

# Nevada Bureau of Mines and Geology Report 51

## Preliminary Assessment of the Potential for Carbon Dioxide Disposal by Sequestration in Geological Settings in Nevada

by

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This CDROM contains the model data used to support the Preliminary Assessment of the Potential for Carbon Dioxide Disposal by Sequestration in Geological Settings in Nevada. In addition to the model data, this CDROM contains the full text of the report, some Nevada base map data layers, and some of the original data sets that were used to develop the model layers. These digital datasets are in shapefile format. All digital coverages are in UTM, zone 11, meters, NAD 27 projection.

A full description of the data sets used in the model and how they were processed are contained in the NBMG Report 51 document which is in Acrobat PDF file format on this CD. This information should be considered preliminary. It has not been edited or checked for completeness or accuracy.

Directory structure:

|               |  |
|---------------|--|
| Readme.doc    | This readme file.                            |
| Readme.pdf    | This readme file in Acrobat PDF file format. |
| Report_51.pdf | Final report in Acrobat PDF file format.     |

Report\Report\_51.pdf Directory containing final report in Acrobat PDF file format.

CO2\_model\_data\_layers\ Directory contains data layers used to construct the final model.

|   |  |
|---|--|
| CO2_model_data_layers\1K_GOOD.SHP           | Areas indicated by model as meeting criteria |
| CO2_model_data_layers\bedrock.shp           | Bedrock areas from geology map               |
| CO2_model_data_layers\clip_ha694b.shp       | Nevada carbonate province outline            |
| CO2_model_data_layers\faults_final_clip.shp | Buffered normal and strike slip faults       |
| CO2_model_data_layers\fin_md_mm5_120_5k.shp | Areas with potential mineral resources       |
| CO2_model_data_layers\geology.shp           | Nevada 1:500,000 scale geology               |
| CO2_model_data_layers\geotherm20k.shp       | 20k geothermal buffer map                    |
| CO2_model_data_layers\k1_basin.shp          | 1 kilometer basin fill or greater            |
| CO2_model_data_layers\nv_boundary.shp       | Nevada boundary map                          |
| CO2_model_data_layers\people.shp            | Areas of population/transportation effects   |
| CO2_model_data_layers\restricted_lands.shp  | Areas of withdrawn lands                     |
| CO2_model_data_layers\val_fill.shp          | Valley fill from Geology map                 |
| CO2_model_data_layers\vf_shallow.shp        | Areas of shallow valley fill                 |

Original\_data\_sets\ Directory containing assorted data sets used to build model data sets. Some data sets are completely documented and others are not. Complete references for the source of the various data sets that were used and are contained in this directory can be found in the full report.

|                                       |   |
|---------------------------------------|---|
| Original_data_sets\Cities.shp         | NBMG cities and Towns in Nevada               |
| Original_data_sets\geothermal.shp     | Geothermal locations in Nevada                |
| Original_data_sets\map120_f.shp       | Draft updated version of NBMG Map120          |
| Original_data_sets\mdist_p.shp        | Mining district map of Nevada, NBMG Report 47 |
| Original_data_sets\nbm_g_qf.shp       | NBMG Quaternary fault data base               |
| Original_data_sets\nv_urban_UTM27.shp | Nevada urban areas from US Census data        |
| Original_data_sets\Roads.shp          | NBMG major Nevada roads and highways          |
| Original_data_sets\usgs_qf.shp        | USGS Quaternary faults for Nevada             |

Original\_data\_sets\USGS\_Geology\_500k\LINE.SHP 500k Nevada geology - lines

Original\_data\_sets\USGS\_Geology\_500k\POLY.SHP 500k Nevada geology - polygons

Data from “Nevada Oil and Gas Well Database (NVOILWEL)” Compiled by Ronald H. Hess.  
Assisted by Shane P. Fitch and Sean N. Warren, 2004, Nevada Bureau of Mines and Geology Open-File Report 04-1:

|  |                                   |
|--|-----------------------------------|
| Original_data_sets\Oil_Gas_OFR_04_01\ofr_04_01.shp                           | Nevada Oil and Gas Well data base |
| Original_data_sets\Oil_Gas_OFR_04_01\of041.pdf                               | Nevada Oil and Gas Well report    |
| Original_data_sets\Oil_Gas_OFR_04_01\README.TXT                              | Nevada Oil and Gas Well text file |
| Original_data_sets\Oil_Gas_OFR_04_01\CO2_Additional_data\Readme_Oil_Data.TXT |                                   |

Data from NBMG Open-File Report 01-03:

|  |                                    |
|--|------------------------------------|
| Original_data_sets\NBMG_OFR_01_03\nv_mrds.shp  | USGS MRDS data                     |
| Original_data_sets\NBMG_OFR_01_03\mils2000.shp | USBM MILS data                     |
| Original_data_sets\NBMG_OFR_01_03\dom_aml.shp  | Div. of Minerals Abandoned Mines 3 |
| Original_data_sets\NBMG_OFR_01_03\nv_pts.shp   | Prospect, shaft, and tunnel sites  |
| Original_data_sets\NBMG_OFR_01_03\OFR0103.txt  | Short version OFR 01-03 report     |

Data from “An Analysis of Nevada’s Metal-Bearing Mineral Resources” 1996, Edited by Donald A. Singer, Nevada Bureau of Mines and Geology Open-File Report 96-2:

|  |                             |
|--|-----------------------------|
| Original_data_sets\Metal_Bearing_Min_Res\Readme_ofr_96_2.txt | Readme file                 |
| Original_data_sets\Metal_Bearing_Min_Res\ofr962\             | OFR 96-2 full report        |
| Original_data_sets\Metal_Bearing_Min_Res\ofr962\index.htm    | OFR 96-2 index to PDF files |

CO2\_model\_layers\_metadata\ Directory containing metadata for model layers

Basedata\ Directory containing various 1:1,000,000 scale Nevada base data layers.

|                           |   |
|---------------------------|---|
| Basedata\cities.shp       | NBMG cities and Towns in Nevada   |
| Basedata\county_p.shp     | NBMG county polygon coverage of Nevada                                    |
| Basedata\nvqdp.shp        | NBMG 7.5 minute quadrangle boundaries of Nevada                           |
| Basedata\roads.shp        | NBMG major Nevada roads and highways                                      |
| Basedata\Nev_Base.tif     | NBMG Georeferenced tifw 1:1,000,000 scale base map of Nevada              |
| Basedata\NV_500k_topo.tif | USGS Scanned georeferenced tifw 1:500,000-scale topographic map of Nevada |

These data and this report present a preliminary assessment of the potential for CO<sub>2</sub> disposal by sequestration in geological settings in Nevada using analysis with geographic information systems (GIS). The key assumptions made are that, for CO<sub>2</sub> disposal in saline aquifers, it is wisest to (1) avoid underground disposal in areas of fractured bedrock and restrict the assessment to parts of alluvial basins that are thick enough to provide a seal against leakage and have sufficient pressure to keep the CO<sub>2</sub> in a condensed phase; (2) stay away from active faults with fracture zones that may allow leakage of CO<sub>2</sub> from underground injection sites; (3) avoid areas that, in the foreseeable future, have a reasonably high probability of being explored and developed for mineral, geothermal, or water resources; (4) avoid current urban areas and areas that are likely to experience significant population growth during the 21st century; and (5) avoid restricted lands, such as parks and military reservations. The data sets used in the GIS analysis are made available in the electronic version of this report, so that others may reevaluate the approach with different assumptions and data sets.

For questions about this CDROM contact:

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