Annotated Bibliography of Subsidence Studies over Abandoned Coal Mines in Colorado

Compiled by
Tom Hatton and J.E. Turney
Information Series 22

ANNOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

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Compiled by
Tom Hatton
and
J.E. Turney

Colorado Geological Survey
Department of Natural Resources
State of Colorado
1984

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Updated June, 1989

A cooperative investigation conducted by the Colorado Geological Survey and funded by the Division of Mined Land Reclamation, Inactive Mine Program, Colorado Department of Natural Resources, through U.S. Government Grant No. G 5127081.
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INTRODUCTION

This bibliography is a compilation of data on coal mine subsidence studies along the Front Range of Colorado. The information contained within can hopefully be used to facilitate further study of undermined areas subject to increased development pressure from Colorado's growing population.

Specific mine investigation studies were obtained from private consultants and public sources. Many of these reports are available for review in the offices of the Colorado Geological Survey and the Division of Mined Land Reclamation.

Other organizations referred to in the bibliography should be contacted regarding availability of their reports. Addresses for these organizations appear in Part III.

We are grateful to the many county and local government agencies and private individuals who provided valuable references and studies for use in compiling this report. We hope this bibliography will be an ongoing effort and we would be pleased to hear of any additions, corrections, or omissions. In Appendix A, we have included a data sheet to be used for additions of existing and future studies. These data sheets can be completed and sent to the Colorado Geological Survey (address listed in Part III).
This bibliography consists of three parts: Part I, annotated bibliography; Part II, selected references; and Part III, sources of information.

Part I references are listed by county. At the beginning of each county section, an index map and cross-reference list is included. Each study is assigned a map reference number. The locations of studies are plotted on the index map using this map reference number. The cross-reference provides a list of map reference numbers matched with authors. The studies are then listed numerically. Additionally, a Colorado Mined Land Reclamation Division identification number (CMLRD I.D.#) is listed in the upper right hand corner of each bibliography reference. This number refers to mine maps on file with the Colorado Division of Mines and information contained in the CMLRD subsidence information system. These numbers are unique for each mine. Where a reference study covers more than one mine, the appropriate CMLRD I.D.#'s are listed in the same order as the mine names.

Part II is a standard bibliography of selected references which are too general for location on the index map. Also included are other useful bibliographies and publications dealing with geology and mine subsidence in Colorado.

Part III lists Federal, State, and local agencies which provide subsidence data. The specific types of data available are listed with each agency.
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<td>Robinson, C.H.</td>
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<td>Amuedo &amp; Ivey, 1978</td>
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B39 CTL/Thompson, 1984
B47 CTL/Thompson, 1981
Figure 1a. Location map, Boulder County subsidence investigations.
Figure 1b. Location map, Boulder County subsidence investigations.
Annotated Bibliography of Subsidence Studies
Over Abandoned Coal Mines in Colorado

Map Reference No. B1
CMLRD I.D. # 0130489892101

Author(s): Aguirre Engineers
Date: 1980
Title: Preliminary subsurface investigation and geologic reconnaissance, proposed business center, Broomfield, Colorado.
Publisher:
County: Boulder
Location: Sec. 32, T1S, R69W
Mine Name: Monarch No. 2
Contents:
Geophysical logs:
Lithology logs: Yes, 29 drill holes (auger holes 60' deep)
Cross-sections:
Mine maps:
Structure maps:
Other:
Comments: Primarily an engineering report with a section on subsidence.

Availability: Colorado Geological Survey
Author(s): Barbis, Frederic C., and Cochran, Dale M.

Date: 1979

Title: Subsidence study for the City of Louisville proposed development in Section 10, T1S, R69W, Boulder County, Colorado

Publisher: Charles S. Robinson and Assoc.

County: Boulder

Location: Sec. 10, T1S, R69W

Mine Name: Vulcan

Contents:

Geophysical logs:

Lithologic logs: Yes, 3 drill holes

Cross-sections:

Mine maps: Yes

Structure maps:

Other: Surficial geologic map

Comments:

Availability: City of Louisville
Author(s): Barbis, Frederic C., and Robinson, Charles S.

Date: 1979

Title: Subsidence study for Cedarwood Park proposed development in Sec. 8, T1S, R69W, Boulder County, Colorado

Publisher: Charles S. Robinson and Assoc.

County: Boulder

Location: Sec. 8, T1S, R69W

Mine Name: Acme

Contents:

- Geophysical logs:
- Lithology logs: Yes, 1 drill hole
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: City of Louisville
Author(s): Caulkin, William S.
Date: 1980
Title: Subsidence potential at Ridgeview Heights, Broomfield, Colorado
Publisher:
County: Boulder
Location: Section 26, T1S, R69W
Mine Name: Hi-Way
Contents:
Geophysical logs:
Lithology logs: No drill holes
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Map of observed subsidence features

Comments:

Availability: Colorado Geological Survey
Author(s): Chen and Associates, Inc.
Date: 1979
Title: Preliminary coal mine subsidence evaluation, three reservoir sites, Boulder and Weld Counties, Colorado
Publisher:
County: Boulder and Weld
Location: Sec. 7, 18, T1S, R69W, Sec. 12, T1S, R70W, Sec. 21, T1N, R68W
Mine Name: Matchless, Eagle
Contents:
  Geophysical logs:
  Lithology logs:
  Cross-sections:
  Mine maps: Yes
  Structure maps:
  Other:
Comments: No drilling.

Availability: City of Louisville
Author(s): Cochran, Dale M., and Robinson, Charles S.

Date: 1973

Title: Engineering geology, Paclamar Farms area, Boulder County, Colorado

Publisher: Charles S. Robinson and Assoc.

County: Boulder

Location: Sec. 7, 8, 18, T1S, R69W; Sec. 12, 13, T1S, R70W

Mine Name: Crown

Contents:

- Geophysical logs:
- Lithology logs: See B21 and B24 for drill holes.
- Cross-sections:
- Mine maps:
- Structure maps:
- Other: Geologic map

Comments: Contains 2-page section on subsidence.

Availability: City of Louisville, Colorado Geological Survey
Author(s): Cochran, Dale M. and Robinson, Charles S.

Date: 1979

Title: Engineering geology, Centennial Valley, Boulder County, Colorado

Publisher: Charles S. Robinson and Assoc.

County: Boulder

Location: Sec. 7, 8, 17, 18, T1S, R69W; Sec. 12, 13, T1S, R70W

Mine Name: Crown, Matchless-Sunland, Fireside

Contents:

Geophysical logs:

Lithology logs: Yes, 13 drill holes, rotary and core holes.

Cross-sections:

Mine maps:

Structure maps:

Other:

Comments: Drill holes are less than 30 ft. deep; 21 auger holes.

Availability: Colorado Geological Survey
Author(s): Cochran, Dale M.

Date: 1982

Title: Phase I, Mine subsidence study, drive-in theatre property, Lafayette, Colorado.

Publisher: Converse Consultants

County: Boulder

Location: Sec. 4, T1S, R69W

Mine Name: Electric

Contents:

Geophysical logs:

Lithology logs: Yes, 7 drill holes (See B9)

Cross-sections:

Mine maps: Yes

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey
<table>
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<th><strong>Author(s):</strong></th>
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<td><strong>Date:</strong></td>
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<tr>
<td><strong>Title:</strong></td>
<td>Phase II, Investigation of bedrock overlying abandoned coal mine workings, Electric Mine, drive-in theatre property, Lafayette, Colorado.</td>
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<tr>
<td><strong>Publisher:</strong></td>
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<td><strong>Comments:</strong></td>
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**Availability:** Colorado Geological Survey
Author(s): Cochran, Dale M.

Date: 1983

Title: Investigation of bedrock overlying abandoned coal mine workings, Electric Mine, drive-in theatre property, Section 4, T1S, R69W, Lafayette, Colorado

Publisher: Converse Consultants

County: Boulder

Location: Sec. 4, T1S, R69W

Mine Name: Electric

Contents:

Geophysical logs:

Lithology logs: Yes, 9 drill holes (6 from B9 plus 3 new holes)

Cross-sections:

Mine maps: Yes

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Converse Ward Davis Dixon, Inc.
Date: 1981
Title: Subsidence study, Dutch Creek development, Boulder County, Colorado
Publisher:
County: Boulder
Location: Sec. 17, T1S, R69W
Mine Name: Acme
Contents:
  Geophysical logs:
  Lithology logs: Yes, 3 drill holes
  Cross-sections:
  Mine maps:
  Structure maps:
  Other:

Comments:

Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.

Date: 1982

Title: Evaluation of subsidence potential, Dutch Creek subdivision, Louisville, Colorado.

Publisher:

County: Boulder

Location: Sec. 17, T1S, R69W

Mine Name: Acme

Contents:

Geophysical logs: gamma, density, caliper, resistivity

Lithology logs: Yes, 5 drill holes

Cross-sections:

Mine maps: Yes

Structure maps:

Other: Compressive strength tests

Comments:

Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.
Date: 1983
Title: Preliminary evaluation of subsidence potential, Autumn Ridge subdivision, Lafayette, Boulder County, Colorado.
Publisher: 
County: Boulder
Location: Sec. 10, 15, T1S, R69W
Mine Name: Vulcan, New Centennial
Contents:
- Geophysical logs:
- Lithology logs: 7 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other: Subsidence hazard map
Comments:

Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.
Date: 1983
Title: Evaluation of subsidence potential, Warembourg property, Louisville, Colorado.
Publisher:
County: Boulder
Location: Sec. 17, T1S, R69W
Mine Name: Acme, Leader
Contents:
Geophysical logs: resistivity, gamma, density, caliper
Lithology logs: Yes, 8 drill holes
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Subsidence hazard map

Comments:

Availability: Colorado Geological Survey
Author(s): Culver, Judi C. and Robinson, Charles S.

Date: 1977

Title: Subsidence study for Colorado Mortgage Company proposed development in T.1S., R.69W., Louisville, Colorado.

Publisher: Charles S. Robinson and Associates, Inc.

County: Boulder

Location: Sec. 8, T1S, R69W

Mine Name: Leader-Ajax

Contents:

Geophysical logs:

Lithology logs: Yes, 5 drill holes

Cross sections: Yes

Mine maps:

Structure maps:

Other:

Comments: No drill hole location map.

Availability: Colorado Geological Survey
Author(s): Gallant, William A. and Benson, Carl
Date: 1981
Title: Subsidence investigation, Pow Wow Rodeo Park, Boulder County, Colorado.
Publisher: Converse Ward Davis Dixon, Inc.
County: Boulder
Location: Sec. 4, T1S, R69W
Mine Name: Helca No. 1, Rex No. 1
Contents:
  Geophysical logs:
  Lithology logs: Yes, 3 drill holes
  Cross-sections: Yes
  Mine maps: Yes
  Structure maps:
  Other: Calculated maximum subsidence maps
Comments:

Availability: City of Louisville
Author(s): Myers, A.R., Hansen, J.B., Lindvall, R.A., Ivey, J.B., and Hynes, J.L.

Date: 1975

Title: Coal mine subsidence and land use in the Boulder-Weld Coal Field, Boulder and Weld Counties, Colorado.

Publisher: Colorado Geological Survey EG-9, Amuedo and Ivey

County: Boulder, Weld

Location: T1S, T1N, T2N; R67W through 70W

Mine Name: Various

Contents:

Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps:
Structure maps:

Other: Extent of mining, depth of cover, mine pillars, thickness of extracted coal, subsidence inventory, and subsidence hazard maps

Comments: Out of print, available for inspection.

Availability: Colorado Geological Survey
Author(s): Robinson, Charles H. and Dea, Peter A.

Date: 1981

Title: Coal mine subsidence study of the Crawford-Reich property, Boulder County, Colorado

Publisher: Converse Ward Davis Dixon, Inc.

County: Boulder

Location: Sec. 5, T1S, R69W

Mine Name: Rex No. 1

Contents:
- Geophysical logs:
- Lithology logs: Yes, 2 drill holes
- Cross-sections:
- Mine maps:
- Structure maps:
- Other:

Comments:

Availability: City of Louisville
Author(s): Robinson, Charles S., and Cochran, Dale M.

Date: 1972

Title: Preliminary report on subsidence at the Crown Mine, Boulder County, Colorado

Publisher: Charles S. Robinson and Associates, Inc.

County: Boulder

Location: Sec. 13, T1S, R70W

Mine Name: Crown

Contents:

- Geophysical logs:
- Lithology logs: Yes, 5 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Robinson, Charles S. and Boyle, Clyde R.

Date: 1972

Title: Report on the undermining and subsidence at Lafayette Park development, Boulder County, Colorado

Publisher: Charles S. Robinson and Associates, Inc.

County: Boulder

Location: Sec. 35, T1N, R69W

Mine Name: Simpson, Mitchell

Contents:

Geophysical logs: 

Lithology logs: Yes, 3 drill holes

Cross-sections: 

Mine maps: Yes

Structure maps: 

Other: 

Comments:

Availability: Colorado Geological Survey
Author(s): Robinson, Charles S. and Boyle, Clyde R.

Date: 1973

Title: Subsidence study at the Matchless-Sunland and Fireside coal mines, Section 7, T1S, R69W, Boulder County, Colorado

Publisher: Charles S. Robinson and Associates, Inc.

County: Boulder

Location: Sec. 7, T1S, R69W

Mine Name: Matchless-Sunland and Fireside

Contents:

Geophysical logs:

Lithology logs: Yes, 3 drill holes (included in B24)

Cross-sections:

Mine maps: Yes

Structure maps:

Other:

Comments:

Availability: City of Louisville
Author(s): Robinson, Charles S., and Culver, Judi C.
Date: 1976
Title: Engineering geology, Colorado Technological Center, Louisville, Colorado
Publisher: Charles S. Robinson and Associates, Inc.
County: Boulder
Location: Sec. 15, 16, 22, T1S, R69W
Mine Name: Nonpariel, Regal
Contents:
Geophysical logs:
Lithology logs: Yes, 6 drill holes
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Subsidence potential map
Comments:
Availability: Colorado Geological Survey City of Louisville
Author(s): Sennett, Robert S. and Olson, Richard D.

Date: 1980

Title: Subsidence studies, Centaur Village North, Centaur Village South, Boulder County, Colorado

Publisher: Charles S. Robinson and Associates, Inc.

County: Boulder

Location: Sec. 4, 9, 10, T1S, R69W

Mine Name: New Centennial, Electric, Big Lake

Contents:

- Geophysical logs:
- Lithology logs: Yes, 7 drill holes
- Cross-sections:
- Mine maps:
- Structure maps:
- Other: Subsidence hazard map

Comments:

Availability: Colorado Geological Survey
Author(s): Summerlee, Thomas E.

Date: 1979

Title: Subsurface investigation, Paclamar Farms project, Boulder County, Colorado


County: Boulder

Location: Sec. 7, 8, 17, 18, T1S, R69W; Sec. 12, 13, T1S, R70W

Mine Name: Crown, Matchless-Sunland, Fireside

Contents:

Geophysical logs:

Lithology logs: Yes, 8 drill holes

Cross-sections:

Mine maps:

Structure maps:

Other:

Comments: 3 drill holes - 1973 See B21
5 drill holes - 1972 See B19

Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1982
Title: Mine subsidence potential - drilling program, Centennial Valley I subdivision, Louisville, Colorado
Publisher: 
County: Boulder
Location: Sec. 8, 17, IS, R69W
Mine Name: Leader
Contents:
- Geophysical logs: gamma ray, SP, resistivity, caliper
- Lithology logs: Yes, 9 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps:
- Other:
Comments: 
Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1982
Title: Report of results: Drilling program for subsidence potential, Centennial Valley II subdivision
Publisher:
County: Boulder
Location: Sec. 7, T1S, R69W
Mine Name: Matchless, Fireside
Contents:
- Geophysical logs: Yes
- Lithology logs: Yes, 12 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps:
- Other:
Comments:

Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1982
Title: Subsidence potential study: Ten-acre site near Louisville, Colorado
Publisher:
County: Boulder
Location: Sec. 17, T1S, R69W
Mine Name: Ajax
Contents:
Geophysical logs: Yes
Lithology logs: Yes, 3 drill holes
Cross-sections:
Mine maps: Yes
Structure maps:
Other:

Comments:

Availability: Tierra Consultants (Now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.
Date: 1982
Title: Mine subsidence potential - drilling program, Sutton Estates subdivision, Lafayette, Colorado
Publisher: 
County: Boulder
Location: Sec. 3, T1S, R69W
Mine Name: Black Diamond II
Contents:

- Geophysical logs: Yes
- Lithology logs: Yes, 6 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1982
Title: Geologic study, Harper Lake expansion
Publisher:
County: Boulder
Location: Sec. 6, T1S, R69W
Mine Name: Matchless
Contents:
- Geophysical logs: Yes
- Lithology logs: Yes, 6 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Tierra Consultants (now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.

Date: 1983

Title: Subsidence potential study, Black Diamond Industrial Park, Lafayette, Colorado (1 of 3)

Publisher:

County: Boulder

Location: Sec. 34, T1N, R69W

Mine Name: Black Diamond No. 2

Contents:

- Geophysical logs: resistivity, sp, gamma, caliper
- Lithology logs: Yes, 5 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Tierra Consultants, Inc. (now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.
Date: 1984
Title: Subsidence potential study, Black Diamond Industrial Park, Lafayette, Colorado (2 of 3)
Publisher:
County: Boulder
Location: Sec. 34, T1N, R69W
Mine Name: Black Diamond II
Contents:
  Geophysical logs: resistivity, sp, gamma, caliper
  Lithology logs: 9 drill holes
  Cross-sections:
  Mine maps: Yes
  Structure maps:
Other: Potential strain contours and profiles
Comments: Second study of area, 4 additional holes; first study completed 1983 w/5 drill holes

Availability: Colorado Geological Survey
ANOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Map Reference No. B30c
CMLRD I.D. #0130432912901

Author(s): Atec Associates, Inc.
Date: August, 1985
Title: Geotechnical Engineering Investigation - Black Diamond Industry Park (3 of 3)
Publisher: Atec Associates, Inc.
County: Boulder
Location: Sec. 34, T1N, R69W
Mine Name: Black Diamond No. 2
Contents:
Geophysical logs: SP, gamma, resistivity
Lithology logs: 4 drill-hole logs
Cross-sections:
Mine maps:
Structure maps:
Other: Pillar Analysis, Strain Analysis
Comments: Included is 1984 Tierra Study and 1983 Tierra Study

Availability: Colorado Geological Survey
Author(s): Tierra Consultants
Date: 1983
Title: Subsidence potential study, Coal Creek Technological Center

Contents:
- Geophysical logs: Yes
- Lithology logs: Yes, 13 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps: Yes
- Other: Strain analysis

Availability: Tierra Consultants (now Atec Associates, Inc.)
Colorado Geological Survey

-38-
Author(s): Tierra Consultants, Inc.
Date: 1983
Title: Subsidence potential study: Lafayette City Center Shopping Complex
Publisher:
County: Boulder
Location: Sec. 2, T1S, R69W
Mine Name: Strathmore
Contents:
- Geophysical logs: Yes
- Lithology logs: Yes, 3 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Tierra Consultants, Inc. (now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.
Date: 1983
Title: Subsidence potential, Lafayette Park subdivision
Publisher:
County: Boulder
Location: Sec. 35, T1N, R69W
Mine Name: Mitchell, Simpson
Contents:
  Geophysical logs: Yes
  Lithology logs: Yes, 6 drill holes
  Cross-sections: Yes
  Mine maps: Yes
  Structure maps:
  Other: Strain profile calculations
Comments:

Availability: Tierra Consultants, Inc. (now Atec Associates, Inc.)
Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1983
Title: Subsidence potential study: Proposed Pine Street Plaza site, Louisville, Colorado
Publisher:
County: Boulder
Location: Sec. 8, T1S, R69W
Mine Name: Acme
Contents:
   Geophysical logs: Yes
   Lithology logs: Yes, 3 drill holes
   Cross-sections:
   Mine maps: Yes
   Structure maps:
   Other:

Comments:
Availability: Tierra Consultants, Inc. (now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.
Date: 1983
Title: Subsidence study, site located near Marshall, Colorado
Publisher:
County: Boulder
Location: Sec. 21, T1S, R70W
Mine Name: Lewis, Fox, Eagle
Contents:
  Geophysical logs: Yes
  Lithology logs: Yes, 2 drill holes
  Cross-sections:
  Mine maps: Yes
  Structure maps:
  Other:

Comments:

Availability: Tierra Consultants, Inc. (now Atec Associates, Inc.)
Author(s): Tierra Consultants, Inc.

Date: 1983

Title: Subsidence potential study, Centaur Village North subdivision Filing #6, Lafayette, Colorado

Publisher: 

County: Boulder

Location: Sec. 4, T1S, R69W

Mine Name: Electric

Contents:
- Geophysical logs: resistivity, sp, gamma, caliper
- Lithology logs: Yes, 24 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps: Yes
- Other: Shaft abandonment report

Comments:

Availability: Colorado Geological Survey
Tierra Consultants, Inc. (now Atec Associates, Inc.)

Map Reference No. B36
CMLRD I.D. # 0130489902601
Author(s): Tierra Consultants, Inc.

Date: 1983

Title: Subsidence potential study on eighteen acres located in the Centennial Valley I subdivision, Louisville, Colorado

Publisher:

County: Boulder

Location: Sec. 8, 17, T1S, R69W

Mine Name: Leader

Contents:

Geophysical logs: resistivity, sp, gamma, caliper

Lithology logs: Yes, 27 drill holes

Cross-sections:

Mine maps: Yes

Structure maps: Yes

Other: Lot summary of subsidence conditions
Statistical composite of various elevations

Comments:

Availability: Tierra Consultants, Inc. (now Atec Associates, Inc.)
Colorado Geological Survey
Author(s): Tierra Consultants, Inc.

Date: 1983

Title: Subsidence potential study, Churchill Pointe subdivision, Lafayette, Colorado

Publisher: 

County: Boulder

Location: Sec. 3, T1S, R69W

Mine Name: Black Diamond II

Contents:

Geophysical logs: resistivity, sp, gamma, caliper

Lithology logs: Yes, 30 drill holes

Cross-sections: Yes

Mine maps: Yes

Structure maps: Yes

Other: Strain analysis report

Comments: 

Availability: Colorado Geological Survey
Tierra Consultants, Inc. (now Atec Associates, Inc.)
ANOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Map Reference No. B40
CMLRD I.D. # Various

Author(s): Tierra Consultants, Inc.
Date: 1985
Title: Surface and Mine Features Map, Louisville and Lafayette
Publisher: Colorado Division of Mined Land Reclamation, Inactive Mine Program
County: Boulder
Location: Louisville - Lafayette
Mine Name: Various

Contents:

Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps: Extent of mining maps (mine features) overlain on air photos and topographic base maps (1 inch to 100 feet)
Structure maps:
Other:

Comments: Louisville is on an airphoto base and Lafayette is on a photographic base.

Availability: Mined Land Reclamation, Inactive Mine Program
Author(s): Tierra Consultants, Inc. (now Atec Associates, Inc.)

Date: April, 1984

Title: Subsidence Potential Study for Centennial IV -- Master Plan

Publisher:

County: Boulder

Location: Sec. 7, T1S, R69W

Mine Name: Matchless, Fireside

Contents:

- Geophysical logs: Resistivity, SP, natural gamma, caliper
- Lithology logs: 18 drill holes, 17 rotary holes and 1 partial core hole
- Cross-sections:
  - Mine maps: yes
  - Structure maps:
- Other: Strain profiles and contours

Comments: Rock strength tests
Drill holes included in B26 and B29

Availability: Colorado Geological Survey
Author(s): Deuel and Associates, Inc. (formerly Tierra Consultants, Inc.)
Date: November, 1984
Title: Subsidence Potential Study for Marcus Properties Limited, Lafayette Project
Publisher:
County: Boulder
Location: Sec. 35, T1N, R69W
Mine Name: Simpson, Mitchell
Contents:
- Geophysical logs: Resistivity, SP. Natural Gamma, Caliper
- Lithology logs: 34 borings and logs
- Cross-sections: Geologic cross section
- Mine maps: yes
- Structure maps: Structure contour map of top of mine interval
- Other: Potential strain calculations and strain contour map, damage reducing architectural techniques

Comments:

Availability: Colorado Geological Survey
ANOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Map Reference No. B43
CMLRD I.D. #0130489932602

Author(s): Deuel and Associates, Inc. (formerly Tierra Consultants, Inc.)
Date: December, 1984
Title: Subsidence Potential Study, Proposed Lafayette Elementary School Site
Publisher:
County: Boulder
Location: Sec. 2, T1S, R69W
Mine Name: Cambro
Contents:
- Geophysical logs: Resistivity, SP, natural gamma, caliper
- Lithology logs: 8 test borings and logs
- Cross-sections:
- Mine maps: yes
- Structure maps:
- Other: Strain analysis

Comments:

Availability: Colorado Geological Survey
Author(s): F.M. Fox and Associates, Inc.

Date: 1979

Title: Subsidence Hazard Investigation, Lafayette Park

Publisher: 

County: Boulder

Location: Sec. 35, T1N, R69W

Mine Name: Simpson, Mitchell

Contents: 

Geophysical logs: 

Lithology logs: 8 Test Holes

Cross-sections: 

Mine maps: 3 Sheets 

Structure maps:

Other: Subsidence Hazard Maps 

Comments: 

Availability: Colorado Geological Survey
Author(s): Amuedo and Ivey

Date: June, 1978

Title: Investigations of Subsidence Potential Proposed Additions to the City of Lafayette Wastewater Treatment Facilities.

Publisher:

County: Boulder

Location: T1N, R69W, Sec. 36

Mine Name: Haywood (Irvington) Mine

Contents:

- Geophysical logs: 6
- Lithology logs: Yes, 6
- Cross-sections:
- Mine maps: Yes
- Structure maps: Yes
- Other: Compressive Strength Tests

Comments:

Availability: Colorado Geological Survey
**Author(s):** Amuedo and Ivey  
**Date:** November, 1978  
**Title:** Subsidence Evaluation - Lafayette Park Filing No. 2  
**Publisher:**  
**County:** Boulder  
**Location:** Sec. 35, T1N, R69W  
**Mine Name:** Simpson, Mitchell  
**Contents:**  
- Geophysical logs: No  
- Lithology logs: No  
- Cross-sections: No  
- Mine maps:  
- Structure maps:  
- Other: 1 Base Map  
**Comments:**  
**Availability:** Colorado Geological Survey
Author(s): Atec Associates, Inc.

Date: July, 1975

Title: Geotechnical Engineering Investigation - Centaur Village Filing No. 7

Publisher: Atec Associates, Inc.

County: Boulder

Location: Lafayette, Colorado T1S, R69W, Sec. 4

Mine Name: Hecla and Big Lake Mines

Contents:

Geophysical logs: Yes, 7

Lithology logs: Yes, 7

Cross-sections: Appendix B

Mine maps: Sketches

Structure maps:

Other: Comments from Greg Sherman (Deuel & Associates April, 1985) Strain Analysis, Architectural Techniques to reduce structural damage.

Comments: (Formerly Deuel & Associates; Formerly Tierra Associates)

Availability: Colorado Geological Survey
Author(s): Deuel and Associates, Inc.

Date: May, 1985

Title: Subsidence Potential Study of 6-Acre Proposed Development Site in Lafayette, Colorado

Publisher:

County: Boulder

Location: Phoenix Park, Section 9, T1S, R69W

Mine Name: Rex No. 2 Mine (Hecla No. 2 previously)

Contents:

- Geophysical logs: Yes, 5 Appendix B
- Lithology logs: Yes, 5
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps: Yes
- Other: Yes

Comments: (Formerly, Tierra Associates; now Atec Associates)

Availability: Colorado Geological Survey
Author(s): Duel and Associates, Inc.

Date: April, 1985

Title: Subsidence Potential Study of Proposed Development Site on Property Located in Lafayette, Colorado (Marcus Properties)

Publisher:

County: Boulder

Location: Sec. 35, T1N, R69W

Mine Name: Mitchell, Simpson

Contents:

Geophysical logs: Gamma, Sp, Resistance, Caliper

Lithology logs: Yes

Cross-sections: No

Mine maps: No

Structure maps: No

Other:

Comments:

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.
Date: February, 1986
Title: Lafayette City Center Geotechnical Investigation
Publisher:
County: Boulder
Location: Sec. 2, T1S, R69W
Mine Name: Strathmore
Contents:
  Geophysical logs: Gamma, Sp
  Lithology logs: Yes
  Cross-sections: No
  Mine maps: Yes
  Structure maps: No
  Other: No
Comments: See B32

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.

Date: June, 1986

Title: Subsidence Investigation Enclave Subdivision Louisville, Colorado

Publisher:

County: Boulder

Location: Sec. 7, T1S, R69W

Mine Name: Matchless (in vicinity)

Contents:

Geophysical logs: Gamma

Lithology logs: Yes

Cross-sections: No

Mine maps: No

Structure maps: No

Other: No

Comments: No mining occurred under this site.

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.

Date: November, 1986

Title: Subsidence and Preliminary Geotechnical Engineering Investigation Lafayette Park Subdivision, Phase II, Lafayette, Colorado

Publisher:

County: Boulder

Location: Sec. 35, T1N, R69W

Mine Name: Mitchell

Contents:

Geophysical logs: Gamma, Resistance

Lithology logs: Yes

Cross-sections: No

Mine maps: No

Structure maps: No

Other: No

Comments:

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.
Date: May, 1987
Title: The Grove at Harper Lake Subdivision
        Louisville, Colorado
Publisher:
County: Boulder
Location: Sec. 7, T1S, R69W
Mine Name: Matchless
Contents:
Geophysical logs: Gamma, Sp, Resistance, Caliper
Lithology logs: Yes
Cross-sections: No
Mine maps: No
Structure maps: No
Other: No
Comments:
Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.

Date: November, 1987

Title: Subsidence Engineering Investigation
       Centennial Valley PUD; Centennial Valley, Subdivisions 4, 6, 7, 8, and
       the Grove at Harper Lake

Publisher:

County: Boulder

Location: Sec. 7, T1S, R69W

Mine Name: Matchless, Fireside

Contents:

Geophysical logs: Gamma, Sp, Resistance, Caliper
Lithology logs: Yes
Cross-sections: No
Mine maps: Yes
Structure maps: No
Other: No

Comments:

Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.
Date: November, 1987
Title: Evaluation of subsidence potential Rock Creek Ranch Development, Superior, Colorado
Publisher: 
County: Boulder and Jefferson
Location: Sec. 19, 29, 30, T1S, R69W
Mine Name: Industrial, Monarch No. 2
Contents:
- Geophysical logs: Gamma, Caliper, Density
- Lithology logs: Yes
- Cross-sections: No
- Mine maps: Yes
- Structure maps: No
Other: 
Comments:

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.
Date: January, 1985
Title: Subsidence Investigation Countryside Village Lafayette, Colorado
Publisher: 
County: Boulder
Location: Sec. 3, T1S, R69W
Mine Name: Strathmore
Contents:
Geophysical logs: Gamma, Sp, Resistance
Lithology logs: Yes
Cross-sections: No
Mine maps: No
Structure maps: No
Other: 
Comments: Area not undermined

Availability: Colorado Geological Survey
Author(s): ATEC Associates, Inc.
Date: December, 1985
Title: Subsidence Investigation Lafayette Business Park Lafayette, Colorado
County: Boulder
Location: Sec. 14, T1S, R69W
Mine Name: Hi-Way
Contents:
- Geophysical logs: Gamma, Sp, Resistance
- Lithology logs: Yes
- Cross-sections: No
- Mine maps: No
- Structure maps: No
Other:

Comments:

Availability: Colorado Geological Survey
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<th><strong>Author(s):</strong></th>
<th>Dames &amp; Moore</th>
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<td>May, 1986</td>
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<td><strong>Title:</strong></td>
<td>Boulder County Subsidence Investigation, Volumes I, II, III</td>
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<td><strong>Location:</strong></td>
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<td>Geophysical logs:</td>
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<td>Mine maps:</td>
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<td>Structure maps:</td>
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<td>Other:</td>
<td>Maps include: overburden thicknesses, subsidence potential and hazard zones</td>
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<td><strong>Comments:</strong></td>
<td>This study excludes mines in the vicinity of Marshall and in northeast Boulder County</td>
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**Availability:** Colorado Geological Survey
Author(s): ATEC Associates, Inc.
Date: February, 1986
Title: Subsidence Investigation Saddleback Subdivision, Louisville, Colorado
Publisher:
County: Boulder
Location: Sec. 7, T1S, R69W
Mine Name: Matchless, Fireside
Contents:
Geophysical logs: Gamma, Sp, Resistance, Caliper
Lithology logs: Yes
Cross-sections: No
Mine maps: No
Structure maps: No
Other: Strain contour map
Comments:
Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc.

Date: February, 1984

Title: Addendum to Subsidence Potential Study on Eighteen Acres located in the Centennial Valley I Subdivision, Louisville, Colorado

Publisher:

County: Boulder

Location: Sec. 17, T1S, R69W

Mine Name: Leader

Contents:

Geophysical logs: Gamma, Sp, Resistance, Caliper
Lithology logs: Yes
Cross-sections: No
Mine maps: Yes
Structure maps: Yes

Other:

Comments: This study was a follow-up to the 1983 study "B37".

Availability: Colorado Geological Survey
### EL PASO COUNTY

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<td>CTL/Thompson, 1984</td>
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<td>Lincoln DeVore, 1984</td>
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<td>Michael Baker, Jr., 1984</td>
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<td>E18</td>
<td>Douglas, Cory and Fisk, 1955</td>
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E6 CTL/Thompson
Figure 2. Location map, El Paso County subsidence investigations.
ANOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Author(s): Colorado Springs Planning Department
Date: 1967
Title: Mining report, Colorado Springs Coal Field, a guide for future land use
Publisher: City of Colorado Springs
County: El Paso
Location: T13S, T14S R66W, R77W
Mine Name: Various
Contents:
Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Summary of coal mine operations in El Paso County
Comments: Compilation of mine data for mines located in Colorado Springs. Also, street maps superimposed on mine maps.

Availability: Pikes Peak Area council of Governments
Author(s): CTL/Thompson, Inc.

Date: 1982

Title: Evaluation of subsidence potential, Ravencrest subdivision, Woodmen Road and Rockrimmon Boulevard, Colorado Springs, Colorado

Publisher:

County: El Paso

Location: Sec. 7, T13S, R66W

Mine Name: Pikeview and Carlton

Contents:

Geophysical logs: gamma, density, caliper

Lithology logs: Yes

Cross-sections:

Mine maps: Yes

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.
Date: Nov 30, 1983
Title: Subsidence evaluation, Lots 3, 7, 8, and 9, Block 4, Rockrimmon Cliffs Subdivision, Colorado Springs, Colorado
Publisher:
County: El Paso
Location: Sec. 18, T13S, R66W Rockrimmon and I-25
Mine Name: Pikeview
Contents: 8 drill holes
  Geophysical logs: gamma, density, caliper
  Lithology logs: Yes
  Cross-sections: Yes
  Mine maps: Yes
  Structure maps:
  Other: Video camera logs on 2 holes
Comments: Proposing to backfill the main slope entrance. Present subdivision name - North Creek 1, 2, 3

Availability: Colorado Geological Survey
Author(s): Lewis, John H.

Date: 1973

Title: Geologic considerations, Rockrimmon dam and reservoir site, Colorado Springs, Colorado

Publisher: Dames and Moore

County: El Paso

Location: Sec. 18, T13S, R66W; Sec. 13, T13S, R67W

Mine Name: Pikeview

Contents:

- Geophysical logs:
- Lithology logs: Yes, 19 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Lincoln Devore
Date: 1981
Title: Preliminary surface soils investigation, Pikeview mine portal area, Colorado Springs, Colorado
Publisher: 
County: El Paso
Location: Sec. 18, T13S, R66W
Mine Name: Pikeview
Contents:
- Geophysical logs:
- Lithology logs: Yes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Woodward, Clyde, Sherard and Associates

Date: 1967

Title: Effects of underground mine on land development, Pikeview mine area

Publisher:

County: El Paso

Location: Sec. 18, T13S, R66W; Sec. 13, T13S, R67W

Mine Name: Pikeview

Contents:

Geophysical logs:

Lithology logs:

Cross-sections: Yes

Mine maps: Yes

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Rocky Mountain Geotechnical, Inc.
Date: July 11, 1983
Title: Mine Subsidence Investigation, Cragmoor Properties
El Paso County, Colorado
Publisher: 
County: El Paso
Location: NE-1/4, Sec. 32, SE1/4, Sec. 29, T13S, R66W
Mine Name: Corley, Busy Bee, Patterson
Contents:
Geophysical logs:
Lithology logs: 10 test holes and Lithology logs
Cross-sections: 2 subsurface profiles through site
Mine maps: Mine map and test boring Location diagram
Structure maps:
Other: Table of Estimates of Maximum Ground Surface Effects
Due to Subsidence; Map of existing subsidence features
Comments: Followup study to Rocky Mtn. Geotechnical report "Subsurface Soils Investigation, First West Group, Colorado Springs, CO", RMG Job No. 79F.

Availability: Rocky Mountain Geotechnical, Inc.
Available for inspection at the Colorado Geological Survey and Colorado Division of Mined Land Reclamation, Inactive Mine Program
Author(s): CTL/Thompson, Inc. (Richard Phillips, Darrel Holmquist)
Date: 1984
Title: Evaluation of subsidence potential, Saddle Ridge and Shave/Black Parcels, Pikeview Mine
Publisher: 
County: El Paso
Location: Saddle Ridge Portion
E/2 Sec. 18, T13S, R67W and W1/2 Sec. 18, T13S, R66W
Shave/Black parcel NW1/4 Sec. 18, T13S, R66W
Mine Name: Pikeview
Contents: 15 exploratory borings
Geophysical logs: gamma logs, density logs, caliper logs
Lithology logs: 15
Cross-sections: 2
Mine maps: Pikeview mine map for the property area
Structure maps: 2 depth to mining maps
Other: Mining history, cores, strength tests (indirect tensile strength unconfined pressure and pointload tests), Subsidence risk map
Comments: Borings 1-6A are on the Saddle Ridge Parcel. Borings 7 through 9 are on the Shave/Black parcels

Availability: Colorado Geological Survey
ANOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Map Reference No. E9
CMLRD I.D. # 0410947170307
0410947170301

Author(s): Rocky Mountain Geotechnical, Inc. (Ken Myers)
Date: January 18, 1983
Title: Subsurface Soils Investigation, First West Group
Publisher:
County: El Paso
Location: NE 1/4 Sec. 32, SE 1/4 Sec. 29, T13S, R66W
Mine Name: Busy Bee, Corley, Patterson
Contents:
Geophysical logs:
Lithology logs: 10 borings and logs
Cross-sections:
Mine maps: Mine Map and Test Boring Location Diagram
Structure maps:
Other: Table of Maximum Surface Subsidence Predictions

Comments: Same property as Rocky Mountain Geotechnical Report No. 2570/3743 (E7 this report), "Mine Subsidence Investigation, Cragmoor Properties."

Availability: Colorado Geological Survey, Division of Mined Land Reclamation, Inactive Mine Program
Author(s): Rocky Mountain Geotechnical, Inc.

Date: September 2, 1983

Title: Subsidence Investigation, Alex Patterson Mine.

Publisher:

County: El Paso

Location: SE 1/4 SW 1/4 Sec 11, T13S, R67W

Mine Name: Alex Patterson

Contents:

- Geophysical logs:
- Lithology logs: 4 test borings with lithology descriptions
- Cross-sections:
- Mine maps:
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey; Mined Land Reclamation Division, Inactive Mine Program.
Author(s): Rocky Mountain Geotechnical, Inc.

Date: November 28, 1983

Title: 2822 Country Club Circle Abandoned Mine Subsidence Investigation

Publisher:

County: El Paso

Location: Sec. 33, T13S, R66W

Mine Name: Rapson

Contents:

Geophysical logs:

Lithology logs: Two test borings with lithology descriptions

Cross-sections:

Mine maps:

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey; Mined Land Reclamation Division, Inactive Mine Program.
Author(s): Rocky Mountain Geotechnical, Inc.

Date: July 11, 1983

Title: Mine Subsidence Report 2858 Country Club Place, Colorado Springs, Colorado

Publisher:

County: El Paso

Location: Sec. 33, T13S, R66W

Mine Name: Rapson

Contents:

Geophysical logs:

Lithology logs: 2 test borings with lithology descriptions

Cross-sections: Subsurface profile

Mine maps:

Structure maps:

Other:

Comments:

Availability: Colorado Geological Survey; Mined Land Reclamation Division, Inactive Mine Program.
Author(s): Rocky Mountain Geotechnical, Inc.

Date: January 30, 1984

Title: Mine Subsidence Analysis, Easternmost Portion of University Commons, Colorado Springs, Colorado

Publisher: Rocky Mountain Geotechnical, Inc.

County: El Paso

Location: Sec. 29, T13S, R66W

Mine Name: Corley No. 3

Contents:

Geophysical logs:

Lithology logs: 13 test borings with lithology descriptions, plus 10 test borings from previous studies

Cross-sections: Mine map with test boring locations

Mine maps: Mine map with test boring locations

Structure maps:

Other: Rock mechanics:

12 Brazilian tensile strength tests, 6 beam flexure tests, 11 unconfined compressive strength tests; 2 strain contour maps, 2 subsidence contour maps

Comments: Same property as E7 and E9 this report

Availability: Colorado Geologic Survey, Mined Land Reclamation Division, Inactive Mine Program
Author(s): Tierra Consultants, Inc. (now Atec Associates)
Date: April, 1984
Title: Subsidence Potential Study, Rockrimmon Property
Publisher:
County: El Paso
Location: Sec. 13, T13S, R67W
Mine Name: Pikeview
Contents: 3 test borings
  Geophysical logs: Resistivity, spontaneous potential, gamma caliper logs
  Lithology logs: 3 lithology descriptions
  Cross-sections: Single profile
  Mine maps: Drill hole location map with general mine workings
  Structure maps:
  Other: Potential strain analysis, maximum potential subsidence

Comments: First of two studies of property

Availability: Colorado Geological Survey
Author(s): Tierra Consultants, Inc. (now Atec Associates)
Date: June, 1984
Title: Subsidence Potential Study, Rockrimmon-Sommerset
Publisher:
County: El Paso
Location: Sec. 13, T13S, R67W
Mine Name: Pikeview
Contents: 4 test borings (plus 3 from previous study)
  Geophysical logs: Resistivity, spontaneous potential, gamma and caliper logs
  Lithology logs: 4 lithology descriptions
  Cross-sections: Single profile
  Mine maps: Drill hole location map with general mine workings
  Structure maps:
  Other: Strain contour map
Comments: Final report of two studies
Availability: Colorado Geological Survey
Author(s): Lincoln Devore Testing Laboratory, Inc.

Date: Feb. 3, 1984; May 25, 1984

Title: Subsidence Evaluation Proposed North Pointe Center and Subsidence Evaluation Addendum

Publisher: 

County: El Paso

Location: Sec. 18, T13S, R66W

Mine Name: Pikeview

Contents: 14 test borings

Geophysical logs: Natural gamma, gamma-gamma and caliper, buorehole camera

Lithology logs: Yes

Cross-sections: 

Mine maps: Final Pikeview - 1957 Mine map and test hole location map

1901 Pikeview Mine Map, Carlton Coal Mine - 1903

Structure maps: 

Other: Subsidence profile and strain curve, tensile strength of core samples

Comments: Subsequent mine backfill proposals by Goodson & Assoc. completed for this project (June 27, 1984)

Availability: Colorado Geological Survey
Author(s): Michael Baker, Jr.

Date: 1984

Title: Colorado Springs Land Use and Building Code Project

Publisher: Office of Surface Mining

County: El Paso

Location: T13S, T14S, R66W, R67W

Mine Name: Various

Contents:

Geophysical logs:

Lithology logs:

Cross-sections:

Mine maps: Mine maps plotted relative to surface features

Structure maps:

Other: This study is an update of the 1967 Colorado Springs study

Comments:

Availability: Mined Land Reclamation Division, Inactive Mine Program; Colorado Geological Survey; Office of Surface Mining; Colorado Springs Planning Department
ANNOTATED BIBLIOGRAPHY OF SUBSIDENCE STUDIES
OVER ABANDONED COAL MINES IN COLORADO

Map Reference No. E18
CMLRD I.D. # 0130489892101

Author(s): Douglas, Corey & Fisk
Date: April 13, 1955
Title: Report on Surface Settlement of the Rangeview Subdivision
Publisher:
County: El Paso
Location: S 1/2 NW 1/4 Sec. 29, T13S, R66W
Mine Name: Curtis, City Coal Mine No. 1 - Williams, Williamsville, New Altitude and Danville

Contents:

Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps: Surface topography and features overlain on the mine maps
Structure maps:
Other:

Comments: Historical, first subsidence hazard investigation for a subdivision

Availability: Colorado Geological Survey
Author(s): Dames and Moore

Date: March, 1985

Title: Colorado Springs Subsidence Investigation - Executive Summary, Volume 1, 2 and 3

Publisher: Colorado Mined Land Reclamation Division, Inactive Mine Reclamation Program

County: El Paso

Location: Colorado Springs area - Rockrimmon, Cragmor, Palmer Park, Rustic Hills

Mine Name: 25 different mines

Contents: Approximately 100 drill holes

Geophysical logs: Yes
Lithology logs: Yes
Cross-sections: Yes
Mine maps: Yes
Structure maps: Yes
Other:

Comments:

Availability: Colorado Geological Survey
Colorado Mined Land Reclamation Division
City of Colorado Springs - Planning Department
Penrose Regional Library - Colorado Springs

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<table>
<thead>
<tr>
<th>Map Reference No.</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>McDermid Engineering Assoc., 1983</td>
</tr>
</tbody>
</table>
Figure 3. Location map, Fremont County subsidence investigations.
Author(s): McDermid Engineering Associates, Inc.
Date: 1983
Title: City of Florence, Newlin Creek Waterline rehabilitation, feasibility, and design report
Publisher: State of Colorado, Mined Land Reclamation Division
County: Fremont
Location: Sec. 24, 25, T20S, R70W
Mine Name: Canon City
Contents:
Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Subsidence zone map
Comments: This is a study on impact of subsidence on a water pipeline.

Availability: Colorado Mined Land Reclamation Division
## JEFFERSON COUNTY

<table>
<thead>
<tr>
<th>Map Reference No.</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>Amuedo and Ivey, 1981</td>
</tr>
<tr>
<td>J2</td>
<td>Amuedo and Ivey, 1981</td>
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<tr>
<td>J3</td>
<td>Amuedo and Ivey, 1982</td>
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<td>J4</td>
<td>Chen</td>
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<td>J5</td>
<td>CTL/Thompson, 1981</td>
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<td>J6</td>
<td>CTL/Thompson, 1982</td>
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<td>J7</td>
<td>CTL/Thompson, 1983</td>
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<tr>
<td>J8</td>
<td>Dames &amp; Moore, 1983</td>
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<tr>
<td>J9</td>
<td>Dames &amp; Moore, 1983</td>
</tr>
<tr>
<td>J10</td>
<td>F.M. Fox, 1972</td>
</tr>
<tr>
<td>J11</td>
<td>F.M. Fox, 1977</td>
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<tr>
<td>J12</td>
<td>Goodson</td>
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<tr>
<td>J13</td>
<td>Lucas</td>
</tr>
<tr>
<td>J14</td>
<td>Myers</td>
</tr>
<tr>
<td>J15</td>
<td>Amuedo and Ivey, 1983</td>
</tr>
</tbody>
</table>
Figure 4. Location map, Jefferson County subsidence investigations.
Author(s): Amuedo and Ivey
Date: 1981
Title: Subsidence investigation, Phase I, Virginia Mine, South Garrison and Ken Caryl, Jefferson County, Colorado
Publisher:
County: Jefferson
Location: Sec. 34, T5S, R69W
Mine Name: Virginia
Contents:
  Geophysical logs:
  Lithology logs:
  Cross-sections:
  Mine maps: Yes
  Structure maps:
  Other: Predicted surface subsidence map, predicted surface strain map.

Comments:

Availability: Jefferson County
Author(s): Amuedo and Ivey

Date: 1981

Title: Phase II, subsidence investigation, Virginia Mine, So. Garrison Street and Ken Caryl Rd., Jefferson County, Colorado

County: Jefferson

Location: Sec. 34, T5S, R69W

Mine Name: Virginia

Contents:

Geophysical logs: gamma, sp, resistivity, caliper, density
Lithology logs: Yes
Cross-sections: Yes
Mine maps:
Structure maps:
Other: Predicted surface subsidence map.

Comments:

Availability: Jefferson County
Author(s): Amuedo and Ivey
Date: 1982
Title: Mine subsidence investigation, Virginia Mine, Jefferson County, Colorado, Vol. 1 and 2
Publisher: Jefferson County
County: Jefferson
Location: Sec. 34, T5S, R69W
Mine Name: Virginia
Contents:
- Geophysical logs: gamma, density, caliper, resistivity, drift survey
- Lithology logs: Yes, auger drill hole, 8 rotary drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps:
- Other: Depth sounding resistivity surveys, subsidence and strain maps.

Comments:

Availability: Mined Land Reclamation Division
Jefferson County
Author(s): Chen and Associates

Date: 1981

Title: Foundation recommendations in areas of potential ground subsidence, Albertson's Food Center #8-P, Ken Caryl Rd. and Garrison Street, Jefferson County, Colorado

Publisher:

County: Jefferson

Location: Sec. 34, T5S, R69W

Mine Name: Virginia

Contents:

Geophysical logs:

Lithology logs:

Cross-sections:

Mine maps:

Structure maps:

Other:

Comments: Text only.

Availability: Jefferson County
Author(s): CTL/Thompson, Inc.
Date: 1981
Title: Evaluation of subsidence potential, Coal Mine West Project, Coal Mine Rd. and Kipling Street, Jefferson County, Colorado
Publisher:
County: Jefferson
Location: Sec. 21, T5S, R69W
Mine Name: Economy
Contents:
- Geophysical logs: gamma, density, caliper, resistivity
- Lithology logs: Yes, 6 drill holes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps: 
- Other: Subsidence hazard map.
Comments: E-logs not available at Colorado Geological Survey.
Availability: Colorado Geological Survey
Author(s): CTL/Thompson, Inc.

Date: 1983

Title: Evaluation of subsidence potential, Coal Mine Road alignment, Coal Mine Road and Kipling Street, Jefferson County, Colorado

Publisher: 

County: Jefferson

Location: Sec. 21, T5S, R69W

Mine Name: Economy

Contents:

- Geophysical logs: gamma, density, caliper, resistivity
- Lithology logs: 8 drill holes
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other: Strain profile, subsidence profile

Comments:

Availability: Colorado Geological Survey
Title: Subsidence potential of the area between the Littleton and Economy mines, Coal Mine Rd. and Kipling Street, Jefferson County, Colorado

Publisher:

County: Jefferson

Location: Sec. 28, T5S, R69W

Mine Name: Littleton, Economy

Contents:

Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps: Yes
Structure maps:
Other: Subsidence risk map.

Comments:

Availability: Colorado Geological Survey
Jefferson County
Author(s): Dames and Moore
Date: 1983
Title: Report, northern end of the Economy Mine subsidence hazard study, Jefferson County, Colorado
Publisher: State of Colorado, Mined Land Reclamation Division
County: Jefferson
Location: Sec. 21, T5S, R69W
Mine Name: Economy
Contents:
- Geophysical logs: gamma, resistivity, gamma density, caliper
- Lithology logs: Yes: 11 rotary, 1 angle core drill hole
- Cross-sections: Yes
- Mine maps:
- Structure maps: Yes
- Other: Surface strain contours, trough subsidence contours, hazard and utility location map

Comments:

Availability: Mined Land Reclamation Division
Author(s): Dames and Moore
Date: 1983
Title: Report, Rubey Clay – mine subsidence hazard study, Golden, Colorado
Publisher:
County: Jefferson
Location: Sec. 28, T3S, R70W
Mine Name: Old Loveland, New Loveland, New White Ash, New Mine
Contents:
   Geophysical logs: gamma, density, resistivity, caliper
   Lithology logs: Yes
   Cross-sections: See comments
   Mine maps: Yes
   Structure maps: Yes
   Other: Surface strain contour map.
Comments: Cross-section maps are of mine workings.
Availability: Jefferson County, City of Golden, Colorado Geological Survey
Author(s): F.M. Fox and Associates, Inc.
Date: 1972
Title: Subsidence evaluation, SE/4 of the NW/4, Section 27, Township 5 South, Range 69 West, Jefferson County, Colorado
Publisher:
County: Jefferson
Location: Sec. 27, T5S, R69W
Mine Name: Littleton
Contents:
- Geophysical logs:
- Lithology logs:
- Cross-sections:
- Mine maps:
- Structure maps:
- Other: Subsidence contour map

Comments:

Availability: Jefferson County
Author(s): F.M. Fox and Associates, Inc.

Date: 1977

Title: Abandoned coal mine review for the Meadows planned development, Jefferson County, Colorado

Publisher: 

County: Jefferson

Location: Sec. 21, 27, 34, T5S, R69W

Mine Name: Littleton, Economy, Virginia

Contents:
- Geophysical logs:
- Lithology logs:
- Cross-sections:
- Mine maps: Yes
- Structure maps:
- Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Goodson and Associates, Inc.

Date: 1983

Title: Virginia Mine subsidence hazard evaluation project

Publisher: State of Colorado, Mined Land Reclamation Division

County: Jefferson

Location: Sec. 34, T5S, R69W

Mine Name: Virginia

Contents:

Geophysical logs: Self-potential, resistivity, resistance, gamma, gamma-gamma, caliper

Lithology logs: See comments

Cross-sections: Strain and geologic

Mine maps: Yes

Structure maps: Yes

Other: Subsidence hazard zone map

Comments: Daily drilling report.
Subsidence monitoring system design.

Availability: Mined Land Reclamation Division
Jefferson County
Monthly survey results from subsidence monitoring system are available at the Mined Land Reclamation Division
Author(s): Lucas, J.C. and Russell, C.
Date: 1984
Title: Investigation of mine conditions beneath a southwest metropolitan water and sanitation district sewer line, Virginia Mine, Jefferson County, Colorado
Publisher: State of Colorado, Mined Land Reclamation Division
County: Jefferson
Location: Sec. 34, T5S, R69W
Mine Name: Virginia
Contents:
- Geophysical logs: caliper, gamma-gamma, gamma
- Lithology logs: Yes, 5 drill holes
- Cross-sections:
- Mine maps:
- Structure maps:
- Other:

Comments:

Availability: Mined Land Reclamation Division
Author(s): Myers, A.R., Lindvall, R.A., Hynes, J.L. and Ivey, J.B.

Date: 1978

Title: Coal and clay mine hazard study and estimated unmined coal resources, Jefferson County, Colorado

Publisher: Jefferson County, prepared by Amuedo and Ivey

County: Jefferson

Location: T2,3,4,5, and 6S, R69W; T2,3,4 and 5S, R70W; T2S, R71W

Mine Name: Bluebird No. 1, Leyden, White Ash, New Loveland, Golden Star, Economy, Rowe, Independence

Contents:

Geophysical logs:

Lithology logs:

Cross-sections:

Mine maps: Extent of mining

Structure maps:

Other: Coal isopach map, columnar section of Cretaceous rocks, subsidence inventory maps, subsidence hazard maps, mining factors maps.

Comments: Contains a bibliography on local coal studies and subsidence theory.

Availability: Colorado Geological Survey
Jefferson County
Author(s): Amuedo and Ivey, Inc.

Date: Sept. 29, 1984

Title: Subsidence Investigation, Littleton Mine, Jefferson County, Colorado

Publisher:

County: Jefferson

Location: NW 1/4 Sec. 27, T5S, R69W

Mine Name: Littleton

Contents:

- Geophysical logs:
- Lithology logs:
- Cross-sections:
- Mine maps: General Mine Map
- Structure maps:
- Other: Subsidence and horizontal strain predictions

Comments: Proposed southwest mini-storage subdivision

Availability: Colorado Geological Survey, Jefferson County Planning Department
## WELD COUNTY

<table>
<thead>
<tr>
<th>Map Reference No.</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>Hydro-Search, 1983</td>
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<tr>
<td>W2</td>
<td>Hynes, 1984</td>
</tr>
<tr>
<td>W3</td>
<td>Tierra, 1983</td>
</tr>
<tr>
<td>W4</td>
<td>Chen, 1980</td>
</tr>
<tr>
<td>W5</td>
<td>Church, 1980</td>
</tr>
<tr>
<td>W6</td>
<td>Gaz, 1980</td>
</tr>
<tr>
<td>W7</td>
<td>Deuel and Associates, 1985</td>
</tr>
<tr>
<td>W8</td>
<td>Deuel and Associates, 1985</td>
</tr>
</tbody>
</table>
Figure 5. Location map, Weld County subsidence investigations.
Author(s): Hydro-Search, Inc.
Date: 1983
Title: Site evaluation and operation plan for Landfill Systems, Inc. disposal site, Erie, Colorado
Publisher: 
County: Weld
Location: Sec. 20, T1N, R68W
Mine Name: Boulder Valley No. 1
Contents:
- Geophysical logs:
- Lithology logs: Yes
- Cross-sections:
- Mine maps: See comments
- Structure maps:
- Other: Subsidence hazard map.

Comments: Mine maps are generalized extent of mining.
Report contains only short section on subsidence.

Availability: Colorado Geological Survey
Author(s): Hynes, Jeffrey L., Colorado Geological Survey

Date: 1984

Title: Tri-Towns Subsidence Investigation, Weld County, Colorado

Publisher: Colorado Division of Mined Land Reclamation, Inactive Mine Program

County: Weld

Location: T1N, T2N, R67W

Mine Name: Baum, Firestone, Evans, Grant, Sterling, Warwick

Contents:

Geophysical logs: natural-gamma, gamma density, resistivity and caliper

Lithology logs: 97 drill holes - 11 core, 86 rotary - and lithology descriptions

Cross-sections: Representative Cross-sections

Mine maps: Mining Features

Structure maps:

Other: Subsidence evaluation and hazard classification

Comments: Extent of mining maps (mine features) overlain on air photos (1 inch to 200 feet scale)

Availability: Colorado Mined Land Reclamation Division, Inactive Mine Program, Colorado Geological Survey
Author(s): Tierra Consultants, Inc.
Date: 1983
Title: Subsidence potential study, Dacono property, Weld County, Colorado
Publisher: 
County: Weld
Location: Sec. 3, T1N, R68W
Mine Name: Puritan
Contents:
- Geophysical logs: Yes
- Lithology logs: Yes
- Cross-sections: Yes
- Mine maps: Yes
- Structure maps: 
- Other: Hole location map.
Comments: 

Availability: Tierra Consultants, Inc.
Author(s): Chen and Assoc.
   Ralph Mock, Richard Hepworth

Date: 1980

Title: Preliminary Engineering Geology, soils and coal mine subsidence evaluation for the Harrington property, Weld County, Colorado

Publisher: Chen and Assoc.

County: Weld

Location: Sec. 12, T1N, R68W

Mine Name: Gradon Mine

Contents:

   Geophysical logs:

   Lithology logs:

   Cross-sections:

   Mine maps:

   Structure maps:

   Other:

Comments:

Availability: Colorado Geological Survey
Author(s): Edward A. Church
          Ralph Mock, Richard Hepworth

Date: 1980

Title: Geologic Investigation, Proposed Coufal Residence, 40 acre tract

Publisher: County: Weld

Location: N-1/2 N-1/2 SW1/4 Sec. 15, T1N, R68W

Mine Name: Eagle Mine

Contents:

Geophysical logs:
Lithology logs:
Cross-sections:
Mine maps:
Structure maps:
Other: Construction recommendations

Comments:

Availability: Colorado Geological Survey
Author(s): Louis Gaz
Date: 1982
Title: Geologic Hazard - Martin Exploration Co.
Publisher: 
County: Weld
Location: Sec. 5, T1N, R67W
Mine Name: Sterling Mine
Contents:
- Geophysical logs:
- Lithology logs:
- Cross-sections:
- Mine maps:
- Structure maps:
- Other: Subsidence Evaluation
Comments:

Availability: Colorado Geological Survey
Author(s): Deuel and Associates
Date: March, 1985
Title: Subsidence Potential of 9 Acres of the Scotts Acres Subdivision
Publisher: Deuel and Associates, Inc.
County: Weld
Location: Section 9, T1N, R68W (incorrectly listed as R69W in report)
Mine Name: Morrison Mine
Contents:
Geophysical logs: 3
Lithology logs: Yes
Cross-sections:
Mine maps:
Structure maps: Yes, 1
Other: Strain Analysis
Comments: Deuel and Associates (now Atec Associates)

Availability: Colorado Geological Survey
Author(s): Deuel and Associates, Inc.

Date: March, 1985

Title: Subsidence Potential Study of 320 Acres located in Frederick, Colorado for Grant Bros.

Publisher:

County: Weld

Location: Sec. 31, T2N, R67W

Mine Name: Sterling

Contents:

Geophysical logs: Gamma, Sp, Resistance, Caliper

Lithology logs: Yes

Cross-sections: No

Mine maps: No

Structure maps: No

Other: Strain contour map

Comments:

Availability: Colorado Geological Survey
SELECTED REFERENCES


Sources of Information

Colorado Division of Mines
1313 Sherman Street, Room 423
Denver, CO 80203
(303) 866-3567

Coal mine maps
Coal mine production records

Colorado Geological Survey
Department of Natural Resources
1313 Sherman Street, Room 715
Denver, CO 80203
(303) 866-2611

CGS publications
Consultant reports
General information

Colorado School of Mines
Golden, CO 80401
(303) 273-3690

Publications
Technical library

Denver Public Library
Western History Department
1357 Broadway
Denver, CO 80203
(303) 571-2009

Rocky Mountain Fuel Co. Maps

Jefferson County Planning Department
1700 Arapahoe Street
Golden, CO 80401
(303) 277-8699

Consultant reports
Virginia Mine subsidence investigation

Mined Land Reclamation Division
State of Colorado Department of Natural Resources
1313 Sherman Street, Room 423
Denver, CO 80203
(303) 866-3567

Colorado Inactive Mine Program
Subsidence hazard publications
Extent of mining maps
OSM emergency action reports
Louisville Planning Department  
749 Main Street  
Louisville, CO  80027  
(303) 666-6565

Consultant reports

Office of Surface Mining  
Western Technical Center  
1020 15th Street  
Denver, CO  80202

Emergency action closeout reports

U.S. Bureau of Mines  
Intermountain Field Operations Center  
Building 20, Denver Federal Center  
Denver, CO  80225  
(303) 234-4119

Coal mine maps and data for the State of Colorado  
Subsidence Information Center bibliography file

U.S. Geological Survey Library  
1526 Cole Boulevard  
Golden, CO  80401  
(303) 234-4133

Publications
Author(s):
Date:
Title:
Publisher:
County:
Location:
Mine Name:
Contents:
  Geophysical logs:
  Lithology logs:
  Cross-sections:
  Mine maps:
  Structure maps:
  Other:

Comments:

Availability:

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