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Transmittal Letter

To: Kathy Arnold	From: David Krizek
Company: Rosemont Copper Company	Date: March 9, 2010
Re: Alternatives Analysis – Preliminary Stormwater Control and Reclamation Sequencing Summary	Project #: 114-320871-3.1
CC: Marcie Bidwell (SWCA)	Doc. #: 070/10-320871-3.1

Please Find Enclosed:

1	<i>copy of</i>	Alternatives Analysis – Preliminary Stormwater Control and Reclamation Sequencing Summary in Microsoft Word Format
1	<i>copy of</i>	Alternatives Analysis – Preliminary Stormwater Control and Reclamation Sequencing Summary in Adobe Acrobat Format

Comments:

This information is preliminary and provided for use in alternative visual analysis associated with the Rosemont Copper Project.

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Barrel and McCleary Alternative Stormwater Control and Reclamation Sequencing

Stormwater Control

For the Barrel and McCleary Alternative, it was assumed that the following stormwater controls would be applied:

- Stormwater drainage channels would be placed at every 100 feet of vertical rise (on approximate 50 foot wide drainage benches) on the outer slopes of the Dry Stack Tailings Facility. Stormwater would flow off these benches to stilling pools/drop-structures, located on the outer slopes of the tailings area, to natural ground, or to stormwater control basins located on wide benches in the Waste Rock Storage Area. Drop-structures located on the west side of the Dry Stack Tailings Facility would drain to the USGS Gauging Station located near SR 83.
- Drop-structures would be located on the north and west sides of the landform that comprises the Barrel and McCleary Alternative. These drop-structures would convey runoff to flow-through drains. The flow-through drains are large rock drains intended to provide a hydraulic connection between the up-gradient side of the landform and the down-gradient side.
- Stormwater control basins would be constructed on wide benches in the Waste Rock Storage Area to contain up to the 500-year, 24-hour storm event. Stormwater generated from flows in excess of the 500-year, 24-hour storm event would be routed to containment areas located between the toe of the Waste Rock Storage Area and adjacent natural ridge areas. These areas would generally be sized to contain the Probable Maximum Precipitation (PMP) event. Stormwater routing to these perimeter containment areas would be via rocked slopes connecting the benches to the perimeter areas.
- Decant structures would be installed on top of the North Dry Stack Tailings Facility to pass stormwater to stilling pools/drop-structures for flows in excess of the 500-year, 24-hour storm event. Storm flows less than this event would be retained on top of the facility in large, depressed areas.
- Storm flows in excess of the 500-year, 24-hour storm event generated on top of the South Dry Stack Tailings would be routed to a flow-through drain located on the west side of the landform comprising the Barrel and McCleary Alternative.
- The majority of the AMEC Earth & Environmental, Inc. (AMEC) Diversion Channel, located to the north and west of the Open Pit, discharges stormwater to flow-through drains located on the west and north sides of the landform.
- The Pit Diversion, located to the south of the Open Pit, is expected to discharge to an area located between the toe of the Waste Rock Storage Area and an adjacent natural ridge and will not drain to the USGS Gauging Station.

Drainage benches (about 50 feet wide) would also be placed on a small portion of the Waste Rock Storage Area adjacent to the closed and encapsulated Heap Leach Facility. These drainage benches would be similar to those planned for the outer surface of the Dry Stack Tailings Facility. Runoff from these benches would be to the up-gradient side (west side) of the landform.

Stormwater control basins located in the Waste Rock Storage Area would not be located above the closed and encapsulated Heap Leach Facility.

Reclamation Sequencing – Year 10

Concurrent reclamation of the east slope of the South Dry Stack Tailings Facility is anticipated to occur. Reclamation of the north face of the South Dry Stack Tailing Facility is not anticipated to occur since this is an interim face and will eventually be covered by the North Dry Stack Tailings Facility. Haul road(s) will likely be on this face until covered by the north dry stack. A haul road will also be located on the west side of the South Dry Stack Tailings Facility, allowing for only partial concurrent reclamation of this side, as practical.

Concurrent reclamation of the eastern most face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the east slope of the South Dry Stack Tailings Facility slope along with the east slope of the North Dry Stack Tailings Facility is anticipated to occur. A haul road is anticipated on the north face of the North Dry Stack Tailings Facility, allowing for only partial concurrent reclamation to occur, as practical. This haul road will also be on the east side of the South and North Dry Stack Tailings Facilities, again allowing for only partial concurrent reclamation to occur, as practical.

Concurrent reclamation of the eastern most face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Areas not reclaimed during operations will be reclaimed at closure. A haul road(s) will likely be left on the west face of the North and South Dry Stack Tailings Facilities and on the north face of the North Dry Stack Tailings Facility.

Barrel Only Alternative Stormwater Control and Reclamation Sequencing

Stormwater Control

For the Barrel Only Alternative, it was assumed that the following stormwater controls would be applied:

- Stormwater drainage channels would be placed at every 100 feet of vertical rise (on approximate 50 foot wide drainage benches) on the outer slopes of the Dry Stack Tailings Facility. Stormwater would flow off these benches to stilling pools/drop-structures, located on the outer slopes of the tailings area, to natural ground, or to rock slopes adjacent to the Waste Rock Storage Area. Drop-structures located on the west side of the Dry Stack Tailings Facility would drain to the USGS Gauging Station near SR 83. Drop-structures would also be located on the west side of the landform that comprises the Barrel Only Alternative. These drop-structures would convey flows to flow-through drains. The flow-through drains are large rock drains intended to provide a hydraulic connection between the up-gradient side of the landform and the down-gradient side.
- Stormwater control basins would be constructed on wide benches in the Waste Rock Storage Area to contain up to the 500-year, 24-hour storm event. Stormwater generated from flows in excess of the 500-year, 24-hour storm event would generally be routed to containment areas located between the toe of the Waste Rock Storage Area and adjacent natural ridge areas. These areas would generally be sized to contain the Probable Maximum Precipitation (PMP) event. Stormwater routing to these perimeter containment areas would be via rocked slopes connecting the benches to the perimeter areas.
- Decant structures would be installed on top of the Dry Stack Tailings Facility to pass stormwater to stilling pools/drop-structures for flows in excess of the 500-year, 24-hour storm event. Storm flows less than this event would be retained on top of the facility in large, depressed areas.
- Construction of a portion of the AMEC Earth & Environment, Inc. (AMEC) diversion channel is assumed. This diversion channel routes stormwater runoff around the Plant Site area to McCleary Canyon Wash drainage, which eventually drains to the USGS Gauging Station location.
- The Pit Diversion, located to the south of the Open Pit, is expected to discharge to an area located between the toe of the Waste Rock Storage Area and an adjacent natural ridge and will not drain to the USGS Gauging Station.

Drainage benches (about 50 feet wide) would also be required on a small portion of the Waste Rock Storage Area adjacent to the closed and encapsulated Heap Leach Facility. These drainage benches would be similar to those planned for the outer surface of the Dry Stack Tailings Facility. Runoff from these benches would be to the up-gradient side (west side) of the landform.

Stormwater control basins located in the Waste Rock Storage Area would not be located above the closed and encapsulated Heap Leach Facility.

Reclamation Sequencing – Year 10

Concurrent reclamation of the east slope of the Dry Stack Tailings Facility is anticipated to occur. A haul road is anticipated on the north face of the Dry Stack Tailings facility, allowing for only partial concurrent reclamation to occur, as practical. This haul road will also be on the east side of the Dry Stack Tailings Facility, again allowing for only partial concurrent reclamation to occur, as practical.

Concurrent reclamation of the eastern most face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the east slope of the Dry Stack Tailings Facility is anticipated to occur. A haul road is anticipated on the north face of the Dry Stack Tailings facility, allowing for only partial concurrent reclamation to occur, as practical. This haul road will also be on the east side of the Dry Stack Tailings Facility, again allowing for only partial concurrent reclamation to occur, as practical.

Concurrent reclamation of the eastern most face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Areas not reclaimed during operations will be reclaimed at closure. A haul road will likely be left on the west and north faces of the Dry Stack Tailings Facility.

Mine Plan of Operations (MPO) Stormwater Control and Reclamation Sequencing

Stormwater Control

Design work associated with the Rosemont Project has been ongoing since submittal of the Reclamation and Closure Plan (Tetra Tech, 2007). Based on this updated design work, the stormwater controls described below were applied to the 2007 MPO Landform for this alternatives assessment:

- Stormwater drainage channels (on approximate 50 foot wide drainage benches) would be placed at every 100-foot vertical rise on the outer slopes of the Dry Stack Tailings Facility. Stormwater would flow off these benches to stilling pools/drop-structures located on the outer slopes of the tailings area, to natural ground, or to stormwater-control basins located on wide benches in the Waste Rock Storage Area;
- Drop-structures located on the west side of the Dry Stack Tailings Facility would drain to the USGS Gauging Station location located near SR 83. Drop-structures would also be located on the north and west sides of the 2007 MPO Landform. Flows emanating from these drop-structures would drain to a Central Drain or to stormwater ponding areas located between the toe of the North Dry Stack Tailings Facility and adjacent, natural ridge areas;
- The Central Drain, or flow-through drain, is a large rock drain intended to provide a hydraulic connection between the up-gradient side of the 2007 MPO Landform and the down-gradient side;
- An Infiltration Drain was incorporated into the 2007 MPO Landform that is hydraulically connected to the Central Drain. For the purposes of this stormwater alternatives assessment, the Infiltration Drain is assumed to pass storm events larger than the 500-year, 24-hour storm event off the top surface while smaller events are retained on the top surface in large, depressed areas;
- Stormwater control basins would be constructed on wide benches in the Waste Rock Storage Area to contain up to the 500-year, 24-hour storm event. Stormwater generated from flows in excess of the 500-year, 24-hour storm event would be routed to containment areas located between the toe of the Waste Rock Storage Area and adjacent, natural ridge areas. These areas would generally be sized to contain the Probable Maximum Precipitation (PMP) event. Stormwater routing to these perimeter containment areas would be via rocked slopes connecting the benches to the perimeter areas.

Reclamation Sequencing – Year 10

Concurrent reclamation of the east and north slopes of the North Dry Stack Tailings Facility is anticipated to occur along with the east buttress associated with the South Dry Stack Tailings Facility. A haul road is anticipated on the west side of the North Dry Stack Tailings, allowing for only partial concurrent reclamation, as practical.

Concurrent reclamation of the east face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the east, north, and west slopes of the North Dry Stack Tailings Facility is assumed completed by the end of Year 10.

Concurrent reclamation of the east face of the South Dry Stack Tailings Facility is anticipated between Year 10 and the Ultimate Year. A haul road is anticipated on the west side of the South Dry Stack Tailings, allowing for only partial concurrent reclamation, as practical.

Concurrent reclamation of the east face of the Waste Rock Storage Area is anticipated along with south/southeast/southwest facing slopes.

Areas not reclaimed during operations will be reclaimed at closure. A haul road(s) will likely be left on the west face of the North and South Dry Stack Tailings Facilities.

Scholefield Tailings and McCleary Waste Alternative Stormwater Control and Reclamation Sequencing

Stormwater Control

For the Scholefield Tailings and McCleary Waste Alternative, it was assumed that the following stormwater controls would be applied:

- Stormwater drainage benches (on approximate 50 foot wide drainage benches) would be placed at every 100 feet of vertical rise on the outer slopes of the Dry Stack Tailings Facility. Stormwater would flow off these benches to stilling pools/drop-structures, located on the outer slopes of the tailings area, to natural ground, or to drainage benches located on the face of the Waste Rock Storage Area. Stormwater flow from these drainage benches would drain to the USGS Gauging Station located near SR 83.
- Stormwater drainage benches would be placed at every 100 feet of vertical rise on the outer slopes of the Waste Rock Storage Area, also on 50 foot wide benches. Stormwater would flow off these benches to stilling pools/drop-structures on the outer slopes of the Waste Rock Storage Area, or to natural ground. Stormwater flow from these drainage benches would drain to the USGS Gauging Station. Due to the configuration of the Waste Rock Storage Area, contouring and the creation of wide benches to pond stormwater runoff may not be achievable under this alternative
- Decant structures would be installed on top of the Dry Stack Tailings Facility to pass stormwater to stilling pools/drop-structures, or to natural ground, for flows in excess of the 500-year, 24-hour storm event. Storm flows less than this event would be retained on top of the Dry Stack Tailings Facility in large, depressed areas.
- Decant structures would be installed on top of the Waste Rock Storage Area to pass stormwater to stilling pools/drop-structures, or to natural ground, for flows in excess of the 500-year, 24-hour storm event. Storm flows less than this event would be retained on top of the Waste Rock Storage Area in large, depressed areas.
- Stormwater flows off the west face of the Waste Rock Storage Area would likely be conveyed to a flow-through drain. The flow-through drain is a large rock drain intended to provide a hydraulic connection between the up-gradient side of the Waste Rock Storage Area and the down-gradient side.
- Construction of a portion of the AMEC Earth & Environment, Inc. (AMEC) diversion channel is assumed. This diversion channel would be revised to route stormwater runoff around the Plant Site and draining into Barrel Canyon and to the USGS Gauging Station.
- The Pit Diversion, located to the south of the Open Pit, is expected to discharge to the upper reach of the Barrel Canyon Basin, eventually draining to the USGS Gauging Station.

Additional waste rock will likely be placed over the Heap Leach Facility to achieve closure. The Scholefield Tailings and McCleary Waste Alternative currently does not show a waste rock cap over the heap. Waste rock would be placed to achieve a minimum cover thickness over the heap surface and to achieve 3H:1V reclamation side slopes. Capping the heap with waste rock is not expected to reduce storm flows to the USGS Gauging Station.

As indicated above, creating wide areas and contouring of the benches of the Waste Rock Storage Area is likely not possible. Additionally, haul road access to the Dry Stack Tailings Facility, and to the Waste Rock Storage Facility, would likely be on the south face of the Waste Rock Storage Area. Concurrent reclamation of these access road areas may not be achievable until area-wide closure and reclamation.

Reclamation Sequencing – Year 10

Concurrent reclamation of the east slope of the Dry Stack Tailings is anticipated to occur. Access to the tailings face will come from the south (from the Waste Rock Storage Area) and will move up the face as buttress construction advances.

Haul road access may be required on a portion of the south face of the Waste Rock Storage Facility, allowing for only partial concurrent reclamation, as practical. Concurrent reclamation of the west face of the Waste Rock Storage Area is anticipated.

The Heap Leach Pad is free standing and is expected to be closed after Y10.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the east slope of the Dry Stack Tailings is anticipated to occur. Access to the tailings face will come from the south (from the Waste Rock Storage Area) and will move up the face as buttress construction advances. Concurrent reclamation of the northwest face of the Dry Stack Tailings Facility is also anticipated to occur as the buttress advances upward.

Haul road access may be required on a portion of the south face of the Waste Rock Storage Facility, allowing for only partial concurrent reclamation, as practical. Concurrent reclamation of the west face of the Waste Rock Storage Area is anticipated.

Areas not reclaimed during operations will be reclaimed at closure. A haul road will likely be left on the south face of the Waste Rock Storage Area.

Capping of the closed heap is not shown but is likely to occur.

Sycamore Tailings and Barrel Waste Alternative - East Side – Waste Rock Storage Area – Stormwater Control and Reclamation Sequencing

Stormwater Control

Figure 2 shows the estimated eastern boundary of the post-mining contributing watershed area associated with the Sycamore Tailings and Barrel Waste Alternative. For this alternative, it was assumed that the following stormwater controls would be applied:

- Stormwater drainage channels would be placed at every 100 feet of vertical rise on the outer slopes of the Waste Rock Storage Area. Stormwater would flow off these benches to stilling pools/drop-structures located on the outer slopes. Drop-structures located on the northern half and a portion of the western half of the Waste Rock Storage Area would convey flows to the USGS Gauging Station location. Drop-structures would also be placed on the southern half of the Waste Rock Storage Area.
- Stormwater runoff generated from the southern face would be routed to containment areas located between the toe of the Waste Rock Storage Area and adjacent natural ridge areas. These areas would generally be sized to contain the Probable Maximum Flood (PMF) event. Due to the configuration of the Waste Rock Storage Area, contouring and the creation of wide benches to pond stormwater runoff may not be achievable under this alternative.
- Stormwater runoff generated from the top surface of the Waste Rock Storage Area would be routed to stormwater control basins located on the southern edge of the facility. Decant structures would then pass overflow to stilling pools/drop-structures located on the south face. Stormwater control basins would not be located above the closed and encapsulated Heap Leach Facility.
- Construction of a portion of the AMEC Earth & Environment, Inc. (AMEC) diversion channel is assumed. This diversion routes stormwater runoff around the Plant Site area to McCleary Canyon Wash drainage, which eventually drains to the USGS Gauging Station.
- The Pit Diversion, located to the south of the Open Pit, is expected to discharge to an area located between the toe of the Waste Rock Storage Area and an adjacent natural ridge and will not drain to the USGS Gauging Station.

There are no flow-through drains associated with the Waste Rock Storage Area under the final closure configuration.

Reclamation Sequencing – Year 10

Concurrent reclamation of the south and southeast faces of the Waste Rock Storage Area is anticipated. Concurrent reclamation of the north side of the Waste Rock Storage Area is not anticipated due to operation of the Heap Leach Facility. A haul road may be required on the southwest face of the Waste rock Storage Area, allowing for only partial concurrent reclamation, as practical.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the south and southeast faces of the Waste Rock Storage Area is anticipated. Concurrent reclamation of the north side of the Waste Rock Storage Area will begin once the Heap Leach Facility is closed in Year 10. A haul road may be required on the southwest face of the Waste Rock Storage Area, allowing for only partial concurrent reclamation, as practical.

Sycamore Tailings and Barrel Waste Alternative – West Side – Sycamore Tailings – Stormwater Control and Reclamation Sequencing

Stormwater Control

For Sycamore Tailings, it was assumed that the following stormwater controls would be applied:

- Stormwater drainage channels would be placed at every 100 feet of vertical rise on the outer slopes of the Dry Stack Tailings Facility. Stormwater would flow off these benches to natural ground and drain to the Stormwater Convergence Point.
- Storms up the 500 year, 24-hour storm event would be retained on top of the Dry Stack Tailings Facility in large, depressed areas. Storm runoff in excess of this event would be routed to side channels cut into natural ground.

There are no flow-through drains associated with Sycamore Tailings under the final closure configuration.

Reclamation Sequencing – Year 10

Concurrent reclamation of the west slope of the Dry Stack Tailings is anticipated to occur since access to the face will move up the face as buttress construction advances.

Reclamation Sequencing – Ultimate Year

Concurrent reclamation of the west slope of the Dry Stack Tailings is anticipated to occur since access to the face will move up the face as buttress construction advances.

Areas not reclaimed during operations will be reclaimed at closure.