

Contents

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

Acronyms and Abbreviations.....1

Chapter 1. Purpose of and Need for Action.....1

Introduction 1

Changes from the Draft Environmental Impact Statement3

Document Structure3

Background5

Purpose of and Need for Action5

Proposed Action in Brief.....7

 Connected Actions 8

 Electrical Transmission Line 8

 Water Supply Pipeline 8

 Electrical Distribution Line..... 8

 Arizona National Scenic Trail Reroute 8

 State Route 83 Highway Maintenance and Improvements 8

Decision Framework.....9

 Forest Service..... 9

 U.S. Army Corps of Engineers 10

 Arizona Corporation Commission 11

Tribal Consultation12

Public Involvement12

 Scoping 12

 Public Review of the Draft Environmental Impact Statement 13

Issues14

 Issue 1: Impact on Land Stability and Soil Productivity 14

 Issue 1 Factors for Alternative Comparison 14

 Issue 2: Impact on Air Quality 15

 Issue 2 Factors for Alternative Comparison 15

 Issue 3: Impact on Water Resources 15

 Issue 3A: East Side Groundwater Availability 15

 Issue 3B: West Side Groundwater Availability 16

 Issue 3C: Groundwater Quality 16

 Issue 3D: Surface Water Availability 17

 Issue 3E: Surface Water Quality 17

 Issue 4: Impact on Seeps, Springs, and Riparian Vegetation 17

 Issue 4 Factors for Alternative Comparison 18

 Issue 5: Impact on Plants and Animals 18

 Issue 5A: Vegetation..... 18

 Issue 5B: Habitat Loss 18

 Issue 5C: Nonnative Species..... 18

 Issue 5D: Wildlife Movement..... 19

 Issue 5E: Special Status Species 19

 Issue 5F: Animal Behavior 19

 Issue 6: Impact on Cultural Resources 19

 Issue 6A: Impacts on Historic Properties..... 20

 Issue 6B: Disturbance of Human Remains 20

 Issue 6C: Sacred Sites..... 20

1	Issue 6D: Traditional Resource Collecting Areas.....	21
2	Issue 7: Impact on Visual Resources.....	21
3	Issue 7 Factors for Alternative Comparison	21
4	Issue 8: Impact on Dark Skies and Astronomy	21
5	Issue 8 Factor for Alternative Comparison	22
6	Issue 9: Impact on Recreation	22
7	Issue 9 Factors for Alternative Comparison	22
8	Issue 10: Impact on Public Health and Safety.....	22
9	Issue 10 Factors for Alternative Comparison.....	22
10	Issue 11: Impacts on Social and Economic Resources.....	23
11	Issue 11A: Regional Socioeconomics.....	23
12	Issue 11B: Rural Landscapes	23
13	Issue 12: Impact on Transportation/Access	23
14	Issue 12 Factors for Alternative Comparison.....	24
15	Chapter 2. Alternatives, Including the Proposed Action.....	1
16	Introduction	1
17	Changes from the Draft Environmental Impact Statement	1
18	Alternatives Considered in Detail	2
19	Removal of Heap Leach Facility from Barrel Alternative	4
20	Applicability of Heap Leach Facility Removal to Other Alternatives	6
21	General Overview of Mining Operations.....	6
22	Mine Facilities and Activities	6
23	Ancillary Facilities and Activities	15
24	Reclamation and Closure	28
25	Permits and Authorizations.....	29
26	Detailed Description of Alternatives.....	34
27	Alternative 1 – No Action.....	34
28	Action Alternatives	36
29	Mitigation and Monitoring.....	66
30	Financial Assurance.....	69
31	Alternatives Considered but Eliminated from Detailed Study.....	71
32	Mining Other Locations	72
33	Mining Methods.....	72
34	Shafts, Adits, and Other Underground Methods.....	73
35	Reducing Pit Size.....	73
36	In Situ Leaching.....	73
37	High-Temperature/High-Pressure Leaching	74
38	Traditional Slurry Tailings.....	74
39	Configuring the Pit to Allow “Continuous” Backfill.....	75
40	Complete Backfill or Partial Backfill of the Pit	75
41	Reconfiguring or Relocating the Waste Rock and Tailings Facilities	77
42	Modifying the Life of the Mine	78
43	Change in Scheduled Hours of Operation.....	78
44	Twelve-Hour Operation with the Same Production Planned	
45	for a 24-Hour Operation and Same Mine Life.....	78
46	Twelve-Hour Operation with Half the Production Planned	
47	for a 24-Hour Operation and Double the Mine Life	79
48	Suspending Operations during High-Wind Events	80
49	Water Supply	81
50	Transportation	82
51	Natural Gas Pipeline	82

1 Land Exchange or Purchase of the Rosemont Copper Project Area by the Forest Service..... 83

2 Downsize Electrical Transmission Line..... 83

3 Bury Electrical Transmission Line..... 84

4 **Forest Plan Consistency 85**

5 Proposed Forest Plan Amendment 88

6 Management Area 16 – Rosemont Mining Area 88

7 Finding of Significance..... 89

8 Forest Plan Revision 91

9 **Alternatives Impact Summary 91**

10 **Chapter 3. Affected Environment and Environmental Consequences1**

11 **Introduction 1**

12 **Geology, Minerals, and Paleontology..... 1**

13 Introduction..... 1

14 Changes from the Draft Environmental Impact Statement 1

15 Issues, Cause and Effect Relationships of Concern 1

16 Analysis Methodology, Assumptions, Uncertain and Unknown Information 2

17 Summary of Effects by Issue Factor by Alternative 2

18 Affected Environment..... 4

19 Relevant Laws, Regulations, Policies, and Plans..... 4

20 Existing Conditions 10

21 Environmental Consequences 29

22 Direct and Indirect Effects of Each Alternative 29

23 Cumulative Effects 33

24 Mitigation Effectiveness..... 34

25 **Soils and Revegetation..... 1**

26 Introduction..... 1

27 Changes from the Draft Environmental Impact Statement 1

28 Issues, Cause and Effect Relationships of Concern 2

29 Analysis Methodology, Assumptions, Uncertain and Unknown Information 2

30 Summary of Effects by Issue Factor by Alternative 5

31 Affected Environment..... 7

32 Relevant Laws, Regulations, Policies, and Plans..... 7

33 Existing Conditions 9

34 Environmental Consequences 14

35 Direct and Indirect Effects of Each Alternative 14

36 Cumulative Effects 33

37 Mitigation Effectiveness..... 34

38 **Air Quality and Climate Change 1**

39 Introduction..... 1

40 Changes from the Draft Environmental Impact Statement 1

41 Issues, Cause and Effect Relationships of Concern 3

42 Analysis Methodology, Assumptions, Uncertain and Unknown Information 4

43 Summary of Effects by Issue Factor by Alternative 12

44 Affected Environment..... 15

45 Relevant Laws, Regulations, Policies, and Plans..... 15

46 Existing Conditions 17

47 Environmental Consequences 31

48 Direct and Indirect Effects of Each Alternative 31

49 Cumulative Effects 60

50 Mitigation Effectiveness..... 63

1	Groundwater Quantity.....	1
2	Introduction.....	1
3	Changes from the Draft Environmental Impact Statement	1
4	Issues, Cause and Effect Relationships of Concern	4
5	Analysis Methodology, Assumptions, Uncertain and Unknown Information	5
6	Summary of Effects by Issue Factor by Alternative	28
7	Affected Environment.....	30
8	Relevant Laws, Regulations, Policies, and Plans.....	30
9	Existing Conditions.....	32
10	Environmental Consequences	40
11	Direct and Indirect Effects of Each Alternative	40
12	Cumulative Effects	67
13	Mitigation Effectiveness.....	68
14	Groundwater Quality and Geochemistry	1
15	Introduction.....	1
16	Changes from the Draft Environmental Impact Statement	1
17	Issues, Cause and Effect Relationships of Concern	3
18	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
19	Summary of Effects by Issue Factor by Alternative	8
20	Affected Environment.....	9
21	Relevant Laws, Regulations, Policies, and Plans.....	9
22	Existing Conditions	11
23	Environmental Consequences	15
24	Direct and Indirect Effects of Each Alternative	15
25	Proposed Action and Action Alternatives.....	32
26	Cumulative Effects	32
27	Mitigation Effectiveness.....	32
28	Surface Water Quantity	1
29	Introduction.....	1
30	Changes from the Draft Environmental Impact Statement	1
31	Issues, Cause and Effect Relationships of Concern	3
32	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
33	Summary of Effects by Issue Factor by Alternative	6
34	Affected Environment.....	7
35	Relevant Laws, Regulations, Policies, and Plans.....	7
36	Existing Conditions	9
37	Environmental Consequences	24
38	Direct and Indirect Effects of Each Alternative	24
39	Cumulative Effects	37
40	Mitigation Effectiveness.....	39
41	Surface Water Quality	1
42	Introduction.....	1
43	Changes from the Draft Environmental Impact Statement	1
44	Issues, Cause and Effect Relationships of Concern	1
45	Analysis Methodology, Assumptions, Uncertain and Unknown Information	3
46	Summary of Effects by Issue Factor by Alternative	4
47	Affected Environment.....	5
48	Relevant Laws, Regulations, Policies, and Plans.....	5
49	Existing Conditions	8
50	Environmental Consequences	18
51	Direct and Indirect Effects of Each Alternative	18
52	Cumulative Effects	34

1	Mitigation Effectiveness	34
2	Seeps, Springs, and Riparian Areas.....	1
3	Introduction.....	1
4	Changes from the Draft Environmental Impact Statement	1
5	Issues, Cause and Effect Relationships of Concern	2
6	Analysis Methodology, Assumptions, Uncertain and Unknown Information	3
7	Summary of Effects by Issue Factor by Alternative	17
8	Affected Environment.....	20
9	Relevant Laws, Regulations, Policies, and Plans.....	20
10	Existing Conditions	21
11	Environmental Consequences	32
12	Direct and Indirect Effects of Each Alternative	32
13	Cumulative Effects	54
14	Mitigation Effectiveness.....	56
15	Biological Resources	1
16	Introduction.....	1
17	Changes from the Draft Environmental Impact Statement	1
18	Issues, Cause and Effect Relationships of Concern	2
19	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
20	Summary of Effects by Issue Factor by Alternative	13
21	Affected Environment.....	16
22	Relevant Laws, Regulations, Policies, and Plans.....	16
23	Existing Conditions	19
24	Environmental Consequences	78
25	Direct and Indirect Effects of Each Alternative	78
26	Cumulative Effects	130
27	Mitigation Effectiveness.....	132
28	Landownership and Boundary Management	1
29	Introduction.....	1
30	Changes from the Draft Environmental Impact Statement	1
31	Issues, Cause and Effect Relationships of Concern	1
32	Affected Environment.....	2
33	Relevant Laws, Regulations, Policies, and Plans.....	2
34	Existing Conditions	2
35	Environmental Consequences	3
36	Direct and Indirect Effects of Each Alternative	3
37	Cumulative Effects	5
38	Mitigation Effectiveness.....	5
39	Livestock Grazing.....	1
40	Introduction.....	1
41	Changes from the Draft Environmental Impact Statement	1
42	Issues, Cause and Effect Relationships of Concern	3
43	Analysis Methodology, Assumptions, Uncertain and Unknown Information	3
44	Summary of Effects by Issue Factor by Alternative	4
45	Affected Environment.....	5
46	Relevant Laws, Regulations, Policies, and Plans.....	5
47	Environmental Consequences	9
48	Direct and Indirect Effects of Each Alternative	9
49	Cumulative Effects	16
50	Mitigation Effectiveness.....	17
51		

1	Dark Skies	1
2	Introduction.....	1
3	Changes from the Draft Environmental Impact Statement	1
4	Issues, Cause and Effect Relationships of Concern	1
5	Analysis Methodology, Assumptions, Uncertain and Unknown Information	2
6	Summary of Effects by Issue Factor by Alternative	5
7	Affected Environment.....	7
8	Relevant Laws, Regulations, Policies, and Plans.....	7
9	Existing Conditions	8
10	Environmental Consequences	8
11	Direct and Indirect Effects of Each Alternative	8
12	Direct and Indirect Effects of Each Alternative	9
13	Cumulative Effects	13
14	Mitigation Effectiveness	14
15	Visual Resources	1
16	Introduction.....	1
17	Changes from the Draft Environmental Impact Statement	1
18	Issues, Cause and Effect Relationships of Concern	1
19	Analysis Methodology, Assumptions, Uncertain and Unknown Information	2
20	Affected Environment.....	15
21	Relevant Laws, Regulations, Policies, and Plans.....	15
22	Coronado Forest Plan.....	16
23	Other Scenery Management Plans and Guidance	16
24	Existing Conditions and Landscape Character	20
25	Existing Scenic Integrity.....	23
26	Environmental Consequences	31
27	Direct and Indirect Effects of Each Alternative	31
28	Comparison of Alternatives	58
29	Cumulative Effects	58
30	Potential State-Wide Impacts to the Arizona National Scenic Trail	60
31	Mitigation Effectiveness	62
32	Mitigation Measures	62
33	Recreation and Wilderness	1
34	Introduction.....	1
35	Changes from the Draft Environmental Impact Statement	1
36	Issues, Cause and Effect Relationships of Concern	1
37	Summary of Effects by Issue Factor by Alternative	2
38	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
39	Affected Environment.....	7
40	Relevant Laws, Regulations, Policies, and Plans.....	7
41	Existing Conditions	8
42	Environmental Consequences	19
43	Direct and Indirect Effects of Each Alternative	19
44	Cumulative Effects	35
45	Mitigation Effectiveness	37
46	Hazardous Materials	1
47	Introduction.....	1
48	Changes from the Draft Environmental Impact Statement	1
49	Issues, Cause and Effect Relationships of Concern	1
50	Analysis Methodology, Assumptions, Uncertain and Unknown Information	2
51	Summary of Effects by Issue Factor by Alternative	4
52	Affected Environment.....	6

1	Relevant Laws, Regulations, Policies, and Plans.....	6
2	Existing Conditions	8
3	Environmental Consequences	8
4	Direct and Indirect Effects of Each Alternative.....	8
5	Cumulative Effects	30
6	Mitigation Effectiveness.....	31
7	Fuels and Fire Management	1
8	Introduction.....	1
9	Changes from the Draft Environmental Impact Statement	1
10	Issues, Cause and Effect Relationships of Concern	1
11	Analysis Methodology, Assumptions, Uncertain and Unknown Information	1
12	Summary of Effects by Issue Factor by Alternative	3
13	Affected Environment.....	4
14	Relevant Laws, Regulations, Policies, and Plans.....	4
15	General Management Direction for Fuels and Fire Management on the Coronado National Forest	5
16	Existing Conditions	5
17	Environmental Consequences	8
18	Direct and Indirect Effects of Each Alternative.....	9
19	Cumulative Effects	13
20	Mitigation Effectiveness.....	13
21	Transportation/Access.....	1
22	Introduction.....	1
23	Changes from the Draft Environmental Impact Statement	1
24	Issues, Cause and Effect Relationships of Concern	2
25	Issue 12: Impact on Transportation/Access	2
26	<i>Issue 12 Factors for Alternative Comparison</i>	2
27	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
28	Summary of Effects by Issue Factor by Alternative	6
29	Affected Environment.....	7
30	Relevant Laws, Regulations, Policies, and Plans.....	7
31	Existing Conditions	9
32	Environmental Consequences	20
33	Direct and Indirect Effects of Each Alternative.....	20
34	Cumulative Effects	32
35	Mitigation Effectiveness.....	33
36	Noise.....	1
37	Introduction.....	1
38	Changes from the Draft Environmental Impact Statement	1
39	Issues, Cause and Effect Relationships of Concern	3
40	Analysis Methodology, Assumptions, Uncertain and Unknown Information	3
41	Summary of Effects by Issue Factor by Alternative	12
42	Affected Environment.....	12
43	Relevant Laws, Regulations, Policies, and Plans.....	12
44	Existing Conditions	15
45	Environmental Consequences	23
46	Direct and Indirect Effects of Each Alternative.....	23
47	Cumulative Effects	30
48	Mitigation Effectiveness.....	31
49	Public Health and Safety.....	1
50	Introduction.....	1
51	Changes from the Draft Environmental Impact Statement	1
52	Issues, Cause and Effect Relationships of Concern	2

Contents

1	Analysis Methodology, Assumptions, Uncertain and Unknown Information	2
2	Summary of Effects by Issue Factor by Alternative	4
3	Affected Environment	7
4	Relevant Laws, Regulations, Policies, and Plans.....	7
5	Existing Conditions	8
6	Environmental Consequences	11
7	Direct and Indirect Effects of Each Alternative	11
8	Cumulative Effects	21
9	Mitigation Effectiveness	22
10	Cultural Resources	1
11	Introduction.....	1
12	Changes from the Draft Environmental Impact Statement	1
13	Issues, Cause and Effect Relationships of Concern	2
14	Analysis Methodology, Assumptions, Uncertain and Unknown Information	4
15	Analysis Area – Direct and Indirect Effects	4
16	Analysis Area – Cumulative Effects	4
17	Analysis Methodology	7
18	Uncertain and Unknown Information	7
19	Summary of Effects by Issue Factor by Alternative	7
20	Affected Environment.....	8
21	Relevant Laws, Regulations, Policies, and Plans.....	8
22	Tribal Consultation for the Rosemont Copper Project.....	12
23	Existing Conditions	14
24	Environmental Consequences	21
25	Direct and Indirect Effects of Each Alternative	21
26	Cumulative Effects	31
27	Mitigation Effectiveness	35
28	Socioeconomics and Environmental Justice.....	1
29	Introduction.....	1
30	Changes from the Draft Environmental Impact Statement	1
31	Issues, Cause and Effect Relationships of Concern	2
32	Issue 11: Impacts on Social and Economic Resources	2
33	Analysis Methodology, Assumptions, Uncertain and Unknown Information	3
34	Summary of Effects by Issue Factor by Alternative	6
35	Affected Environment.....	10
36	Relevant Laws, Regulations, Policies, and Plans.....	10
37	Existing Conditions	11
38	Population and Demographics	11
39	Housing.....	15
40	Property Values	15
41	Employment.....	17
42	Income Characteristics.....	23
43	Quality of Life Conditions	36
44	Environmental Justice.....	39
45	Environmental Consequences	44
46	Direct and Indirect Effects of Each Alternative	44
47	Cumulative Effects	71
48	Mitigation Effectiveness for Socioeconomics	74
49	Mitigation Effectiveness for Environmental Justice	76
50	Required Disclosures.....	1
51	Short-Term Uses and Long-Term Productivity.....	1
52	Geology, Minerals, and Paleontology.....	1

1	Soils and Revegetation.....	1
2	Air Quality and Climate Change.....	2
3	Groundwater Quantity	2
4	Surface Water Quantity	2
5	Seeps, Springs, and Riparian Areas	2
6	Biological Resources	2
7	Dark Skies.....	2
8	Visual Resources	2
9	Recreation and Wilderness	3
10	Transportation/Access	3
11	Cultural Resources	3
12	Socioeconomics and Environmental Justice	3
13	Unavoidable Adverse Effects.....	3
14	Air Quality and Climate Change.....	3
15	Soils and Revegetation.....	4
16	Groundwater Quantity	4
17	Surface Water Quantity	4
18	Seeps, Springs, and Riparian Areas	4
19	Biological Resources	4
20	Livestock Grazing.....	4
21	Dark Skies.....	5
22	Visual Resources	5
23	Recreation and Wilderness	5
24	Hazardous Materials	5
25	Fuels and Fire Management.....	5
26	Transportation/Access	5
27	Noise.....	5
28	Public Health and Safety.....	5
29	Cultural Resources	6
30	Socioeconomics and Environmental Justice	6
31	Irreversible and Irretrievable Commitments of Resources.....	6
32	Geology, Minerals, and Paleontology.....	6
33	Air Quality and Climate Change.....	7
34	Soils and Revegetation.....	7
35	Groundwater Quantity	7
36	Groundwater Quality and Geochemistry	7
37	Surface Water Quantity	8
38	Surface Water Quality	8
39	Seeps, Springs, and Riparian Areas	8
40	Biological Resources	8
41	Livestock Grazing.....	9
42	Dark Skies.....	9
43	Visual Resources	9
44	Recreation and Wilderness	10
45	Hazardous Materials	10
46	Fire and Fuels Management.....	10
47	Transportation/Access	10
48	Noise.....	11
49	Public Health and Safety.....	11
50	Cultural Resources	11
51	Socioeconomics and Environmental Justice	11
52	Cumulative Effects.....	12
53	Other Required Disclosures	12
54	Consultation under the Endangered Species Act	12

1	Consultation under the National Historic Preservation Act	12
2	Conflicts with Regional, State, and Local Plans, Policies, and Controls	12
3	Chapter 4. Agencies Consulted	1
4	Introduction	1
5	Tribal Consultation	1
6	Government.....	1
7	Federal	1
8	State	2
9	County	2
10	Local	2
11	Organizations.....	2
12	List of Agencies, Organizations, and Persons Who Were Sent Copies of the FEIS and the	
13	Record of Decision	4
14	List of Agencies, Organizations, and Persons Who Were Sent Copies of the Record of	
15	Decision Only	4
16	Commenters on the DEIS	5
17	Chapter 5. List of Preparers	1
18	Forest Service.....	1
19	SWCA Environmental Consultants	3
20	Other Assisting Consultants	5
21	Chapter 6. Literature Cited	1
22	Chapter 7. Glossary	1
23		
24		
25		
26	List of Appendices	
27		
28	A. U.S. Army Corps of Engineers’ Section 404(b)(1) Alternatives Analysis	
29	B. Mitigation and Monitoring Plan (includes U.S. Army Corps of Engineers’ Habitat Mitigation	
30	Plan)	
31	C. Visual Simulations (on compact disc (CD))	
32	D. Memorandum of Agreement with Arizona State Historic Preservation Office	
33	E. Tribal Consultation	
34	F. U.S. Fish and Wildlife Service Biological Opinion	
35	G. Summary of Response to Comments on the DEIS (comments and responses on DVD)	
36		
37		
38		
39		

List of Figures

1

2

3 Figure 1. Project location and Barrel Alternative footprint2

4 Figure 2. Sulfide ore processing; general schematic9

5 Figure 3. Oxide ore processing, general schematic 11

6 Figure 4. Typical transmission and pipeline easement (Tucson Electric Power Company 2011)15

7 Figure 5. Approved utility alignment for the Rosemont Copper Project.....17

8 Figure 6. Process water schematic.....20

9 Figure 7. Arizona National Scenic Trail relocations.....27

10 Figure 8. Alternative 1 – No Action35

11 Figure 9. Alternative 2 – Proposed Action footprint.....38

12 Figure 10. Layout of plant facilities under the proposed action41

13 Figure 11. Stormwater control concept under the proposed action43

14 Figure 12. Road changes under the proposed action44

15 Figure 13. Alternative 3 – Phased Tailings Alternative footprint46

16 Figure 14. Phased Tailings Alternative plant site48

17 Figure 15. Phased Tailings Alternative stormwater control concept50

18 Figure 16. Road changes under the Phased Tailings Alternative.....52

19 Figure 17. Alternative 4 – Barrel Alternative footprint54

20 Figure 18. Barrel Alternative plant site56

21 Figure 19. Barrel Alternative stormwater concept.....57

22 Figure 20. Road changes under the Barrel and Barrel Trail Alternatives59

23 Figure 21. Alternative 5 – Barrel Trail Alternative footprint.....60

24 Figure 22. Barrel Trail Alternative stormwater control concept (flow-through drains not shown).....62

25 Figure 23. Alternative 6 – Scholefield-McCleary Alternative footprint63

26 Figure 24. Road changes under the Scholefield-McCleary Alternative65

27 Figure 25. Basic Forest Service bonding process as supported by regulations and guidance70

28 Figure 26. Designated management areas, Coronado National Forest.....86

29 Figure 27. Proposed Coronado National Forest Management Area 16 – Rosemont Mining Area.....90

30 Figure 28. Analysis area for geology, minerals, and paleontology3

31 Figure 29. General geology of the project area. Adapted from Tetra Tech (2007a),
 32 Johnson and Ferguson (2007), and Drewes (1972a)..... 13

33 Figure 30. Geological cross section of the project area. Adapted from Tetra Tech (2007a),
 34 Johnson and Ferguson (2007), and Drewes (1972a)..... 15

35 Figure 31. Analysis area for soils 3

36 Figure 32. Reclamation area: revegetation types year 518

37 Figure 33. Reclamation area: revegetation types year 10.....19

38 Figure 34. Reclamation area: revegetation types year 1520

39 Figure 35. Reclamation area: revegetation types year 22.....21

40 Figure 36. Phasing of concurrent reclamation activities for preferred alternative26

41 Figure 37. Surface treatments for revegetation for preferred alternative29

42 Figure 38. Analysis area and nonattainment and maintenance areas for air.....5

43 Figure 39. Distribution of winds (percent) at the project site.....20

44 Figure 40. Pima County monitoring sites (Pima County Department of
 45 Environmental Quality 2009c).....24

46 Figure 41. Visibility at Saguaro National Park East29

47 Figure 42. Locations of Class I areas40

48 Figure 43. Analysis area for groundwater quantity2

49 Figure 44. Tucson Active Management Area16

Contents

1 Figure 45. Groundwater levels in the Cienega Basin21
2 Figure 46. Comparison of sources of recharge and withdrawal sinks in mine water supply
3 analysis area in the Upper Santa Cruz Sub-Basin.....35
4 Figure 47. Groundwater levels in the Upper Santa Cruz Sub-Basin in 2004 and 200536
5 Figure 48. Subsidence in the Sahuarita and Green Valley areas, Pima County,
6 February 2009 through January 2010. Adapted from ADWR (2010).....38
7 Figure 49. Geographic area of impact from mine water supply pumping after 20 years of pumping
8 during the active mining phase (Errol L. Montgomery and Associates Inc. 2009a).....43
9 Figure 50. Regional water-level drawdown after 20 years of active mining,
10 including mine supply pumping.....44
11 Figure 51. Regional water-level drawdown after 20 years without mine supply pumping45
12 Figure 52. Regional water-level elevations after 20 years of active mining,
13 including mine supply pumping.....46
14 Figure 53. Regional water-level elevations after 20 years without mine supply pumping.....47
15 Figure 54. Water-level drawdown in the vicinity of the mine at the end of active mining.....52
16 Figure 55. Water-level drawdown in the vicinity of the mine 20 years after active mining.....53
17 Figure 56. Water-level drawdown in the vicinity of the mine 50 years after active mining.....54
18 Figure 57. Water-level drawdown in the vicinity of the mine 150 years after active mining.....55
19 Figure 58. Water-level drawdown in the vicinity of the mine 1,000 years after active mining.....56
20 Figure 59. Range of water-level drawdown 1,000 years after active mining
21 based on sensitivity analyses63
22 Figure 60. Analysis area for groundwater quality5
23 Figure 61. Analysis area for surface water quantity2
24 Figure 62. Outstanding Arizona Waters and stock tanks12
25 Figure 63. Analysis area for cumulative effects – surface water quantity38
26 Figure 64. Analysis area for surface water quality2
27 Figure 65. Potentially jurisdictional waters within the project area9
28 Figure 66. Analysis area for seeps, springs, and riparian areas4
29 Figure 67. Stream reaches of concern5
30 Figure 68. Overview of Pima County mapped riparian habitat.....9
31 Figure 69. Seeps and springs within the analysis area.....22
32 Figure 70. Minimum monthly stream flows for Upper Cienega Creek.....35
33 Figure 71. Analysis area for biological resources.....5
34 Figure 72. Stock tanks within the analysis area.....21
35 Figure 73. Mine adits and shafts within the analysis area (WestLand Resources Inc. 2009d)22
36 Figure 74. Talus slopes, rocky outcrops, and rocky canyon bottoms within the analysis area
37 (WestLand Resources Inc. 2009g)23
38 Figure 75. Vegetation types within the analysis area (Brown 1994; Pima County 2013)25
39 Figure 76. Wildlife linkages relative to the analysis area (Arizona Game and Fish Department 2012c;
40 Beier et al. 2008; Beier et al. 2006a; The Arizona Wildlife Linkages Workgroup 2006)34
41 Figure 77. Mineral survey fractions4
42 Figure 78. Grazing allotments and the Barrel Alternative2
43 Figure 79. Analysis area for dark skies.....3
44 Figure 80. Analysis area for visual resources3
45 Figure 81. Coronado National Forest scenic integrity objectives.....6
46 Figure 82. Analysis viewpoints8
47 Figure 83. Road and trail concern levels10
48 Figure 84. A project area landscape.....21
49 Figure 85. Viewpoint 3 in relation to Arizona National Scenic Trail reroute alternatives.....28

1 Figure 86. Barrel Alternative regional visibility. The regional visibility figures for the other
2 action alternatives are located in appendix C on a CD in a sleeve of the FEIS.39
3 Figure 87. Visual simulation of the Scholefield-McCleary Alternative as seen from viewpoint 240
4 Figure 88. Visual simulation of the Barrel Alternative (with revegetation over the
5 span of 20 years) as seen from viewpoint 240
6 Figure 89. Analysis area for recreation and wilderness resources5
7 Figure 90. Recreation Opportunity Spectrum and proposed action.....10
8 Figure 91. Recreation sites (note: the majority of hunt unit 34A is located
9 beyond the forest boundary)14
10 Figure 92. Recreation Opportunity Spectrum with Phased Tailings Alternative28
11 Figure 93. Recreation Opportunity Spectrum with Barrel Alternative30
12 Figure 94. Recreation Opportunity Spectrum with Barrel Trail Alternative32
13 Figure 95. Recreation Opportunity Spectrum with Scholefield-McCleary Alternative34
14 Figure 96. Analysis area for hazardous materials3
15 Figure 97. Hazardous materials storage—proposed action18
16 Figure 98. Hazardous materials storage—Barrel Alternative19
17 Figure 99. Analysis area for fire and fuels management2
18 Figure 100. Fire occurrence within Rosemont Copper claim boundary on NFS land, 1988 to 2009.....6
19 Figure 101. Original transportation/access analysis area3
20 Figure 102. Transportation/access expanded analysis area5
21 Figure 103. County and State roads.....10
22 Figure 104. Coronado National Forest roads.....12
23 Figure 105. Access roads29
24 Figure 106. Analysis area and locations of noise receptors (Tetra Tech 2009)2
25 Figure 107. Ambient noise monitoring locations (Tetra Tech 2009)16
26 Figure 108. Analysis area for public health and safety3
27 Figure 109. Analysis area for direct and indirect effects on cultural resources5
28 Figure 110. Analysis area for cumulative effects on cultural resources6
29 Figure 111. Analysis area for socioeconomics.....5
30
31
32

List of Tables

33
34
35 Table 1. Landownership or management of the utility corridor16
36 Table 2. Large-truck trip per weekday data (years 1 and 20 of operations phase)25
37 Table 3. Permits and authorizations that may be applicable to the proposed
38 Rosemont Copper Mine30
39 Table 4. Differences among action alternatives evaluated.....36
40 Table 5. Mine life and anticipated production schedule for the proposed action alternative,
41 Rosemont Copper Project39
42 Table 6. Mine life and anticipated production schedule for the Phased Tailings Alternative47
43 Table 7. Mine life and anticipated production schedule for the Barrel Alternative53
44 Table 8. Coronado National Forest Plan consistency considerations87
45 Table 9. Management prescriptions for Coronado National Forest Management Area 16.....88
46 Table 10. Reduction in existing management areas.....89
47 Table 11. Alternatives comparison table: disturbance elements91
48 Table 12. Alternatives impact summary93
49 Table 13. Summary of effects4

Contents

1 Table 14. Summarized geology, age, potential paleontological content, and paleontological
2 sensitivity of the project area using the Potential Fossil Yield Classification system.....26
3 Table 15. Amount of rock removed by formation30
4 Table 16. Summary of proposed surface disturbance in acres for each alternative by
5 Potential Fossil Yield Classification ranking31
6 Table 17. Soil characteristics in the analysis area.....4
7 Table 18. Summary of effects5
8 Table 19. Summary of the potential plant community and soil conditions based on the general
9 ecosystem survey 11
10 Table 20. Rangeland conditions from the 1950s through 201012
11 Table 21. Watershed condition classification within the analysis area13
12 Table 22. Desired vegetation condition over time17
13 Table 23. Species expected to be present.....23
14 Table 24. Reclamation phasing over active mining phase for preferred alternative.....27
15 Table 25. Soil productivity based on ecological site descriptions (in pounds per acre)30
16 Table 26. Direct soil productivity loss and soil salvage volumes by alternative32
17 Table 27. Summary of expected changes to sediment delivery under alternatives33
18 Table 28. Summary of effects13
19 Table 29. Air quality laws, ordinances, regulations, and standards15
20 Table 30. Summary of average monthly precipitation (in inches) from various sources18
21 Table 31. Summary of average monthly temperatures (°F) from various sources19
22 Table 32. Average monthly pan evaporation for nearby stations and the project area (inches).....20
23 Table 33. National Ambient Air Quality Standards22
24 Table 34. Pima County monitoring data, 2008 through 2012.....25
25 Table 35. Pima County 2008 emissions inventory (tons per year)30
26 Table 36. Premining fugitive dust emissions associated with surface disturbances in tons per year ...34
27 Table 37. Premining tailpipe emissions for worker and equipment shipment trips in
28 tons per year – all alternatives.....35
29 Table 38. Active mining tailpipe emissions from worker and equipment shipment trips in
30 tons per year – proposed action, Phased Tailings, Barrel Trail,
31 and Scholefield-McCleary Alternatives35
32 Table 39. Active mining tailpipe emissions from worker and equipment shipment trips in
33 tons per year – Barrel Alternative36
34 Table 40. Premining fugitive dust emissions from paved surfaces in tons per year –
35 all alternatives37
36 Table 41. Active mining fugitive dust emissions from paved surfaces in tons per year.....37
37 Table 42. Maximum annual point and fugitive source emissions within the perimeter fence
38 under the action alternatives in tons per year.....38
39 Table 43. Comparison of Pima County emissions and premining emissions under the action
40 alternatives (in tons per year).....38
41 Table 44. Comparison of Pima County emissions and active mining emissions under the action
42 alternatives (in tons per year).....39
43 Table 45. Maximum modeled and ambient emission concentrations at the perimeter fence for
44 proposed action and action alternatives43
45 Table 46. Maximum modeled and ambient emission concentrations at Saguaro East
46 National Park boundary for action alternatives.....47
47 Table 47. Maximum modeled and ambient emission concentrations at Class I areas
48 for all action alternatives.....51

1 Table 48. VISCREEN level 1 modeling of visibility impacts at Saguaro National Park East
2 Class I area..... 53
3 Table 49. VISCREEN level 2 modeling of visibility impacts at Saguaro National Park East
4 Class I area..... 53
5 Table 50. CALPUFF modeling of visibility impacts at other Class I areas..... 55
6 Table 51. CALPUFF modeling of deposition impacts for each Class I area..... 58
7 Table 52. Summary of nitrogen deposition impacts for selected Class I areas..... 60
8 Table 53. Summary of effects 28
9 Table 54. Summary of the Federal, State, and local regulatory requirements
10 applicable to the project with respect to groundwater quantity 30
11 Table 55. Estimate of water balance for the Davidson Canyon/Cienega Basin..... 39
12 Table 56. Modeled groundwater-level drawdown for selected wells 41
13 Table 57. Modeled and historic rates of water-level change for selected wells 48
14 Table 58. Number of registered wells potentially impacted near mine water supply pumping..... 49
15 Table 59. Modeled groundwater-level drawdown for selected public supply, municipal,
16 or government wells..... 49
17 Table 60. Modeled groundwater drawdown resulting from mine pit at end of active mining..... 57
18 Table 61. Modeled groundwater drawdown resulting from mine pit 20 years after mine closure 58
19 Table 62. Modeled groundwater drawdown resulting from mine pit 50 years after mine closure 59
20 Table 63. Modeled groundwater drawdown resulting from mine pit 150 years after mine closure 59
21 Table 64. Modeled groundwater drawdown resulting from mine pit 1,000 years after mine closure .. 60
22 Table 65. Predicted time to first modeled impacts (years after start of active mining),
23 including range of sensitivity analysis 61
24 Table 66. Number of registered wells potentially impacted near mine pit 64
25 Table 67. Comparison of equilibrium loss of water availability by pit lake..... 65
26 Table 68. Summary of effects 8
27 Table 69. Summary of the Federal, State, and local regulatory requirements
28 applicable to the project with respect to groundwater quality 9
29 Table 70. Number of geochemical tests conducted on Rosemont Copper waste rock samples 13
30 Table 71. Expected water quality from tailings facility 18
31 Table 72. Expected water quality from waste rock seepage 19
32 Table 73. Expected water quality from heap leach seepage 20
33 Table 74. Water balance of the mine pit lake 200 years after mine closure..... 25
34 Table 75. Results of geochemical modeling for mine pit lake at 200 years 26
35 Table 76. Summary of effects 6
36 Table 77. Summary of the Federal, State, and local regulatory requirements
37 applicable to the project with respect to surface water resources 7
38 Table 78. Summary of past wildfires larger than 10 acres..... 10
39 Table 79. Summary of primary watersheds within the project area 11
40 Table 80. Annual peak flows in Barrel Canyon at SR 83 bridge, 1962 to 1976..... 14
41 Table 81. Annual mean stream flows in Cienega Creek below the confluence with
42 Davidson Canyon, 1994 to 2010..... 15
43 Table 82. Surface water flow at Cienega Creek near Sonoita, Arizona..... 16
44 Table 83. Surface water flow at Cienega Creek near Pantano, Arizona 17
45 Table 84. Surface water flow at Pantano Wash near Vail, Arizona..... 18
46 Table 85. Surface water flow at Davidson Canyon Wash near Vail, Arizona..... 20
47 Table 86. Summary of onsite surface water rights associated with the project area..... 21
48 Table 87. Summary of offsite surface water rights within the area of groundwater drawdown 22
49 Table 88. Summary of stock tanks associated with the project area..... 23

Contents

1 Table 89. Direct impacts to stock tanks by alternative28

2 Table 90. Impacts to postclosure surface runoff by alternative30

3 Table 91. Indirect impacts to downstream stock tanks32

4 Table 92. Summary of expected changes to postclosure stormwater flow under the proposed action.33

5 Table 93. Summary of expected changes to postclosure stormwater flow

6 under Phased Tailings Alternative.....34

7 Table 94. Summary of expected changes to postclosure stormwater flow under Barrel Alternative ...35

8 Table 95. Summary of expected changes to postclosure stormwater flow under Barrel Trail

9 Alternative36

10 Table 96. Summary of expected changes to postclosure stormwater flow

11 under Scholefield-McCleary Alternative36

12 Table 97. Summary of effects4

13 Table 98. Summary of the Federal, State, and local regulatory requirements

14 applicable to the project with respect to surface water resources5

15 Table 99. Summary of preliminary jurisdictional waters delineation within

16 project area and utility corridor.....8

17 Table 100. Summary of Davidson Canyon existing water quality11

18 Table 101. Summary of Lower Cienega Creek existing water quality13

19 Table 102. Results of baseline surface water quality samples in Barrel Canyon15

20 Table 103. Summary of impacts under each action alternative on potential WUS and the

21 presence/absence of special aquatic sites.....19

22 Table 104. Summary of postmine average annual sediment delivery to the

23 USGS gaging station for each alternative22

24 Table 105. Water quality (in mg/L) for selected waste rock type and applicable designated uses

25 (based on Barrel Canyon)28

26 Table 106. Stream reaches of concern6

27 Table 107. Relationships between selected riparian vegetative characteristics and

28 selected hydrologic characteristics based on San Pedro study.....12

29 Table 108. Summary of effects17

30 Table 109. Seeps, springs, and other water features within the analysis area.....23

31 Table 110. Riparian affected environment.....29

32 Table 111. Potential to affect Outstanding Arizona Water in Davidson Canyon and

33 Lower Cienega Creek42

34 Table 112. Summary of predicted water quality for waste rock runoff and existing

35 water quality in Barrel Canyon, Davidson Canyon, and Cienega Creek43

36 Table 113. Potential to affect Outstanding Arizona Water in Upper Cienega Creek45

37 Table 114. Estimated impacts to springs and seeps as a result of proposed action.....46

38 Table 115. Summary of special status plant and animal species that are known to

39 occur in the project or analysis areas and are analyzed in this EIS.....10

40 Table 116. Summary of effects13

41 Table 117. Vegetation type by landowner (acres) within analysis area24

42 Table 118. Information regarding intermountain animal movement corridors in and

43 near the analysis area31

44 Table 119. Anticipated impacts to biophysical features resulting from each action alternative

45 and connected actions85

46 Table 120. Anticipated impacts to seeps, springs, and stock tanks resulting from each action

47 alternative and connected actions88

48 Table 121. Range of direct impacts to vegetation type by landownership (acres lost or altered)

49 from all action alternatives and connected actions90

1 Table 122. Direct impacts to vegetation type (acres lost or altered) resulting from each action
2 alternative and connected actions91
3 Table 123. Potential direct impacts (acres lost or altered) to special status plant and animal species’
4 habitat resulting from each action alternative and connected actions in the project area97
5 Table 124. Direct impacts (acres and percent lost) to jaguar proposed critical habitat
6 (by unit or subunit) resulting from each action alternative and connected actions..... 114
7 Table 125. Direct impacts (acres and percent of total lost or modified) to the Santa Rita Mountains
8 Important Bird Area resulting from each action alternative and connected actions 118
9 Table 126. Direct impacts (acres and percent of total lost or modified) to Pima County’s Conservation
10 Lands System lands associated with the “Sonoran Desert Conservation Plan” resulting from
11 each action alternative and connected actions 119
12 Table 127. Direct impacts (lost or modified) by the proposed action to animal movement
13 corridors within the analysis area..... 120
14 Table 128. Direct impacts (lost or modified) by the Phased Tailings Alternative to animal
15 movement corridors within the analysis area..... 122
16 Table 129. Direct impacts (lost or modified) by the Barrel Alternative to animal movement
17 corridors within the analysis area..... 125
18 Table 130. Direct impacts (lost or modified) by the Barrel Trail Alternative to animal
19 movement corridors within the analysis area..... 127
20 Table 131. Direct impacts (lost or modified) by the Scholefield-McCleary Alternative to
21 animal movement corridors within the analysis area..... 129
22 Table 132. Summary of effects5
23 Table 133. Summary of current grazing activities within project area7
24 Table 134. Rangeland conditions from the 1950s through 20108
25 Table 135. Potential loss of grazing during premining and active mining phases
26 under proposed action 10
27 Table 136. Stock ponds and springs lost under proposed action 10
28 Table 137. Potential loss of grazing during premining and active mining phases
29 under Phased Tailings Alternative..... 14
30 Table 138. Potential loss of grazing during premining and active mining phases
31 under Barrel Alternative..... 14
32 Table 139. Additional stock ponds lost under Barrel Alternative 15
33 Table 140. Potential loss of grazing during premining and active mining phases
34 under Barrel Trail Alternative 15
35 Table 141. Potential loss of grazing during premining and active mining phases
36 under Scholefield-McCleary Alternative 16
37 Table 142. Additional springs lost under Scholefield-McCleary Alternative 16
38 Table 143. Summary of effects5
39 Table 144. Comparison of light source locations and outputs 10
40 Table 145. Comparison of light sources of towns and cities in southern Arizona..... 10
41 Table 146. Comparison of Scenery Management System and Visual Management System objectives.4
42 Table 147. Magnitude and degrees of effects 13
43 Table 148. Summary of effects 13
44 Table 149. Sensitive viewsheds 24
45 Table 150. Santa Rita Ecosystem Management Area and regional visibility impacts by alternative ...55
46 Table 151. Visibility impacts to SR 83 and Box Canyon Road, by alternative 55
47 Table 152. Summary of effects2
48 Table 153. Recreation Opportunity Spectrum classifications within the Santa Rita Ecosystem
49 Management Unit.....9

Contents

1 Table 154. Semiprimitive motorized setting indicators*22

2 Table 155. Summary of effects4

3 Table 156. Permits, laws, and regulatory codes related to facilities that produce, transport,

4 store, or dispose of toxic or hazardous materials in Arizona6

5 Table 157. Summary of potentially hazardous materials and their anticipated quantities.....10

6 Table 158. List of analytical reagents13

7 Table 159. Estimated frequency of shipments of hazardous materials to the project area16

8 Table 160. Potential environmental hazards and potential receptors.....26

9 Table 161. Summary of effects3

10 Table 162. Permits, laws, and regulatory codes related to fuels and fire management in Arizona.....4

11 Table 163. Human related activities affecting fuel load or fire risk9

12 Table 164. Summary of effects6

13 Table 165. SR 83 annual average daily traffic volume, 2006 to 201114

14 Table 166. Study segments15

15 Table 167. Level of service criteria17

16 Table 168. Existing level of service – roadway segments18

17 Table 169. Weekday mine related traffic21

18 Table 170. Weekend mine related traffic22

19 Table 171. Copper concentrate and copper cathode truck trips25

20 Table 172. 2012 level of service – roadway segments26

21 Table 173. MPO, Phased Tailings, Barrel Trail, and Scholefield-McCleary Alternatives

22 traffic volume – active mining phase year 130

23 Table 174. Barrel Alternative traffic volume – active mining phase year 131

24 Table 175. Decommissioned roads by action alternative31

25 Table 176. Typical dBA levels4

26 Table 177. Site acceptability standards7

27 Table 178. Peak overpressure (airblast) levels8

28 Table 179. Maximum peak particle velocity8

29 Table 180. Federal Highway Administration Noise Abatement Criteria9

30 Table 181. Occupational Safety and Health Administration permissible noise exposures10

31 Table 182. Summary of effects12

32 Table 183. Summary of noise levels at project area monitoring sites (dBA)17

33 Table 184. Summary of noise levels at active copper mine (in dBA)21

34 Table 185. Noise impacts expected to occur during premining phase.....24

35 Table 186. Noise impacts expected to occur during final reclamation and closure phase.....25

36 Table 187. Impacts from airborne and ground vibrations.....26

37 Table 188. Noise impacts expected to occur during operational phase under proposed action.....27

38 Table 189. Noise impacts expected to occur during operational phase under Barrel Alternative28

39 Table 190. Noise impacts expected to occur during operational phase under

40 Barrel Trail Alternative28

41 Table 191. Noise impacts expected to occur during operational phase under

42 Scholefield-McCleary Alternative29

43 Table 192. Summary of effects4

44 Table 193. Baseline traffic counts for SR 8311

45 Table 194. Traffic volume – premining phase year 114

46 Table 195. Proposed action, Phased Tailings, Barrel Trail, and Scholefield Alternatives –

47 traffic volume active mining phase year 115

48 Table 196. Barrel Alternative – traffic volume active mining phase year 115

49 Table 197. Estimated frequency of shipments of hazardous materials*19

1 Table 198. Summary of effects 8
2 Table 199. Chronology of the Rosemont area 14
3 Table 200. Archaeological investigations conducted for the Rosemont Copper Mine survey 17
4 Table 201. Direct impacts to historic properties 23
5 Table 202. Indirect impacts to historic properties..... 25
6 Table 203. Direct and indirect impacts to human remains 26
7 Table 204. Resource collection areas excluded by alternative 30
8 Table 205. Summary of effects 7
9 Table 206. Comparative historical and projected populations for the analysis area
10 and the United States 13
11 Table 207. Selected age, household, and housing characteristics, 2010..... 14
12 Table 208. Number of owner-occupied housing units and median property values
13 for the analysis area 16
14 Table 209. Summary of property values within 10 miles of the project area 16
15 Table 210. Labor force summary, 2000 and 2011 17
16 Table 211. Major employers by county, 2008..... 18
17 Table 212. Employment by industry, 2001 and 2010 20
18 Table 213. Current role of the Coronado National Forest’s recreation related contributions
19 to the area economy (employment and labor income) 22
20 Table 214. Personal and household income characteristics, 2010..... 23
21 Table 215. Industry output in 2008 for Pima County—top 20 industries in county 24
22 Table 216. Industry output in 2008 for Santa Cruz County—top 20 industries in county 25
23 Table 217. Industry output in 2008 for Cochise County—top 20 industries in county 26
24 Table 218. Primary and secondary property tax levies in 2011 28
25 Table 219. Transaction privilege and severance tax distribution to counties 29
26 Table 220. Shannon-Weaver Diversity Index for each county in the analysis area..... 30
27 Table 221. Off-highway vehicle expenditures in the analysis area and in Arizona, 2002 31
28 Table 222. Hunting and fishing expenditures in the analysis area and in Arizona, 2001 32
29 Table 223. National tourism impact ratios..... 32
30 Table 224. Tourism related sectors for three-county area: Industry output using
31 Minnesota IMPLAN Group and adjusted using tourism impact ratios..... 33
32 Table 225. Nature-based travel 34
33 Table 226. Estimated annual economic impact of the Whipple Observatory in
34 Arizona (dollars in millions) 36
35 Table 227. ADOT programmed funding for SR 83 improvements, 2001 to 2010 37
36 Table 228. Minority populations in the analysis area, 2010 41
37 Table 229. Poverty and low income statistics for the analysis area, 2010..... 43
38 Table 230. Projected impact on property values within 5 miles of proposed mine 53
39 Table 231. Projected effects on annual property tax revenues within 5 miles of proposed mine 55
40 Table 232. Annual direct impacts to tourism in the Patagonia Census County Division 57
41 Table 233. Direct impacts to nature-based tourism, greater Tucson area 59
42 Table 234. Secondary effects of reduction in nature-based tourism, greater Tucson area..... 60
43 Table 235. Potential impacts to net migration in Santa Cruz County by alternative 66
44 Table 236. Projected population increase, 2010 to 2035 67
45 Table 237. Induced effects of changes in net migration in Santa Cruz County 68
46 Table 238. Potential environmental justice impacts common to all action alternatives 69
47
48