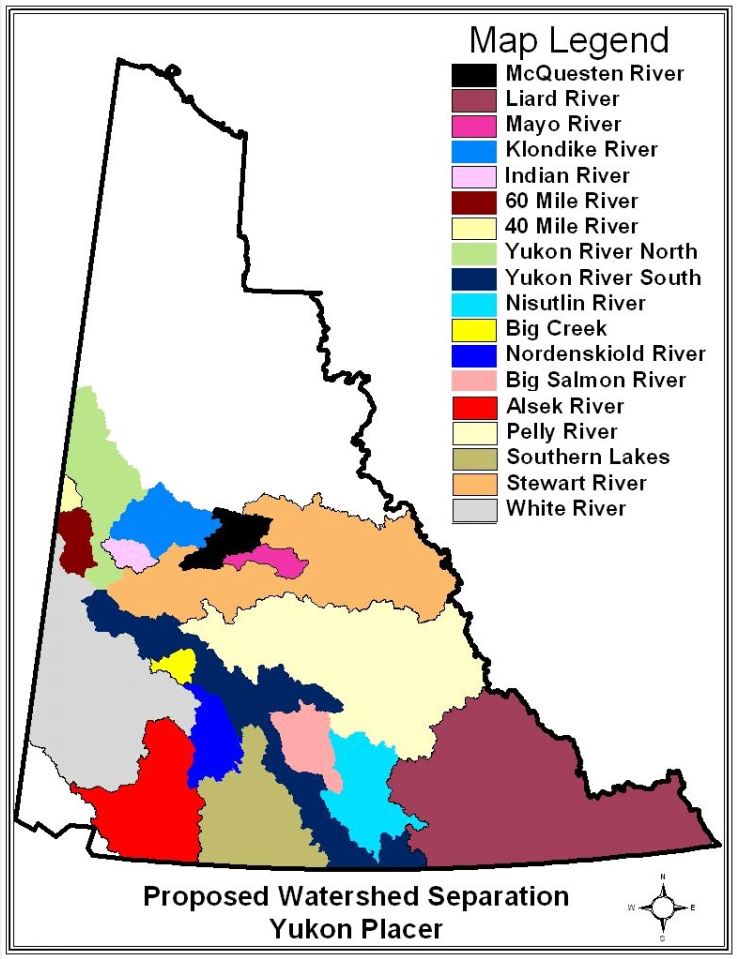
- The sensitivity of a watershed to placer mining activities
- The suitability of fish habitat within individual watercourses

Watershed Sensitivity and Fish Habitat Suitability Classification Methodology

Watershed Level:

Considers indicators and defines a classification based on a cumulative scoring system at the watershed-wide scale.

higher score = higher sensitivity



Watershed Sensitivity Classification

YUKON PLACER SECRETARIAT

Objective is to assign a watershed sensitivity designation (Category A or B) to each watershed.

Category A Watersheds

- Watersheds which are more susceptible to the effects of placer mining activities

Category B Watersheds

- Watersheds which are less susceptible to the effects of placer mining activities

Watershed Sensitivity Classification

Physical Parameters

- Degree of Development
- Degree of Development in Moderate Habitat Suitability Zone
- Water Quality

Biological Watershed Indicator

Presence of Valued Ecosystem Component

- Adult salmon distribution
- Includes all species of Pacific salmon in the Yukon (Chinook, chum, coho, sockeye)
- Distribution information is based on scientific, traditional and local knowledge

Physical Watershed Indicators

Degree of Development

- Includes linear stream length currently subjected to placer mining activities
- Linear stream length subjected to past placer mining activities (but not reclaimed to current standards)
- Considers development that has occurred directly in, or within 30 meters of a watercourse

Physical Watershed Indicators

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Water Quality

- Considers the overall natural background concentration of sediment during the open water season
- Measured in Total Suspended Solids
- Focus on the “main stem” of the watershed
- Focus on long-term trends as opposed to sporadic, infrequent events

Watershed Sensitivity Designation

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Overall Watershed Sensitivity Designation

Physical Criteria	Biological Criteria
Degree of Development Score (1 – 3) *Moderate Suitability Development Score (1 – 3)* + *Water Quality Score (1 – 3)*	*Adult Salmon Distribution (0 – 9)*
Total physical criteria score (3 - 9)	Total biological criteria score (0 - 9)

Total physical criteria score + Total biological criteria score = Total Watershed Sensitivity Score (3 – 18)

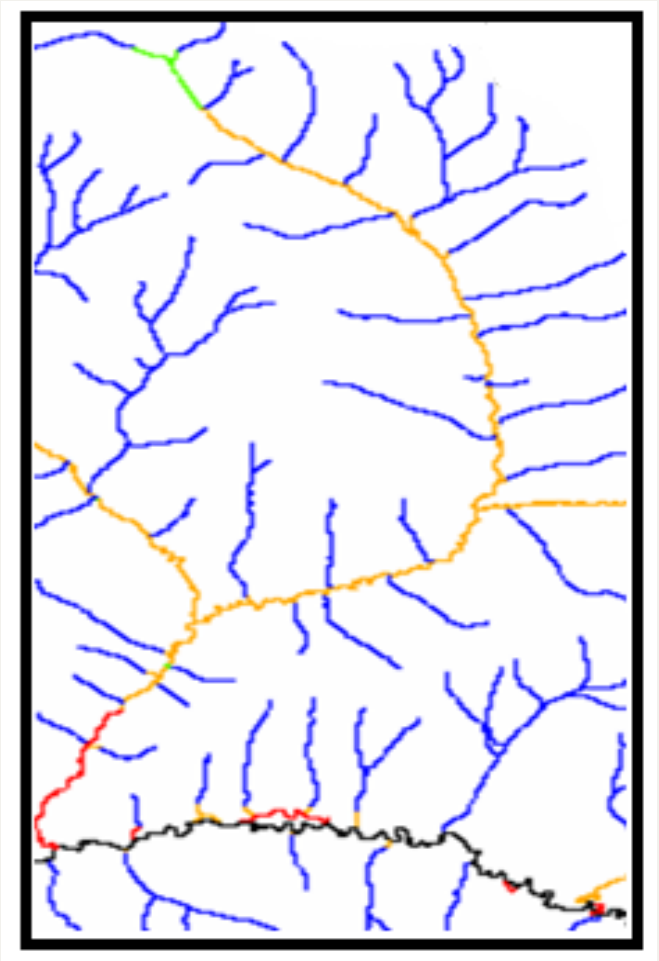
Category A Watershed; Total Watershed Sensitivity Score 11– 18

Category B Watershed; Total Watershed Sensitivity Score 3 - 10

Habitat suitability classification

Stream reaches are classified based on overall scoring of physical and biological watershed sensitivity criteria.

higher score = greater suitability



Fish habitat suitability indicators

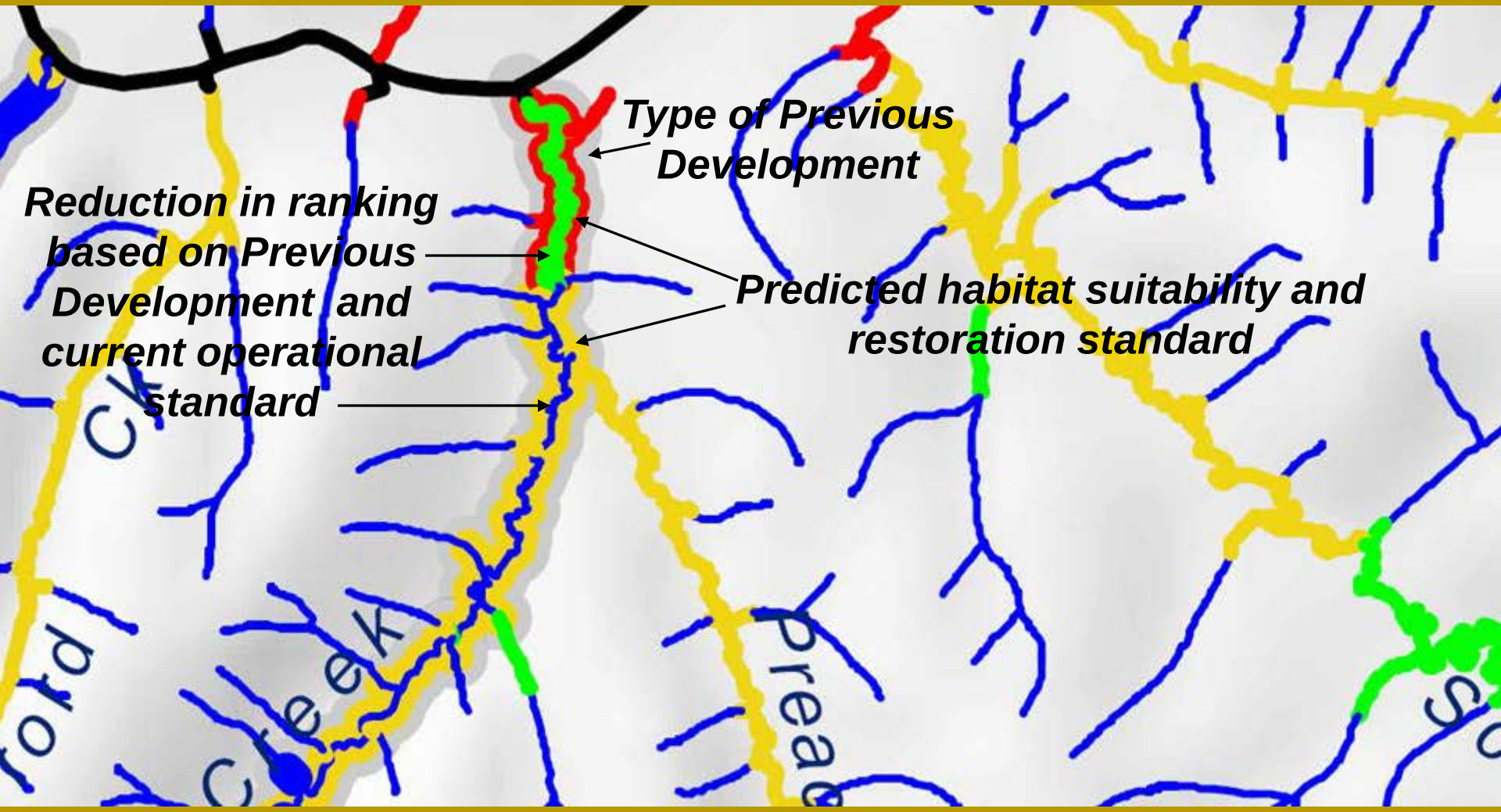
Physical

- Watercourse Gradient
- Proximity to Chinook Salmon Production Areas
- Water Quality

Biological

- Presence of Chinook Salmon Production Areas
- Areas of Special Consideration

Previous Development



Water Quality Objectives and Sediment Discharge Standards

Watersheds of Higher Sensitivity

YUKON PLACER SECRETARIAT

Habitat Sensitivity	Sensitivity Indicators	Description	WQO[9]	Sediment Discharge Standard
High	Tier 1[1]	Salmonid spawning[4]	< 25 mg/L	0 mg/L[10]
Moderate-H	Tier 2[2]	Rearing CH[5] High	< 25 mg/L	< 200 mg/L[11]
Moderate-M	Tier 2	Rearing CH[5] Moderate	< 50 mg/L	< 200 mg/L
Moderate-L	Tier 2	Rearing CH Low Rearing Other High[6]	< 80 mg/L	Design Target: 0.2 ml/L[12] Action Level:[13] 0.8 ml/L[15] Compliance Level:[14] 1.2 ml/L
Low	Tier 3[3]	Rearing Other Low[7]	< 200 mg/L	Design Target: 0.2 ml/L[12] Action Level: 1.0 ml/L Compliance Level: 1.5 ml/L
Water Quality	Field	No Fish[8]	None	Standard to meet downstream Water Quality[16]

Water Quality Objectives and Sediment Discharge Standards

Watersheds of Lower Sensitivity

YUKON PLACER SECRETARIAT

Habitat Sensitivity	Sensitivity Indicators	Description	WQO[9]	Sediment Discharge Standard
High	Tier 1[1]	Salmonid spawning[4]	< 25 mg/L	0 mg/L[10]
Moderate-H	Tier 2[2]	Rearing CH[5] High	< 25 mg/L	< 200 mg/L[11]
Moderate-M	Tier 2	Rearing CH[5] Moderate	< 100 mg/L	Design Target: 0.2 ml/L[12] Action Level:[13] 0.4 ml/L[15] Compliance Level:[14] 0.8 ml/L
Moderate-L	Tier 2	Rearing CH Low Rearing Other High[6]	< 200 mg/L	Design Target: 0.2 ml/L[12] Action Level: 1.0 ml/L Compliance Level: 2.0 ml/L[17]
Low	Tier 3[3]	Rearing Other Low[7]	< 300 mg/L	Design Target: 0.2 ml/L[12] Action Level: 1.0 ml/L Compliance Level: 2.5 ml/L[18]
Water Quality	Field	No Fish[8]	None	Standard to meet downstream Water Quality[16]

Water Quality Objectives and Sediment Management

YUKON PLACER SECRETARIAT

Design Target:

The best settling facility that can be established at a placer mining operation, given the prevailing site characteristics

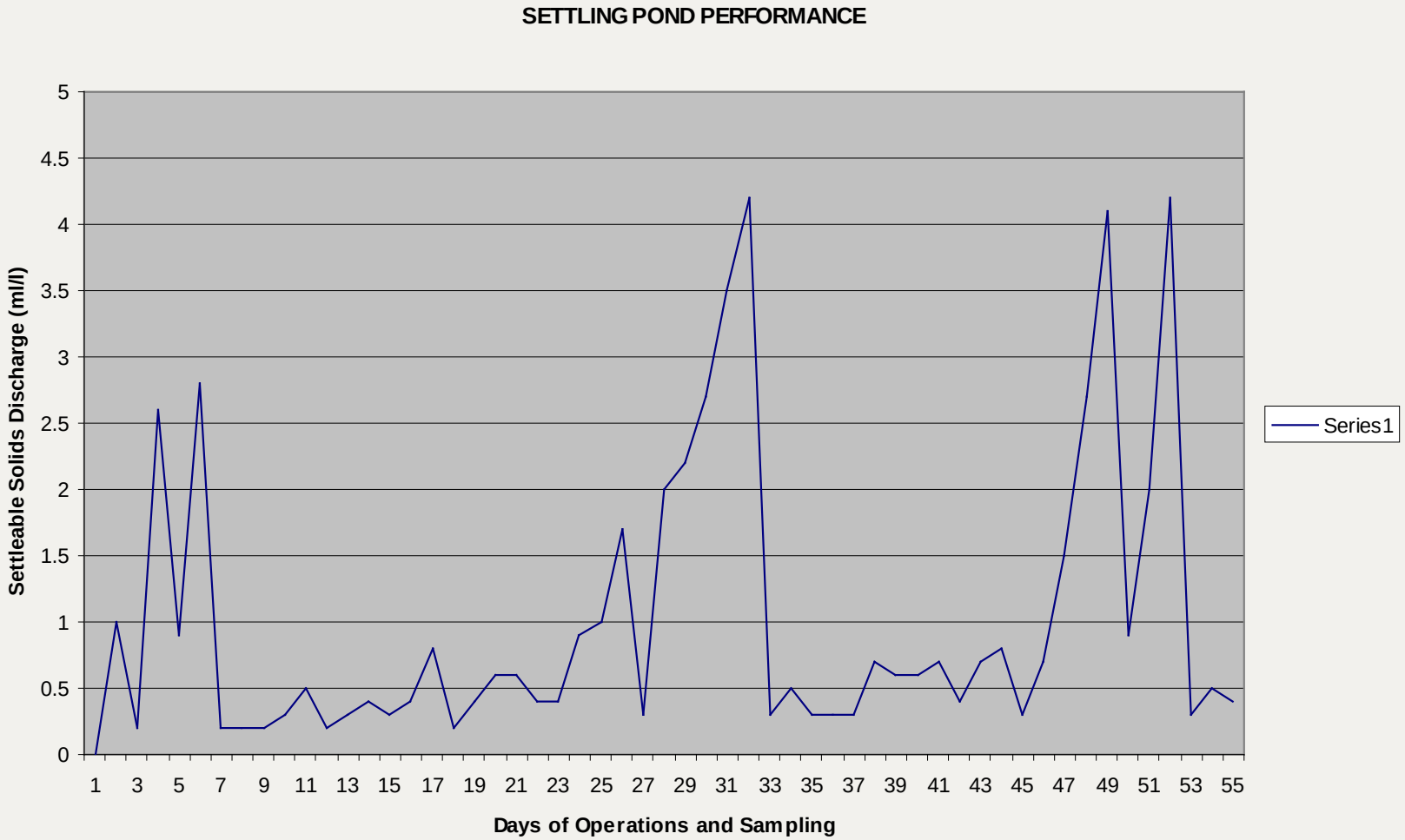
Action Level:

The end-of-pipe sediment concentrations that must not be exceeded --on average-- for the life of the mining operation

Compliance Level:

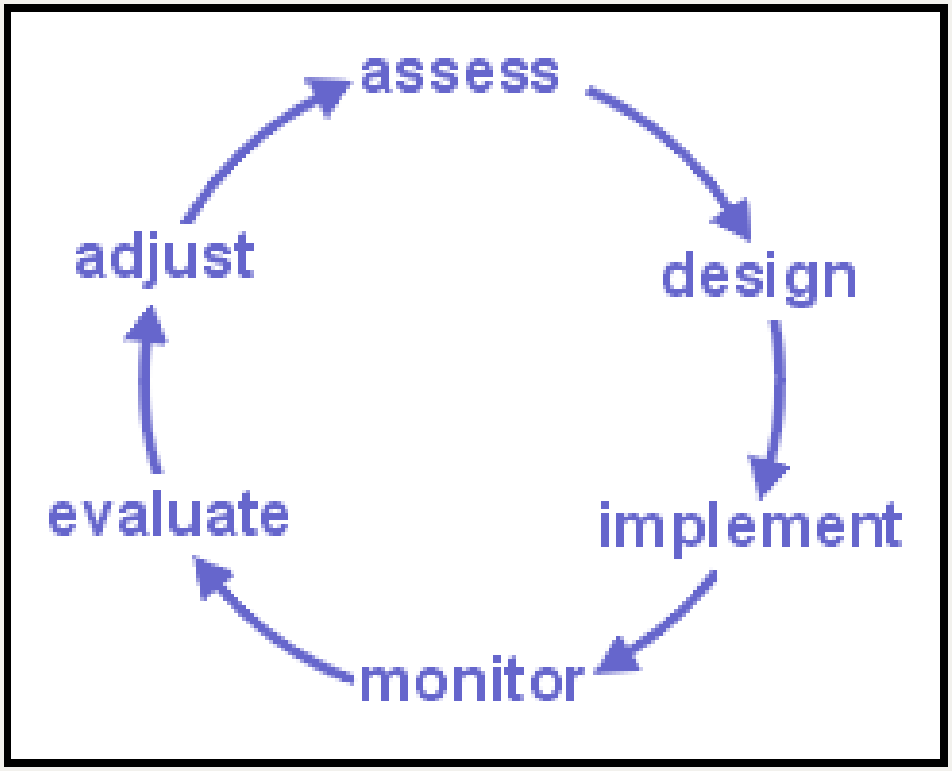
A maximum end-of-pipe concentration that must never be exceeded

Example of Settling Pond Performance



Adaptive management framework

An adaptive management framework will be used to ensure the authorizations are achieving their objective.



Adaptive management, traditional knowledge, and effects-monitoring

YUKON PLACER SECRETARIAT

The AMF will rely on traditional knowledge, and the results of three effects-monitoring programs, each governed by a strict protocol.

- Aquatic health monitoring

Adaptive management, traditional knowledge, and effects-monitoring

YUKON PLACER SECRETARIAT

The AMF will rely on traditional knowledge, and the results of three effects-monitoring programs, each governed by a strict protocol.

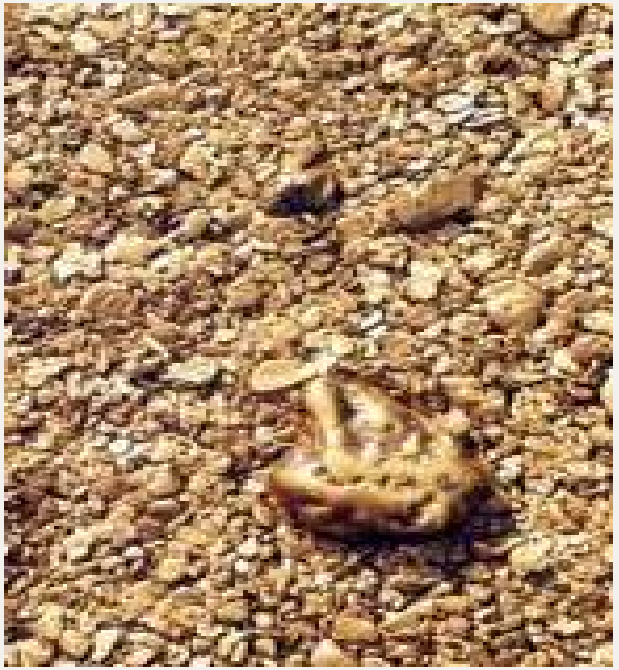
- Aquatic health monitoring
- Water quality objectives monitoring

Adaptive management, traditional knowledge, and effects-monitoring

YUKON PLACER SECRETARIAT

The AMF relies upon traditional knowledge and the results of three effects-monitoring programs, each governed by a strict protocol.

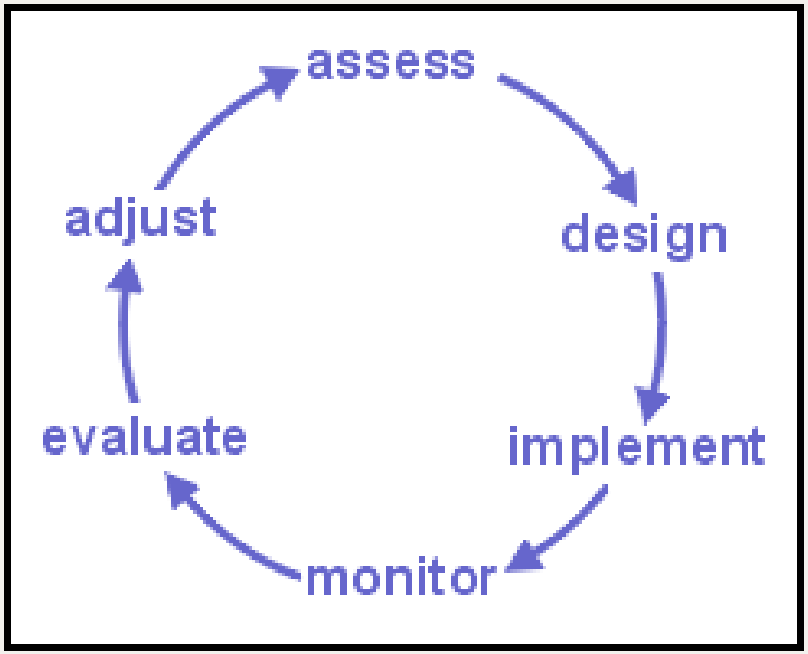
- Aquatic health monitoring
- Water quality objectives monitoring
- Economic health monitoring



Adaptive management decisions

The combined results are evaluated on an annual basis.

The adaptive management process may result in changes to authorizations to ensure the management objectives are achieved.



Reporting

Database Development

- Corporate PIPER will not assist CMI for several years
- PIMS and YMIS are being enhanced to improve information-sharing and reporting
- Modifications have been made to export key information to Excel spreadsheet
- Excel tools will be used to design and publish reports

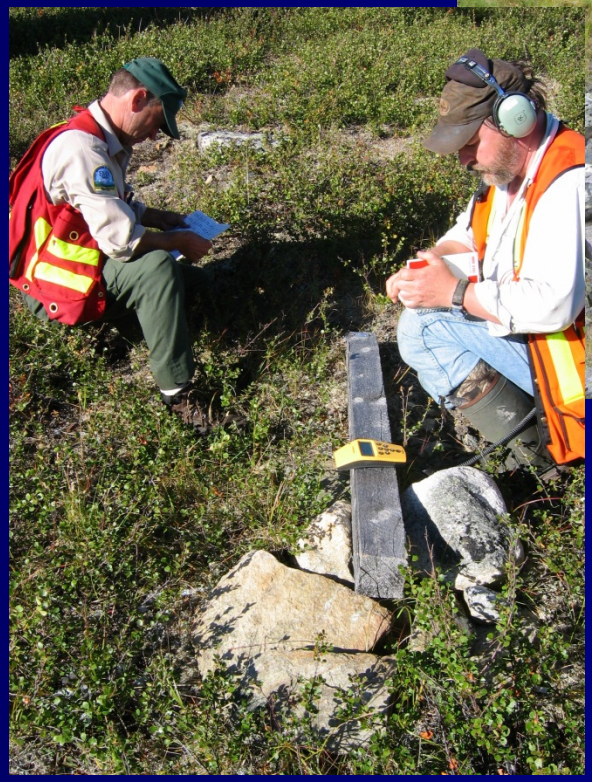
CMI . . . contributing to environmental assessments and scheduled inspections for the Oil and Gas industry . . .

. . . verifying land suitability for agricultural land uses . . .

. . . issuing personal use timber permits for firewood and round wood harvesting . . .

. . . water quality research and laboratory analysis . . .

. . . inspection of mineral claim staking or assessment work at the request of a mining recorder . . .



. . . inspection of placer and hard-rock mineral exploration . . .

. . . inspection of quartz mining operations and placer mining operations . . .

. . .monitoring resource development activities and correcting inappropriate practices through education, encouragement and enforcement . . .

. . . deploying knowledgeable and experienced staff . . .

. . . In full service district offices.

Promoting the sustainable, responsible use of the Yukon's natural resources

Compliance Monitoring & Inspections Branch
Department of Energy, Mines and Resources
Yukon Government