Updated
Rico Soils Residual Risk Analysis
Rico
Colorado

Prepared for:
Atlantic Richfield Company
Butte, Montana

Prepared by:
ENVIRON International Corporation
Seattle, Washington

Date:
June 2011

Project Number:
3023914C

Contents

1 Introduction

This report provides an update to the Rico soils residual risk analysis originally presented in a report titled, "Rico Soils Residual Risk Analysis" (Integral 2010). This update reflects the outcome of recent discussions between representatives of USEPA Region 8 (EPA), the Colorado Department of Public Health and Environment (CDPHE), The Trust for Land Restoration, ENVIRON International Corporation (ENVIRON)[1], and the Atlantic Richfield Company (AR) regarding the purpose of the original analysis. Updates include clarifications of and additions to the analysis that are necessary to allow for improved decision making by risk managers regarding the presence of lead in soil on vacant lots within Rico prior to development. Updates to average weighted lead concentrations for the high-end examples presented in the original analysis are also provided. These updates reflect a change to the action level for street capping as well as changes to lot boundaries within the Van Winkle subdivision that occurred since the original analysis was prepared. To ensure continuity of the original and updated analysis, where appropriate, narrative from the original analysis by Integral (2010) is reproduced in this update.

[1] Technical contributors to the original analysis, Dr. Rosalind Schoof and Ms. Dina Johnson, are responsible for the updates on behalf of ENVIRON.

2 Purpose and Limitations of the Residual Risk Analysis

Consistent with the original analysis, the intent of this updated analysis is to determine whether the residual risk for residents living next to existing vacant lots within Rico is likely to exceed the risk-based residential action level for the site (1,100 mg/kg) assuming that reclamation decisions for those existing vacant lots are deferred until further development of each lot. The residual risk analysis is not intended as a standalone human health risk assessment, nor does it update/supersede conclusions presented in the "Lead Health Risk Assessment for Rico Townsite Soils" (Integral 2006) from which the risk-based residential action level for the site was selected. Rather, the analysis is solely intended to address community questions regarding whether it is acceptable to defer clean up of vacant lots exceeding the residential action level until the time the property is re-developed.

To address the intended purpose, the analysis presents a set of theoretical assumptions regarding the frequency of outdoor exposures by young children (6 years old and under) to surface soil on their own residential property and on other nearby properties. These assumptions are combined with site-specific soil lead data representative of current conditions, or anticipated conditions that will result from remediation activities planned within a one to two year timeframe, to calculate weighted-average concentrations for each occupied property evaluated in the analysis. The findings of the residual risk analysis must be considered in the context of the underlying assumptions on which they are based.

Calculated weighted-average concentrations reflect soil concentration data from the hypothetical child's residential property as well as soil from nearby streets, alleys, mine waste piles, vegetative right-of-ways, and other nearby occupied or vacant lots. As with the original analysis, a soil lead concentration of 1,100 mg/kg is used to interpret each weighted average concentration in the context of a risk-based residential action level approved for use at the site.

Also consistent with the original analysis, one of the high-end examples presented summarized in this updated analysis considers soil lead within an undeveloped Dolores River corridor lot as an input to the weighted-average concentration for one of the subject property examples evaluated. Although the Dolores River corridor is used recreationally by Rico residents, inclusion of a Dolores River corridor lot in this analysis is not intended to update/supersede recreational risk conclusions presented in the prior risk assessment by Integral (2006).

In the course of this analysis, the presence of some very high lead concentrations (i.e., "hot spots") has been identified in a few areas. The presence of these hot spots has been highlighted in the updated analysis to facilitate further consideration by risk managers for the site. However, recommendations for remedial actions based on the findings of this analysis are outside of the scope of this work.

3 Overview of Action Level Basis

As noted above, the weighted-average soil lead concentrations calculated for each of the high-end examples presented in the residual risk analysis are interpreted with regard to a soil lead concentration of 1,100 mg/kg. This value, 1,100 mg/kg, is the residential soil lead action level approved for use at the site. As detailed in the "Lead Health Risk Assessment for Rico Townsite Soils" (Integral 2006), this action level was derived using a child lead exposure model called the Integrated Exposure Uptake Biokinetic Model for Lead in Children or IEUBK model. The IEUBK model was used to estimate the probability that children (less than 7 years of age) will have blood lead levels exceeding the risk management action level of 10 µg/dL due to lead in Rico residential soils (Integral 2006).

The IEUBK model assumes the child's home and surrounding yard is the basic unit for risk analysis because lead exposure for pre-school children commonly occurs within this domain. The model is structured to integrate exposures that occur through air, water, food, soil, and dust to estimate the blood lead levels in children in realistic environmental settings. Indoor dust lead concentrations are assumed to derive from outdoor soil in the child's residential yard. Model simulations represent chronic exposure without consideration of daily or seasonal variability in consumption patterns and media concentrations (EPA 1994).

4 Approach

As stated above, the intent of this updated analysis is to determine whether the residual risk for residents living next to existing vacant lots within Rico is likely to exceed the risk-based residential action level for the site (1,100 mg/kg) assuming that reclamation decisions for those existing vacant lots are deferred until further development of each lot.

For this analysis, data for lead in surface soil and mining waste piles from occupied residential lots and immediately surrounding areas including unpaved streets or alleys, vacant lots, and vegetative ROWs were compiled and weighted-average concentrations for each subject property and associated off-property areas were calculated. The sum of these weighted-average concentrations (i.e., the final weighted-average concentration for each subject property) was then compared to the risk-based residential action level for the site, 1,100 mg/kg.

Young children, ages six and under, are the primary population to protect in selecting risk-based action levels for lead because young children are both the most sensitive to the effects of lead and the most likely to have substantial exposure to soil. Therefore, decision rules developed for assessing individual subject properties were developed with consideration of exposure assumptions associated with the young children age group.

The approach developed to support this determination was designed to be conservative and to ensure that residential properties located within the vicinity of vacant lots with the highest lead concentrations are considered. Similarly, for the one example that considers potential exposures contributed by soil within the Dolores River corridor, the area of the Dolores River corridor with the highest lead concentrations was considered. By focusing the analysis on these high-end examples for the site, low end examples are also addressed and it is not necessary to evaluate every individual residential property at the site. Throughout the remainder of this summary, the subset of properties selected to represent the high-end examples in this analysis are referred to as “subject properties” and the adjacent areas considered in the analysis are referred to as the “off-property areas.”

4.1 Identification of High-end Candidate Subject Property Examples

A total of 20 high-end subject property examples were selected for this analysis. Identification of these high-end examples was accomplished by sorting average lead concentration data for vacant lots from highest to lowest, and then reviewing the locations of these vacant lots (from highest to lowest) on maps to see whether occupied (i.e., developed) residential properties bordered them. In some cases, vacant lots with high lead concentrations were not located immediately adjacent to an occupied property and were, therefore, excluded from the high-end examples. If more than one occupied property bordered the same vacant property, preference was given to the candidate with the highest average lead concentration.

If the owner of the candidate property owner had previously refused AR’s offer for reclamation of soil above the action level, the next available candidate lot was identified. Exclusion of reclamation refusal properties as subject properties is consistent with the scope of the residual risk analysis, which focuses on occupied properties where soil lead is below the action level, but which are near other vacant lots where cleanup decisions will be deferred until development.

Because occupied lots where reclamation has been refused would have soil lead greater than the action level, such lots are not subject property candidates within the scope of the residual risk analysis, but were retained as part of the associated off-property areas when bordering a candidate subject property.

Using the process of sorting and visual inspection described above, several candidate properties were identified for further consideration from among those bordering vacant lots with the highest soil lead. For each of these candidate subject properties, off-property area data, including soil concentrations on adjacent lots, streets, alleys, and vegetative right-of-ways were compiled to estimate the final weighted-average concentrations for the candidate subject property. Of these, 19 examples that yielded the highest weighted-average concentrations were selected as the high-end examples in this analysis. One additional example was also selected that included a Dolores River corridor lot as an off-property area input to the weighted-average concentration at a nearby subject property.

In addition, in the course of this analysis, examples that considered exposures by child residents to non-adjacent vacant lots were also considered. However, the results yielded by these alternative examples were found to be within the range of results for the examples selected for this analysis. Although the analysis presents only 20 examples, these examples were culled from analysis and consideration of a larger set of properties and were identified based on the potential to yield the highest weighted-average concentrations. Thus, the 20 subject properties included in this analysis are considered appropriate for representing a high-end range of residual risk estimates for the given set of assumptions on which they are based.

4.2 Key Assumptions and Decision Rules

Key assumptions and decision rules that underlay the evaluation of each subject property and associated off-property area are detailed below.

4.2.1 Key Assumption #1

Access to vacant lots and other undeveloped land present within residential neighborhoods of Rico and along the Dolores River corridor is not restricted (i.e., Rico residents may visit or trespass on these lots). In the future, should development of vacant lots be proposed, the adoption of a comprehensive institutional controls program ensures that the landowner/developer proposes a cleanup plan tailored to his or her development that will protect residents and recreational visitors when these areas are used more actively.

4.2.2 Key Assumption #2

Consistent with the lead risk model on which the Rico residential soil lead action level is based, the residual risk analysis assumes that the primary exposure unit relevant to a very young child is their home and surrounding yard. Children are expected to spend the majority of their outdoor time playing in their own residential yards with considerably less time spent contacting soil immediately adjacent to their property boundaries. Thus, for this analysis, 80% of the hypothetical child's exposure is assumed to occur within his or her own residential yard (i.e., the subject property) and 20% will be assumed to occur on bordering or nearby properties, such as unpaved streets, alleys, vacant lots, and vegetative ROWs (i.e., the associated off-property areas). For comparative purposes, results are also presented assuming an equal proportion of

time (i.e., 50/50) both on the subject property and on associated off-property areas. The 50/50 basis is considered less representative of likely exposures to very young children evaluated in this analysis and should be regarded as highly conservative.[2]

4.2.3 Key Assumption #3

Potential exposures by very young children to areas along the Dolores River corridor that are visited for recreational purposes (e.g., walking or fishing) are expected to occur with less frequency than contact with soils on or near the child's residential property. Further, the nature of soil contacts for a child playing on or near their residence is likely to be more intensive than that represented by intermittent recreational visits to the Dolores River corridor.

4.2.4 Decision Rules for Residential Subject Property Estimates

Two decision rules were applied to derive residential subject property estimates.

First, for exposure to a young child residing at a subject property, all available lead concentration results reported for that property were used to calculate the weighted-average concentration for that property. For residential properties where reclamation has been completed, concentrations of lead in topsoil replacements at the property were used in place of excavated concentrations. Topsoil concentrations varied by property and were applied on a property-specific basis only when topsoil replacements had been previously documented. Topsoil replacements were applied to reclaimed subject properties as well as to reclaimed lots that were considered as part of the off-property areas for a given subject property. For example, at Lot 133, pre-reclamation composite results were reported as: 408 mg/kg, 3,650 mg/kg, 3,840 mg/kg, 851 mg/kg, and 661 mg/kg. During reclamation, soils associated with the two highest results were replaced with topsoil containing 15 mg/kg lead. Therefore, the weighted-average lead concentration for Lot 133 was calculated as: (408+15+15 +851+661) / 5 = 390 mg/kg.

Second, weighted-average lead concentrations for the young child's subject property were multiplied by 0.8 (and by 0.5 for the 50/50 basis) corresponding to Key Assumption #2 above.

4.2.5 Decision Rules for Associated Off-Property Area Estimates

Four decision rules were applied to derive residential subject property estimates.

First, for each subject property evaluated, immediately adjacent residential lots (whether occupied or vacant) were included in the weighted-average soil concentration calculation for the

[2] Literature reported values for the percentage of time a young child spends in outdoor play within and outside of the home property were researched, but found to be limited. Values were reported in one study (Ko et al. 2007) that was designed to assess the relationship between video-observed oral behaviors during outdoor play in an urban environment to children's blood lead levels. In that study, investigators reported that approximately 84% of the total play time among all children in the study was spent in their own yards, with 11% spent on the easement, and 6% spent at neighboring properties. The time assumptions incorporated within the Rico residual risk estimates are consistent with these reported values and more conservative.

subject property's associated off-property area. For all but one example, only lots immediately adjacent to the subject property (i.e., not separated by streets or alleys), were considered in order to limit subjective decision-making with regard to which nearby, but non-bordering areas to include in the analysis for associated off-property areas. The same topsoil replacement rules described for subject property weighted-average calculations were also applied for lots included as part of the associated off-property area.

As stated previously, in all but one example, only lots immediately adjacent to the subject property were considered in the off-property area estimates. The one exception to this rule was applied for the lot 330 example which is located near to, but not immediately bordering Lot 469. Lot 469 is a large vacant lot that includes a large portion of the Dolores River corridor. Lot 469 was included in the off-property area estimate for Lot 330 to provide a measure of residual risk posed to a very young child whose home range area might expand into the river corridor open space. Lot 469 soil samples were above the residential action level for lead (i.e., greater than 1100 mg/kg) in 7 of 10 samples collected from this property. The lead concentrations measured at Lot 469 ranged from 356 to 30,100 mg/kg with an average of 6,357 mg/kg.

Second, for streets, alleys, and vegetative right-of-ways immediately adjacent to the child's subject property, lead concentration results available at locations nearest to the perimeter of the subject property boundary were also compiled. Available lead concentrations on unpaved street and alley locations may represent soil samples from streets, alleys, or mine waste samples. Consistent with ongoing discussions between AR and the town of Rico regarding Rico's streets, it is assumed that within the near future (1-2 years) soil caps will be placed on all unpaved streets and in use alleys with lead concentrations greater than 1,100 mg/kg. At these locations, borrow material from off-site will have less than 100 mg/kg lead, and will be used to cap the streets. Therefore, soil lead concentrations reported for street, alley, or mine waste samples that exceed 1,100 mg/kg were replaced with 100 mg/kg prior to estimating residual risk concentrations.

Third, weighted-average concentrations of the associated off-property area inputs were calculated without distinction between the type of result included (i.e., off-property averages may include street, alley, and/or adjacent lot concentrations). Weighting was based on the total number of off-property inputs associated with the subject property (e.g., a subject property with one street result, one alley result, and two adjacent lot results would be weight-averaged based on four inputs for the associated off-property area calculation).

Fourth, weighted-average lead concentrations for the young child's associated off-property area were multiplied by 0.2 (and by 0.5 for the 50/50 basis) corresponding to Key Assumption #2 above.

The sum of the weighted-average subject property estimate and the weighted-average associated off-property areas estimate represent the final weighted-average concentration for the subject property that was compared to the residential risk-based action level of 1,100 mg/kg.

5 Results for High-end Examples

Residual risk estimates were calculated for 20 subject properties that are expected to be at the upper end of residual risk estimates for the site based on the weighting approach described above. Given that the focus of the evaluation was on vacant lots with lead concentrations above the action level, this analysis targeted occupied residential lots immediately adjacent to vacant lots, or near to an area of the Dolores River corridor, with elevated lead concentrations as described in section 4.1.

Final weighted-average concentration estimates for each subject property example are summarized in Table 1 and are based on lead concentration data obtained from site figures and data used in the 2006 human health risk assessment as well as updated information corresponding to topsoil concentrations at reclaimed properties. Figure 1 provides a reference map showing the locations of these example properties. A number of additional properties (not represented in Table 1) were also evaluated during selection of these high-end examples confirming that the examples are representative of the upper end residual risks for site residential lots encompassed by this evaluation. A discussion of the residual risk analysis results presented in Table 1 is provided below for the 19 examples that did not consider the Dolores River corridor and the 1 example that did.

5.1 Residual Risk for 19 Subject Properties Considering Only Immediately Bordering Off-Property Areas

Based on the residual risk analysis performed for the 19 subject properties presented in Table 1 that considered only immediately adjacent off-property areas[3], the final weighted-average lead concentrations for the 80/20 basis were below the residential action level at all but one property and the 50/50 basis concentrations were below the residential action level at all but two properties. These findings are discussed further below.

Both the 80/20 and 50/50 basis concentrations for lot 45 were above the soil action level. The high final weighted-average concentration at lot 45 is primarily due to inclusion of the mine waste sample result on the adjacent Forest Service property which was part of the associated off-property area for lot 45, but is also influenced by the elevated vegetative ROWs in the vicinity of lot 45. For perspective, should reclamation of the higher vegetative ROW sample result (i.e. vegetative ROW input “B” for lot 45, Table 1) occur, the 80/20 basis estimate for lot 45 would be below the residential action level. Reclamation of both vegetative ROW areas would further lower the 80/20 basis estimate, but the 50/50 basis estimate would still exceed the residential action level due to inclusion of the mine waste sample result on the adjacent Forest Service property. The intent of the current evaluation was to evaluate whether the residual risk for residents living next to existing vacant lots is likely to exceed risk-based residential action levels for the site if reclamation decisions for those existing vacant lots are deferred until further development of each lot. In the context of this evaluation, mine waste on Forest Service property is an issue that the town needs to consider separately from the issue of concentrations

[3] The impact of including non-adjacent, but nearby properties on residual risk estimates for the subject properties was also considered and did not significantly increase average concentrations.

at vacant lots in that it is not expected to undergo development for residential use at some point in the future.

Weighted area concentration for Van Winkle subdivision Lot 6 (formerly part of Lot 53) exceeds the action level for the 50/50 basis, but not for the 80/20 basis, which is considered more representative of exposures likely to occur for young children evaluated in this assessment (see Key Assumption #2 above). Elevation of the 50/50 basis for this example is driven by the average soil lead concentration on the lot immediately to the north of this subject property (i.e., Van Winkle Lot 5, formerly part of Lot 50). The soil lead input for this adjacent vacant lot is based on two surface soil samples with concentrations of 12,300 mg/kg and 16,200 mg/kg lead.

Lots within the Van Winkle subdivision area have undergone property line revisions and other surface modifications since the time of data used in this analysis had been collected. New soil data have not been collected since these revisions were made. Based on these existing data, several areas of higher concentrations are indicated within this subdivision area in addition to those identified in the Lot 6 example. None of these additional areas contributes to weighted-average estimates above the action level for the high-end examples evaluated. However, risk managers may wish to confirm that remediation and modifications to lots in the Van Winkle area are sufficient to address elevated lead levels in that area.

5.2 Residual Risk for 1 Subject Property Considering Influence of Nearby Dolores River Corridor Open Space in the Off-Property Area Estimate

The residual risk analysis performed for Lot 330 (Table 1) included nearby Lot 469 in the off-property area estimate to evaluate the potential for unacceptable residual risks to a child resident living in close proximity to the Dolores River corridor where elevated lead concentrations were present. Lot 469 includes a large portion of the river corridor area and was found to have some of the highest lead concentrations reported for any samples at the site. Predicted residual risks for Lot 330 are well below the action level for the 80/20 basis and slightly lower than the residential action level when it was assumed that a child would derive 50% of his or her exposure from off-property areas, including Lot 469.

Although the weighted-average concentrations for both 80/20 and 50/50 bases are below the action level in this example, the presence of some very high sample concentrations on Lot 469 were noted in this analysis. These concentrations appear to be present in the vicinity of the former county shops area of the corridor. Options and decisions regarding how these high concentration areas will be addressed are outside the scope of this analysis and deferred to the risk managers.

6 Uncertainties

As described previously, the intent of this analysis is to assess whether the residual risk for residents living next to existing vacant lots within Rico is likely to exceed the risk-based residential action level for the site (1,100 mg/kg) assuming that reclamation decisions for those existing vacant lots are deferred until further development of each lot. Certain uncertainties are associated with the approach used to address this purpose.

First, the analysis presents a set of theoretical assumptions regarding the frequency of outdoor exposures by a hypothetical young child (6 years old and under) to surface soil on their own residential property and on other nearby properties. Actual activity patterns for young children in Rico are expected to vary by individual and location. As described in section 4.1, alternative activity patterns (i.e., a child ranging beyond adjacent properties to more distant properties) were considered in the initial identification of high-end subject properties, but did not yield more conservative results than those represented by the selected approach. Thus, key assumptions and decision rules employed in this analysis are expected to capture likely and reasonably high exposures anticipated for a typical child of this age living within Rico. These assumptions are also intended to remain consistent with the underlying basis for the residential soil action level used to compare estimates from this analysis. Uncertainties associated with these assumptions are expected to have a low impact on the results of the analysis.

Second, this is a retrospective analysis that incorporated available data collected for purposes other than to support a residual risk analysis. Thus, uncertainty is introduced by a more limited dataset. The magnitude of this uncertainty is not known, though this type of uncertainty would be equally expected to increase or decrease residual risk estimates presented herein.

Finally, where the analysis employs assumptions regarding actions that will be undertaken in the future, such as capping streets with lead above 1,100 mg/kg within a one to two year timeframe, the findings of the residual risk analysis are contingent on those actions taking place.

7 Conclusions

In summary, weighted-average concentrations for both the 50/50 and 80/20 bases were below the residential soil action level (1,100 mg/kg) for all but two of the twenty-one (21) subject property examples evaluated. The two exceptions were lot 45 and lot 53.

At lot 45, high sample results for nearby vegetative ROWs and the adjacent Forest Service Property contribute to elevated final weighted-average concentrations for both the 50/50 and 80/20 bases. Reclamation of vegetative ROWs would effectively lower the 50/50 basis concentration below the residential action level.

At lot 53, the final weighted-average concentration exceeded the residential action level due to the influence of soil lead present on an adjacent vacant lot. This exceedance occurred only when assuming a young child would have 50% of his or her exposure from the associated off-property areas. As noted previously (see Key Assumption #2 above), it is more likely that no more than 20% of exposures will be derived from associated off-property areas. Thus, the 80/20 basis estimates are considered more representative of exposures likely to occur for young children evaluated in this assessment.

Finally, residual risks to a young child living in close proximity to a Dolores River corridor open space area are not expected to be unacceptable based on this analysis. However, options and decisions regarding the presence of some high concentrations identified on this Dolores River corridor lot in the vicinity of the former county shops area are deferred to the risk managers.

Overall, the selected property examples represent the greatest potential exposure to lead in vacant lot soils from the broader community. Therefore, this evaluation provides a high level of confidence that unremediated vacant lots are not posing widespread risks to residents.

8 References

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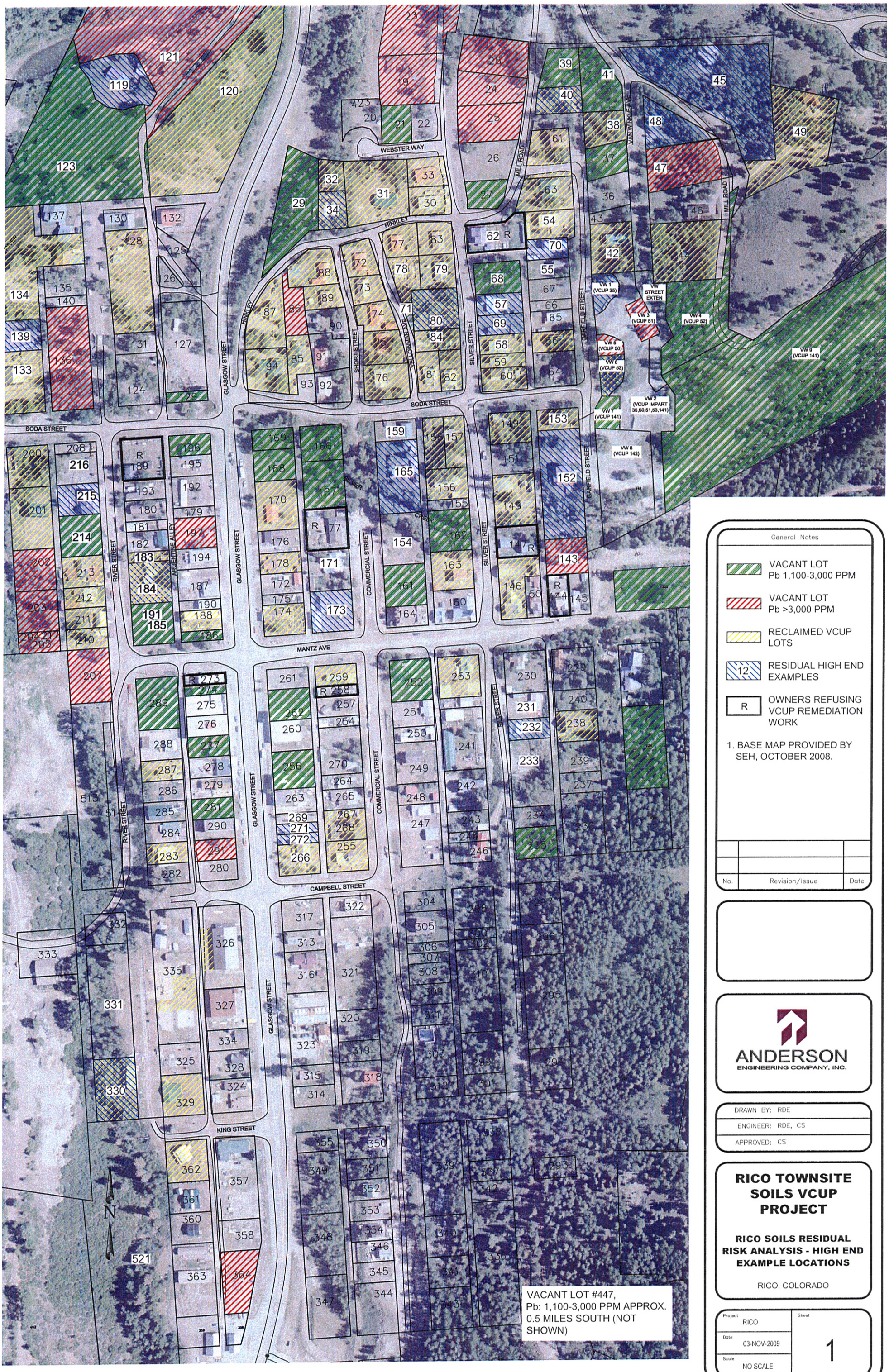
Figures and Tables



General Notes

- VACANT LOT Pb 1,100-3,000 PPM
- VACANT LOT Pb >3,000 PPM
- RECLAIMED VCUP LOTS
- 12 — RESIDUAL HIGH END EXAMPLES
- R — OWNERS REFUSING VCUP REMEDIATION WORK

1. BASE MAP PROVIDED BY SEH, OCTOBER 2008.

No.	Revision/Issue	Date

ANDERSON
ENGINEERING COMPANY, INC.

DRAWN BY: RDE
ENGINEER: RDE, CS
APPROVED: CS

RICO TOWNSITE SOILS VCUP PROJECT

RICO SOILS RESIDUAL RISK ANALYSIS - HIGH END EXAMPLE LOCATIONS

RICO, COLORADO

Project	Sheet
RICO	1
Date: 03-NOV-2009	
Scale: NO SCALE	

Table 1. Rico Soils Residual Risk Analysis - High-End Examples

Subject Property		Subject Lot Location Attributes for Weighted Average Estimate		Estimated Weighted Average Concentration for Subject Property (mg/kg)**		Concentration Data Used for Areas Adjacent to Subject Property (mg/kg)							
						Lot Average			Street and/or Alley			Vegetative ROW	
Lot ID	Reclaimed?	Average Concentration (mg/kg)	Description of Adjacent Areas	80/20 Basis	50/50 Basis	A	B	C	A	B	C	A	B
34	Yes	15	Vacant lot 29 to the west. Reclaimed lots 31 and 32 to the east and north, respectively. Portion of Hinkley road to south of lot will be capped. Vegetative ROW sample in vicinity.	150	353	1,590	17	15	100			1,730	
VW 1 (VCUP 35)	No	329	Within new Van Winkle subdivision. Reclaimed lot 42 to the north. Vacant VW 2 to the east and south. Garfield Street to the west. Shaping of mine waste area to southeast of VW 1 and installation of a retaining wall between VW 1 and VW 2 to prevent migration of mine waste from adjacent VanWinkle area. Elevated results on adjacent VW 2 identified as source material (10,300 ppm and 3,150 ppm with average of 6,725 ppm). One vegetative ROW sample in vicinity. Mine waste sample reported near street to the north of the subject property at concentration of 1470 ppm, but assumed will be capped to less than 100 ppm in near future.	588	976	15	6,725		881	100		394	
40	Yes	15	Vacant lots 39 and 41 to north and east. Mill Road to west will be capped.	335	814	2,796	696		100			2,859	
45	No	561	Reclaimed lot 49 to the southeast. Forest Service property to the north and northeast with an elevated mine waste sample near northeastern corner of lot 45. Mill Road along western length of property will be capped. Vegetative ROW samples in vicinity.	**1,170**	**2,084**	113	12,600		100			1,690	3,530
48	Yes	425	Vacant lot 47 to the south. Mill Road along north/eastern portion of property will be capped.	529	685	1,948			100	788			
VW 6 (VCUP 53)	Yes	15	Within new Van Winkle subdivision. Vacant VW 5 to north. Vacant VW 2 to the east/southeast. Vacant VW 7 to south with vegetative ROW result at 1680 ppm. Portion of Soda Street to southwest and elevated mine waste sample (2040 ppm) near Garfield Street to west will be capped. Two vegetative ROW samples in vicinity (1020 ppm and 1520 ppm).	760	**1,877**	14,250	1,680	6,725	100	881		1,520	1,020
57	No	974	Vacant lot 68 to north. Residential lot 69 to south. Capped and uncapped portions of Silver Street to west. Unpaved alley to east.	969	963	1,138	978		1,240	100	1,300		
69	No	978	Residential lot 57 to north. Reclaimed lot 58 to south. Silver Street to west. Unpaved alley to east.	969	956	974	585		1,240	1,300	576		
70	No	844	Reclaimed lot 54 to the north. Residential lot 62 (owner refused reclamation) to northwest. Residential lot 55 to south (no sample data). Unpaved alley to west. Garfield Street to east.	810	761	64	961		881	805			
80	Yes	15	Reclaimed lots 78 and 79 to the north. Reclaimed lot 84 to the south. Vacant lot 71 to west. Silver Street to east. Vegetative ROW sample in vicinity.	173	409	15	15	15	1,240			2,730	
119	No	311	Vacant lot 123 to southwest. Vacant lot 121 to northeast. Vegetative ROW sample in vicinity.	466	698	959	1,327		1,410	644			
139	No	227	Reclaimed lot 133 to south and 134 to north. Hancock Street to west will be capped. Unpaved alley to east.	303	416	390	354		100	1,580			
152	No	688	Reclaimed lot 153 to north. Vacant lot 143 to south. Garfield Street to east with portion of road along northern half of eastern border to be capped.	734	802	413	2,232		100				
165	No	894	Residential lot 159 to north. Vacant lot 154 to south. Commercial Street to southwest with wooded area/Silver Creek area directly west of subject lot. Unpaved alley to east.	807	677	392	737		253				
173	No	875	Residential lot 171 to north. Mantz Ave. to south. Commercial street to east. Unpaved alley to west will be capped. Vegetative ROW samples in vicinity.	807	706	337			100	253	411	1,100	1,020
184	Yes	120	Reclaimed lot 183 to the north. Vacant lot 185 to south. River Street to west. Unpaved alley to the east. Vegetative ROW sample in vicinity.	291	546	353	1,882		803	763		1,060	

Table 1. Rico Soils Residual Risk Analysis - High-End Examples

Subject Property		Subject Lot Location Attributes for Weighted Average Estimate		Estimated Weighted Average Concentration for Subject Property (mg/kg)**		Concentration Data Used for Areas Adjacent to Subject Property (mg/kg)							
						Lot Average			Street and/or Alley			Vegetative ROW	
Lot ID	Reclaimed?	Average Concentration (mg/kg)	Description of Adjacent Areas	80/20 Basis	50/50 Basis	A	B	C	A	B	C	A	B
215	No	684	Vacant lots 214 to the south and 216 (no sample data for lot, but vegetative ROW sample used in analysis is adjacent to lot 216) to the north. Portion of River Street to the east will be capped. Unpaved alley to the west. Vegetative ROW sample in vicinity.	778	920	1,427			100			1,939	
232	No	1,005	Residential lot 231 (no sample data for lot, but vegetative ROW sample used in analysis is adjacent to lot 231) to north and 233 to south. Silver Street to west, a portion of which will be capped. Unpaved alley to east. Vegetative ROW sample in vicinity.	910	768	530			874	100	396	758	
271	No	274	Combined with lot 272 (see below).	See Lot 272									
272	No	462	[Note: Lots 272 and 271 combined for analysis because they appear to be one lot (possibly commercial?) on map. However, only the higher average lead concentration, corresponding to lot 272, was used for the analysis.] Vacant lot 269 to north. Reclaimed residential lot 266 to south. Paved Glasglow Steet to west. Unpaved alley to east.	466	471	331	416		695				
330	Yes	369	Lot 469 near property boundary to the west (includes 1 surface sample and several elevated Dolores River Corridor samples). Vacant lots 521 (no sample data for lot) to south and 331 to north. Streets to east and south. Vegetative ROW sample in vicinity.	656	1,087	6,357	668		732	315		952	

mg/kg = milligrams per kilogram
ROW = Right-of-Way
** Bolded estimates are above the residential risk-based action level of 1,100 mg/kg.

Notes:
1) Please refer to the residual risk evaluation memorandum for background regarding selection of subject lots included in this table. All subject lots are expected to be occupied residential properties where lead concentrations were below the action level and did not require reclamation or at which reclamation was completed. Adjacent lots may be residential or commercial lots, whether vacant or occupied and without regard to reclamation status.
2) 80/20 Basis assumes child under age 6 spends 80% time on subject property and 20% on adjacent areas.
3) 50/50 Basis assumes child under age 6 spends 50% time on subject property and 50% on adjacent areas.
4) Elevation of the weighted average concentration at lot 45 is due to the mine waste sample result on the adjacent Forest Service property.
5) Lot 469 average includes the following samples: 4691S1, 0111D1, 0111D2, 0121D1, 0131D1, 0141D1 (+ duplicate), 0151D1, 0161D1, 0171D1, and 0181D1.