



United States
Department of
Agriculture

Forest Service

Pacific
Northwest
Region



January 2007

Buckhorn Access Project

Final Environmental Impact Statement

Tonasket Ranger District
Okanogan and Wenatchee National Forests
1 West Winesap
Tonasket, WA 98855



Marias Creek Road

Final Environmental Impact Statement
Buckhorn Access Project
Okanogan County, WA
January 2007

Lead Agency: USDA Forest Service
Okanogan and Wenatchee National Forests

Responsible Official: James L. Boynton
Forest Supervisor
Okanogan and Wenatchee National Forests
215 Melody Lane
Wenatchee, WA 98801

For Further Information Contact: Phil Christy
Project Manager
1 West Winesap
Tonasket, WA 98855
(509) 486-5137

Abstract: The Buckhorn Access Project final Environmental Impact Statement describes the purpose and need for an access project over and on National Forest System lands, the proposed action, issues raised regarding the proposal, alternatives to the proposed action, mitigation and monitoring measures, affected resources and effects to those resources. The Responsible Official has identified Alternative B1, with modifications, as the preferred alternative, which will allow Crown Resources/Kinross Gold Corporations to utilize the Marias Creek route to construct and reconstruct roads, build a pipeline to a water infiltration gallery and water augmentation sites, construct a project fence, drill wells, construct livestock management features (fences, cattle guards, gates, well, water troughs) and construct utilities across National Forest System lands to facilitate Crown's plan to mine an ore body on their private lands that are surrounded by Federal lands. Alternative B1 will reconstruct approximately 5.2 miles of existing road and construct approximately 1.5 miles of new road, and would close approximately 2.6 miles of existing road in Bear Trap Canyon. Other alternatives considered a variation on Alternative B1, or other access routes up to the private lands. All alternatives include the project fence, water infiltration gallery and pipeline, water augmentation sites, monitoring well and water monitoring, wildlife guzzlers and utility construction. Alternative B considers the same Marias Creek route as Alternative B1, but has fewer mitigation measures. Alternative C considers the Nicholson Creek route, with 12.4 miles of reconstruction and 0.6 miles of new road construction. Alternative D considers the Cow Camp route, with 2.1 miles of reconstruction and 0.6 miles of new road construction. None of the other alternatives include closures in Bear Trap Canyon. Each alternative also has different mixes of mitigation measures. Comments on the draft EIS, and its preceding preliminary EA were considered and resulted in alternative and analysis modifications presented in the final EIS. Response to comments on the draft EIS and preliminary EA are located in Appendix F. Changes between draft and final EIS are highlighted at the end of Chapter I of the final EIS.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD).
USDA is an equal opportunity provider and employer.

Buckhorn Access Project Final Environmental Impact Statement

Table of Contents

	Page
Summary.....	S-1
Introduction.....	S-1
Purpose and Need.....	S-4
Proposed Action.....	S-4
Decision Framework.....	S-5
Public Involvement and Consultation.....	S-6
Scoping.....	S-6
Consultation and Coordination.....	S-7
Issues.....	S-7
Changes Between Draft and Final EIS.....	S-11
Alternatives.....	S-11
Alternative A – No Action Alternative.....	S-12
Forest Plan Amendments Included in Action Alternatives.....	S-12
Alternative B – Proposed Action.....	S-16
Alternative B1 – Modified Proposed Action.....	S-16
Alternative C.....	S-17
Alternative D.....	S-18
Identification of the Preferred Alternative.....	S-23
Comparison of Alternatives.....	S-23
Chapter I, Purpose and Need.....	1
Introduction.....	1
Purpose and Need.....	6
Proposed Action.....	6
Decision Framework.....	7
Public Involvement and Consultation.....	8
Scoping.....	8
Consultation and Coordination.....	9
Issues.....	9
Changes Between Draft and Final EIS.....	15
Chapter II, Alternatives Including the Proposed Action.....	17
Introduction.....	17
Formulation of Alternatives.....	17
Introduction.....	17
Identification of Project Components.....	18
Management, Mitigation and Monitoring.....	19

	Page
Alternatives Considered but Eliminated From Detailed Study.....	19
Components Considered but Eliminated From Detailed Study.....	20
Alternatives Fully Developed.....	30
Alternative A – No Action	30
Forest Plan Amendments Included in Action Alternatives.....	30
Components Common To All Alternatives.....	33
Alternative B – Proposed Action.....	36
Alternative B1 – Modified Proposed Action.....	41
Alternative C.....	45
Alternative D.....	50
Comparison of Components.....	54
Reclamation Measures.....	57
Mitigation Measures.....	63
Monitoring Measures.....	90
Performance Securities.....	96
Identification of the Preferred Alternative.....	97
Comparison of Alternatives.....	98
Chapter III, Affected Environment and Environmental Consequences.....	109
Introduction.....	109
Transportation.....	112
Affected Environment.....	112
Environmental Consequences.....	114
Direct and Indirect Effects.....	114
Cumulative Effects.....	125
Soils.....	127
Affected Environment.....	128
Environmental Consequences.....	130
Direct and Indirect Effects.....	130
Cumulative Effects.....	137
Hydrology.....	138
Affected Environment.....	138
Environmental Consequences.....	149
Direct and Indirect Effects.....	149
Cumulative Effects for All Action Alternatives.....	172
Aquatics.....	187
Affected Environment.....	187
Environmental Consequences.....	192
Alternative A: No Action.....	192
Effects Common to All Action Alternatives.....	193
Alternative B and B1 Direct/Indirect Effects.....	201
Alternative C Direct/Indirect Effects.....	204
Alternative D Direct/Indirect Effects.....	206
Cumulative Effects.....	207

	Page
Biological Evaluation.....	213
Air Quality.....	215
Affected Environment.....	215
Environmental Consequences.....	216
Direct and Indirect Effects.....	218
Cumulative Effects.....	225
Noise.....	230
Affected Environment.....	230
Environmental Consequences.....	232
Direct and Indirect Effects.....	234
Cumulative Effects.....	237
Scenery.....	247
Affected Environment.....	247
Environmental Consequences.....	248
Direct and Indirect Effects.....	249
Cumulative Effects.....	252
Recreation.....	254
Affected Environment.....	254
Environmental Consequences.....	258
Alternative A.....	258
Direct and Indirect Effects.....	259
Cumulative Effects.....	266
Wildlife.....	269
General Affected Environment.....	269
General Environmental Consequences.....	271
Species not Affected by this Project.....	271
Effects Common to All Species.....	271
Alternative B Direct/Indirect Effects.....	271
Alternative B Cumulative Effects.....	274
Alternative B1 Direct/Indirect Effects.....	275
Alternative B1 Cumulative Effects.....	277
Alternative C Direct/Indirect Effects.....	279
Alternative C Cumulative Effects.....	280
Alternative D Direct/Indirect Effects.....	282
Alternative D Cumulative Effects.....	282
Effects Common to All Species and All Action Alternatives.....	284
Cumulative Effects Common to All Species.....	289
Species Specific Analysis.....	296
Threatened and Endangered Species.....	296
Sensitive Species.....	317
Management Indicator Species.....	341
Species of Interest.....	372
Forest Vegetation.....	390
Affected Environment.....	390

	Page
Environmental Effects.....	390
Direct and Indirect Effects.....	390
Cumulative Effects.....	391
Botany.....	392
Affected Environment.....	392
Environmental Consequences.....	393
Alternative A – No Action.....	393
All Action Alternatives.....	394
Direct and Indirect Effects.....	394
Cumulative Effects.....	401
Determination Conclusions.....	406
Range.....	407
Affected Environment.....	407
Environmental Consequences.....	410
Effects Common to all Action Alternatives.....	411
Direct and Indirect Effects.....	412
Cumulative Effects.....	417
Noxious Weeds.....	417
Affected Environment.....	418
Environmental Consequences.....	420
Direct and Indirect Effects.....	420
Cumulative Effects.....	423
Inventoried Roadless Areas and Unroaded/Undeveloped Character.....	427
Affected Environment.....	427
Environmental Consequences.....	429
Jackson Creek Direct and Indirect Effects.....	429
Cumulative Effects on Jackson IRA.....	430
Unroaded/Undeveloped Direct and Indirect Effects.....	430
Unroaded/Undeveloped Cumulative Effects.....	431
Cultural Resources.....	432
Affected Environment.....	432
Environmental Consequences.....	434
Direct and Indirect Effects.....	434
Cumulative Effects.....	436
Other Required Disclosures.....	437
Socio-Economic Effects.....	437
Social Groups, Civil Rights, and Environmental Justice.....	438
American Indian Rights.....	440
Floodplains and Wetlands.....	441
Prime Range Land, Farm Land, and Forest Land.....	441
Wild and Scenic Rivers.....	441
Relationship Between Short Term Uses and Long Term Productivity.....	441
Potential Mine Expansion.....	442
Accidents and Spills – Transportation Spill.....	442

	Page
Energy Requirements and Conservation Potential of Alternatives.....	447
Possible Conflicts With Federal, Regional, State, Local and Tribal Land Use Plans, Policies and Controls.....	448
Irreversible and Irretrievable Effects.....	448
Unavoidable Impacts.....	448
Summary of Cumulative Effects.....	449
 Chapter IV, List of Preparers.....	 453
 Appendices.....	 457
Appendix A, Glossary, Acronyms, Abbreviations.....	459
Appendix B, Index.....	477
 Volume 2, Appendices C-G	
Appendix C, References.....	C-1
Appendix D, Water Monitoring Plan.....	D-1
Appendix E, Distribution List for FEIS.....	E-1
Appendix F, Response to Comments on Preliminary EA and DEIS.....	F-1
Appendix G, Comment Letters on DEIS and Preliminary EA from Federal, State and Local Agencies and Elected Officials.....	G-1

**Buckhorn Access Project
Final Environmental Impact Statement
List of Figures**

	Page
Summary	
Figure S-1, Project Vicinity Map.....	S-2
Figure S-2, Land Ownership Map.....	S-3
Figure S-3, Alternative B.....	S-32
Figure S-4, Alternative B1.....	S-33
Figure S-5, Alternative C.....	S-34
Figure S-6, Alternative D.....	S-35
 Chapter I, Purpose and Need	
Figure I-1, Vicinity Map.....	2
Figure I-2, Ownership Map.....	3
Figure I-3, Management Area Map.....	5
 Chapter II, Alternatives	
Figure II-1, Alternative B.....	37
Figure II-2, Alternative B1.....	43
Figure II-3, Alternative C.....	46
Figure II-4, Alternative D.....	51
Figure II-5, Ground Water Monitoring Wells and Surface Water Monitoring Locations.....	92
 Chapter III, Affected Environment and Environmental Consequences	
Figure III-1, Impacted Wetlands Locations	143
Figure III-2, Marias Haul Route Picture.....	149
Figure III-3, Wastewater and Stormwater Treatment and Disposal Schematic.....	184
Figure III-4, Detailed Waste Storage, Treatment and Outfall Schematic.....	185

Buckhorn Access Project

Final Environmental Impact Statement

List of Tables

	Page
Summary	
Table S-1, Potential Permits Required for Buckhorn Access Project.....	S-6
Table S-2, Comparison of Components by Alternative.....	S-19
Table S-3, Comparison of Alternatives with Mitigation in Place.....	S-23
 Chapter I, Purpose and Need	
Table I-1, Potential Permits Required for the Buckhorn Access Project.....	8
 Chapter II, Alternatives	
Table II-1, Disturbance Acres for Alternative B.....	40
Table II-2, Road Closures for Alternative B1.....	44
Table II-3, Disturbance Acres for Alternative C.....	49
Table II-4, Disturbance Acres for Alternative D.....	54
Table II-5, Comparison of Components by Alternative.....	55
Table II-6, Road Relief Culvert Spacing.....	87
Table II-7, Comparison of Alternatives with Mitigation in Place.....	99
 Chapter III, Affected Environment and Environmental Consequences	
Table III-1, Summary of Existing Conditions for Project Access Routes.....	113
Table III-2, Current Open Road Density.....	113
Table III-3, Current Total Road Density on NFS Lands by Project Area.....	114
Table III-4, Alternative B During Project Open Road Density.....	115
Table III-5, Alternative B1 During Project Open Road Density.....	116
Table III-6, Alternative B1 Road Closures in MA14-18 and MA26-16.....	116
Table III-7, Alternatives C and D During Project Open Road Density.....	119
Table III-8, Road Density from Elimination of MA14-19.....	123
Table III-9, Total Road Density by Alternative on NFS Lands in Project Area.....	125
Table III-10, Haul Routes on All Lands from Mine to Mill by Alternative..	127
Table III-11, Estimated Annual Maintenance Costs for Roads in the Buckhorn Project Area by Alternative.....	127
Table III-12, Existing Soils.....	129
Table III-13, Soil Classification.....	129

	Page
Table III-14, Average Monthly Precipitation at Buckhorn Mountain.....	139
Table III-15, Nicholson Creek Stream Flow Distribution (%).....	139
Table III-16, Marias Creek Stream Flow Distribution (%).....	139
Table III-17, Nicholson Creek Monthly Baseflow and Surface Water Runoff (%).....	140
Table III-18, Marias Creek Monthly Baseflows and Surface Water Runoff.....	140
Table III-19, Area and Category Ratings of Wetlands Affected by Marias Creek Route.....	142
Table III-20, Area and Category Ratings of Wetland Affected by Nicholson Creek Route.....	144
Table III-21, Area of Wetland and Category Rating Near Cow Camp Road.....	144
Table III-22, Water Quality Parameters, Marias and Nicholson Creeks..	146
Table III-23, Water Quality Parameters in Marias and Nicholson Creeks at SW-7 and SW-8.....	146
Table III-24, Kettle River Overall WQI Trend for Water Years 1994 to 2001.....	148
Table III-25, Existing Condition Stream Sedimentation.....	148
Table III-26, Delivered Sediment Production; Alternative B (B1).....	157
Table III-27, Reduction of Sediment by Stabilization Measures Outside of WEPP model.....	159
Table III-28, Impacts on Wetlands Along Marias Creek Haul Route.....	164
Table III-29, Delivered Sediment Production, Alternative C.....	166
Table III-30, Reduction of Sediment by Stabilization Measures Outside of the WEPP Model.....	167
Table III-31, Impacts on Wetlands Along the Nicholson Creek Haul Route.....	169
Table III-32, Delivered Sediment Production, Alternative D.....	171
Table III-33, Predicted Changes in Baseflows for Nicholson and Marias Creek Monitoring Stations.....	181
Table III-34, Effluent Limitations: Treatment Plant Effluent and Limits Set by Draft NPDES Permit.....	183
Table III-35, Nicholson Creek and Marias Creek 2005 Stream Survey Data Compared to INIFSH RMOs by Stream.....	190
Table III-36, Threatened, Endangered, Proposed, and Sensitive Species Determinations.....	213
Table III-37, Total Dust Emissions on National Forest Haul Roads.....	223
Table III-38, Refined Analysis Regional Haze Impact Summary Class 1 Areas.....	227
Table III-39, Criteria Pollutants.....	227
Table III-40, Typical Range of Common Sounds.....	230
Table III-41, Recommended Maximum Noise Impacts to Recreational Areas.....	232

	Page
Table III-42, Construction Equipment for Mine Access Road.....	235
Table III-43, Predicted Borrow Area Operational Sound Levels at Nearest Receptor (dBA).....	238
Table III-44, Predicted Traffic Sound Levels, Leq.....	238
Table III-45, Traffic Sound Levels, Project Traffic Levels, Leq.....	241
Table III-46, Summary of Impacts to Residents within 500 Feet of Road.....	242
Table III-47, Summary of Impacts to Dispersed Camping Sites Within 200' of Road.....	242
Table III-48, Cumulative Impacts to Residents of Ore and Supply Haul from Mine Site to FR 3575 & OCR 9495 Junction....	243
Table III-49, Plant Association Groups, Biophysical Environments and the Acres Within Buckhorn Block.....	269
Table III-50, Current Open Road Density.....	270
Table III-51, Alternative B During Project Open Road Density.....	274
Table III-52, Alternative B1 During Project Open Road Density.....	277
Table III-53, Alternative C During Project Open Road Density.....	281
Table III-54, Alternative D During Project Open Road Density.....	283
Table III-55, Discrete Management Area Current Open Road Density.....	306
Table III-56, Discrete Management Area Current Open Road Density.....	350
Table III-57, Alternative B During Project Open Road Density.....	353
Table III-58, Alternative B1 During Project Open Road Density.....	354
Table III-59, Alternative C During Project Open Road Density.....	355
Table III-60, Alternative D During Project Open Road Density.....	356
Table III-61, Partners in Flight Priority Habitats and Focal Species for the Northern Rocky Mountain Region.....	380
Table III-62, Migratory Bird Habitat on NFS Impacted by Noise Under Each Action Alternative.....	383
Table III-63, Noxious Weeds Reported on Buckhorn Mountain Project off NFS Lands.....	420
Table III-64, Cultural Resources in the APE.....	435
Table III-65, Unavoidable Impacts.....	449
Table III-66, Summary of Cumulative Effects by Resource Area.....	450

This page intentionally blank