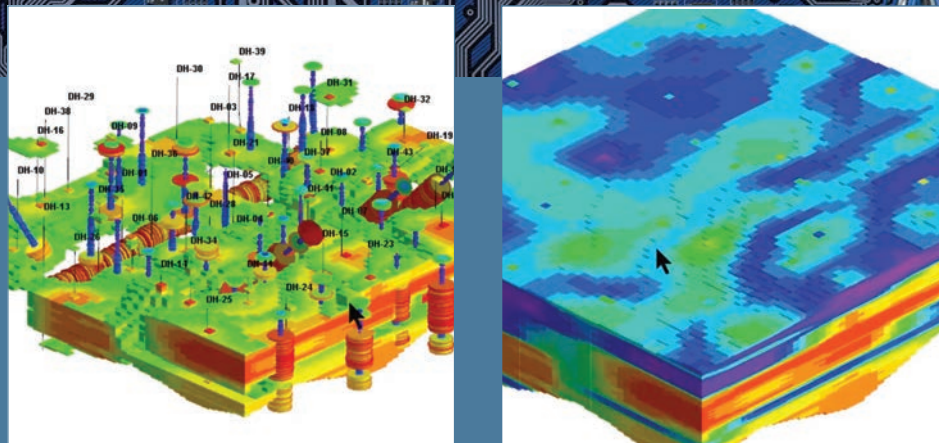


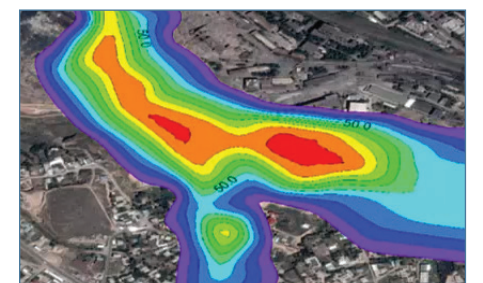
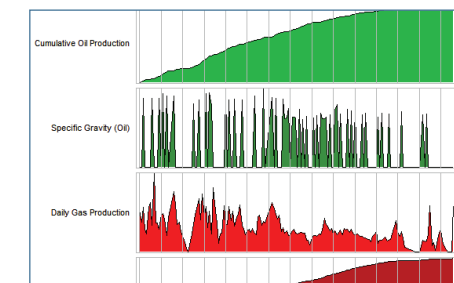
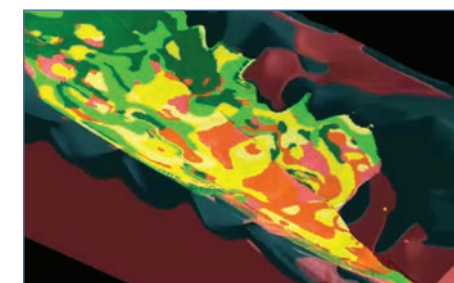


RockWorks contains tools that will save time and money, increase profitability and provide you with a competitive edge through high-quality graphics, models and plots. See what's new!

3D trend-polynomial modeling • Redesigned grid and solid math menus w/up to 10 steps • Raster symbols within maps & diagrams • Separate left & right profile and section axis labeling (e.g., elevations on left, depths on right) • Draped images now clipped if image is larger than grid • Compute changes in mass of contaminant over discrete time intervals • Crop models based on convex polygon automatically fitted to control points • Launch other programs from Playlist • Borehole map symbols now unique or uniform • Determine intersections of grids (e.g., water table & ground surface) • Stretch, cascade, tile & stack options added to Layout options • Create block models in which voxel values between two surfaces defined by another grid (e.g., ore grades) • Faults now included in the Multi-Table import/export. • More accurate grid interpolations adjacent to 3D faults • Display downhole seismic and radar data as distance to an object (e.g., pilings) • 2D & 3D faults created from RockPlot2D lines/polygons • Convert 2D faults to 3D faults • Import RockWorks17 2D faults • Grid smoothing & plotting of 3D fault intercepts within 2D maps • Drag/drop, delete, and paste multiple playlist items • Assign borehole symbols by enabling borehole groups • More forgiving borehole import • Backup all files in project folder to compressed file outside current project folder • Redesigned grade/thickness programs • Lithology/stratigraphy filter added to I-Data, P-Data, & T-Data histograms & statistics • Adjustable # of sides within 3D cylindrical entities (cylinder, cones, disk, etc.) • Sections & profiles can now include two surfaces (e.g., ground surface and water table) • Vertical title position for section & profile annotation can now be manually specified • Grid smoothing added to T-Data time-animations • All files now listed within Project Manager • Reports now include options for independently specifying the decimals places for area, g-value, length, mass, volume, etc • Reports redesigned for better readability • Multiple polygons can now be used to clip grids • All menus now include reset-to-defaults option • "Show Instructions" checkbox replaced w/small +/- buttons • Playlist now displays number of items within title • Solid reveal animations now support both isosurfaces and voxel models • Voxel reveal now includes view direction, zoom, vertical exaggeration, etc • 12 different changes of rotation added to Solid Reveal animations • Imports now support user-defined delimiters • Redesigned Digitize program • 5-meter DEM import • 30% faster 3D animations • Shape file import now reads projection and coordinate reference system (prg file) • Rectangles drawn in RockPlot2D can now be used to re-define project dimensions • Anchor points now used to move text within RockPlot2D • Subsites can now be added to Playlist • RCL import/export options added to Playlist • RockPlot2D manual pattern scaling can be applied to all diagrams • Images floated in Google Earth now force rotation so that the images are in view • Multiple files now selectable when importing raster logs • Raster import more forgiving when tiff file is no longer in original folder • Vertical splitter bar added to 2D log-design window • Scroll bars added to Georeference dialog • Project dimensions load/save added to Playlist • Direct graphic output to PDF • Opacity of 2D objects now independently adjustable • T-data within striplogs now corresponds to time animations • Convert solids to depth-to-target grids • Constrain modeling based on Boolean models (e.g., geochemistry and permeable zones) • Null values now skipped when reading Datasheet • DXF exports now use True Colors and support vertical exaggeration • Collada Export now supports meters • Up to six cutoff levels within IsoShell animations • TCE plume migration tutorial dataset • Sand & Gravel tutorial dataset



RockWorks is a comprehensive program that offers visualization and modeling of spatial data and subsurface data. Whether you are a petroleum engineer, environmental scientist, hydrologist, geologist or educator, RockWorks has what you need.





New Features

- Video—A new button titled “2D & 3D Embellishments” has been added to the “What’s New in RockWorks 2021” index. Clicking on this button will display a new video that describes some additional new features within RockWorks 2021.(<https://www.screencast.com/t/16pyJxgBJp>).
- The new ModOps | Volume | Time-Based Mass creates a report that lists the change in mass of a contaminant over time, based on a list of solids that represent geochemical models for discrete time intervals.
- A new option titled “Polygon” has been added to the gridding options menus. This new tool can be used to crop grid models using a polygon based on:
 - ~ the control point extents (i.e. a convex hull),
 - ~ a polygon table,
 - ~ a polygon defined within an RwDat file, or
 - ~ a polygon defined within a RockPlot2D file.
- A new option titled “Launch Program” has been added to the Playlist | Add pull-down menu.
- The Borehole Operations | Maps | Borehole Map menu now includes an option for using the borehole symbols that are unique to each borehole (as defined within the Borehole Location tab for each borehole) or specifying a uniform symbol for all boreholes.
- The new ModOps | Grid | Math | Grid Intersections program determines the locations where two grids intersect, such as where a water table intersects the surface topography.
- The Layout menu offers more automatic stretch, cascade, tile, and horizontal or vertical stack of open documents and windows.
- The new program titled ModOps | Grid | 3 Grids -> Solid program will create a block model in which the voxel values between two surface model grids are defined by another grid (e.g. a grid representing ore grades).
- The faults are now included in the Multi-Table import/export (hence in the Archive also), and faults can now be transferred when creating a new project.
- The new Double Gridding option in the gridding Options | Faulted menu will create more accurate interpolations adjacent to 3D faults.
- The new Perpendicular Model option in the 3D Log Designer | Fractures menu and Fractures | Solid Model program offers easier display of downhole seismic and radar surveys in which the fracture radius represents the distance to an object (e.g. pilings) and the aperture represents the height of the object.
- RockWorks can now import 5 meter DEM's. Be aware that they create huge (>1.5M node) grids so plotting will be slow.
- The processing of 3D animations has been sped up by about 30%.
- Changed the memory display colors for 0-25% to white text on a red background.
- Dates will now be saved in US format MM/DD/YEAR (i.e. 7/22/2020) for Ini, Play list and command script files.
- Shape file import will now read the Shape file's Projection and Coordinate Reference System (prg file).
- Date Format and Date Separator in the Datasheet work with 'Date' Type columns and programs that use dates.



Program Automation

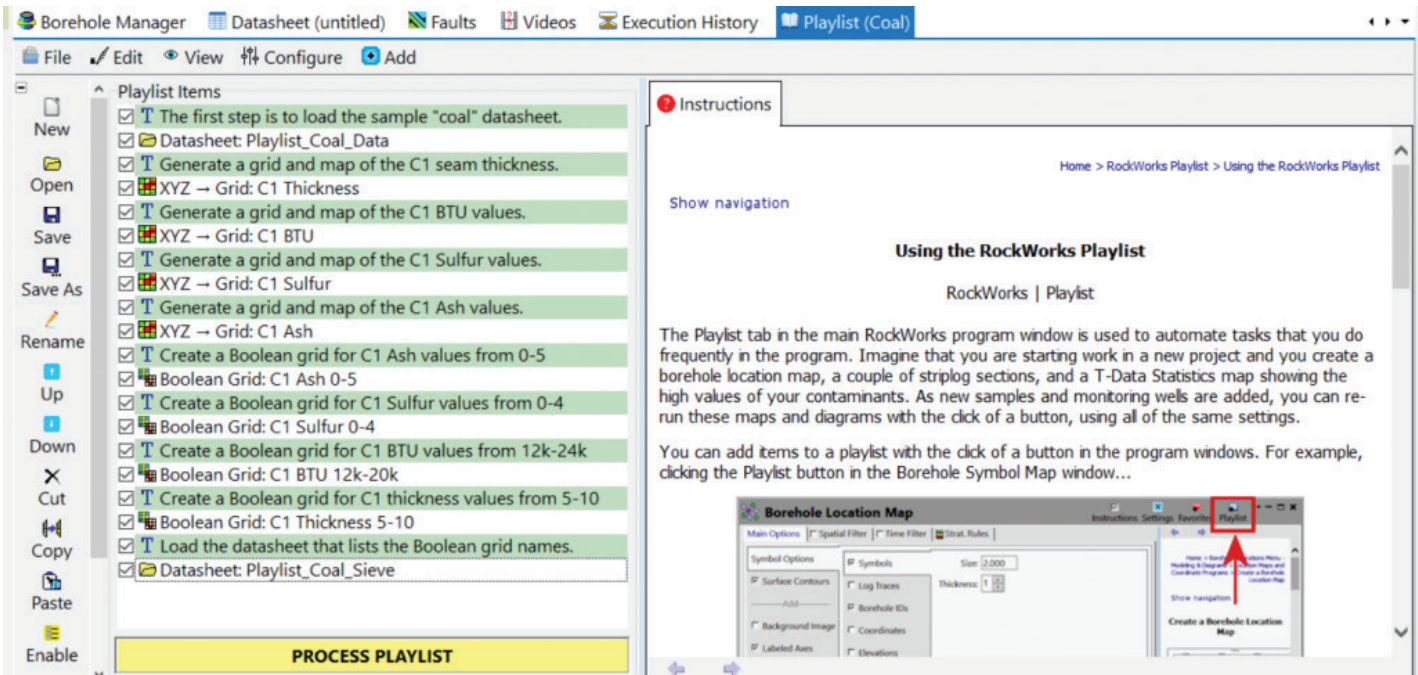
The new RockWorks Playlist offers easy automation – just click a button to add a program to the current Playlist. Then, click a button to run your Playlist to create models, maps, diagrams while you have lunch. Available for Basic (5 items), Standard (5 items) and Advanced (unlimited items).

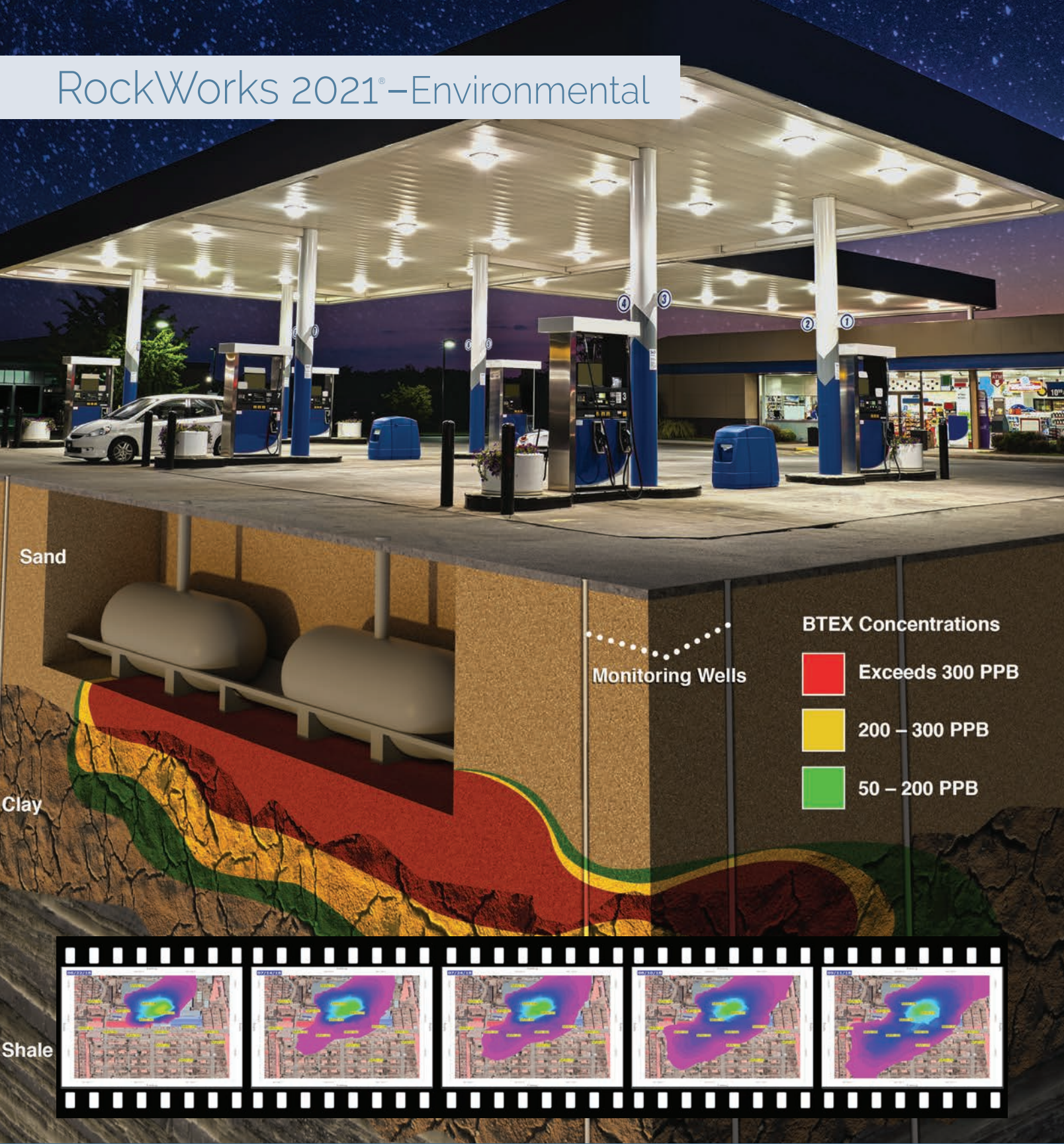
The Playlist provides:

- **Turn-key tools** for colleagues or clients who need to use RockWorks capabilities without any downtime spent learning how to use it.
- **A memory aid** for projects that are infrequently re-visited.
- **An audit trail** to serve as a record of what was done and all of the associated menu settings.
- **Automation of data processing** in which new data is being introduced on an ongoing basis (e.g. resampling and monitoring).
- **A template** for processing different data sets/sites using a streamlined workflow.

Recent Playlist Improvements:

- Launch an **external program** from within the Playlist to automate data transfer.
- **Load dimensions** from a sub-site within the project, and from a saved coordinate list.
- **Easier navigation** with multi-select cut/copy/paste.



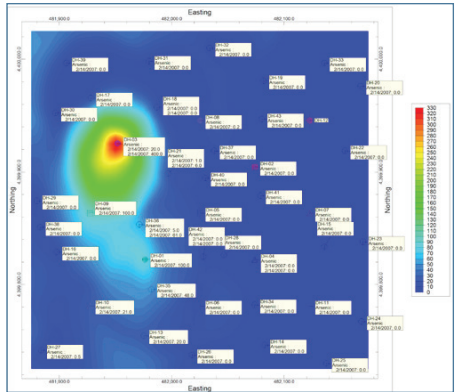


Borehole logs, cross sections, concentration maps, plume models, geology models, time-based animations, geochemistry diagrams and more. RockWorks will help the environmental professional along the path from site characterization to remediation planning and execution.



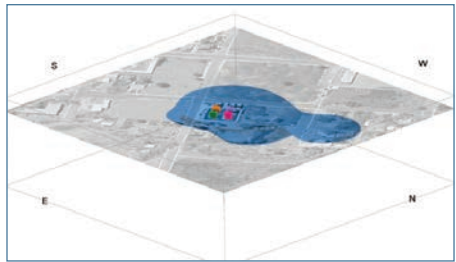
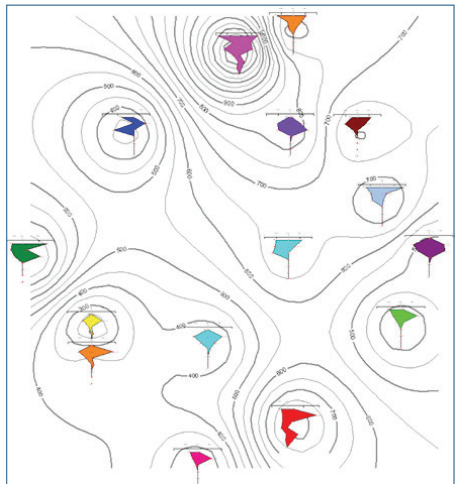
Mapping Tools

- Borehole location maps with detailed data labels
- Contaminant concentration maps with lines and color fills, custom color tables, date filters
- Plan- and surface-based slices from 3D models
- Stiff diagram maps
- Time-graph maps for user-selected analytes
- Potentiometric surface maps
- Flow maps in 2D and 3D
- Coordinate systems/conversions: lon/lat, UTM, State Plane, local, custom



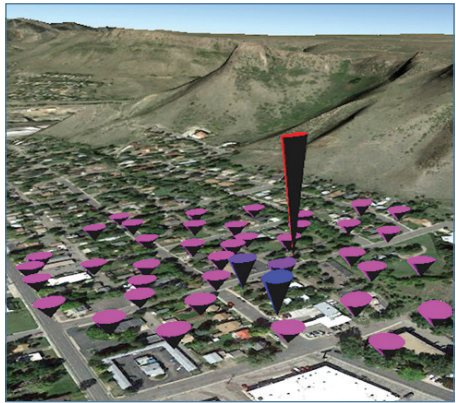
Borehole Database Tools

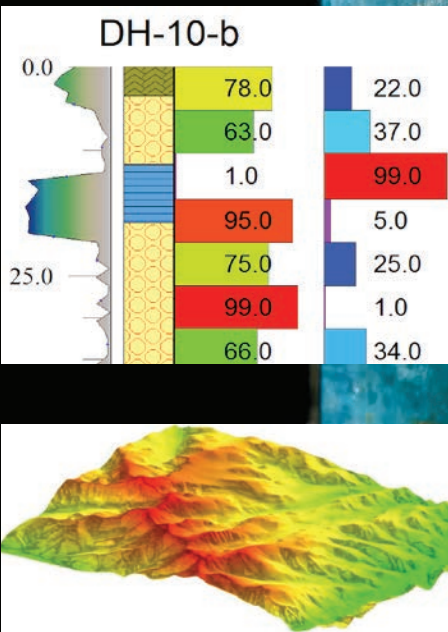
- Cross sections: multi-panel projected and hole to hole, with borehole logs and/or interpolated panels
- Correlations: model-based and "EZ" panels, snapping tools for hand-drawn correlations
- Borehole logs in 2D and 3D
- 3D fence diagrams
- Surface modeling of stratigraphic layers and water levels
- Plume modeling of analytical data, with display as voxel or isosurface diagrams, 2D plan and section slices
- Solid modeling of lithologic materials, geophysical and geotechnical measurements
- Volume reports of lithologic and stratigraphic models, contaminant extraction models
- Bulk data imports from Excel, text, LAS, other databases



Other Tools

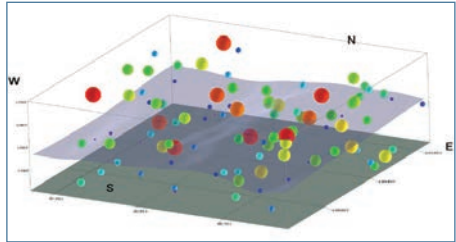
- Time-based animations
- Piper and Durov diagrams with TDS circles, Stiff diagrams for multiple samples
- Water level drawdown diagrams and surfaces
- 2D editing tools: contour lines, text, shapes, legends, images
- Composite scenes in 3D with maps, logs, surfaces, solids, panels, surface objects
- Page layout program for small to large format presentations and posters
- Exports to GIS Shapefiles, CAD DXF, raster formats, Google Earth
- Image import and rectification
- Program automation
- Google Earth output directly from data: points, cones, lines, polygons, images, flyovers





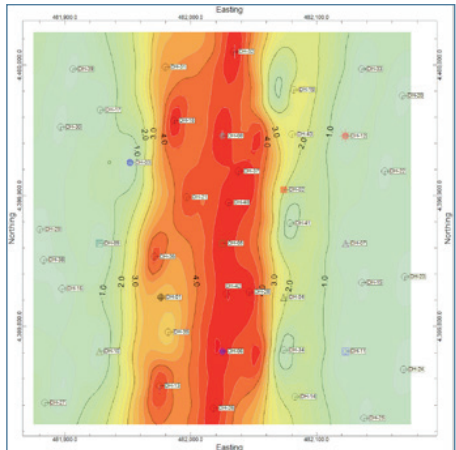
Mapping Tools

- Drillhole location maps with detailed data labels
- Assay, concentration maps with lines and color fills, custom color tables
- 3D surface displays: topographic surfaces, stratigraphic units
- 3D point maps
- Geology maps: plan or surface-based slices from block models
- Multivariate maps: pie chart, bar chart, starburst, spider maps
- Coordinate systems/conversions: lon/lat, UTM, State Plane, local, custom



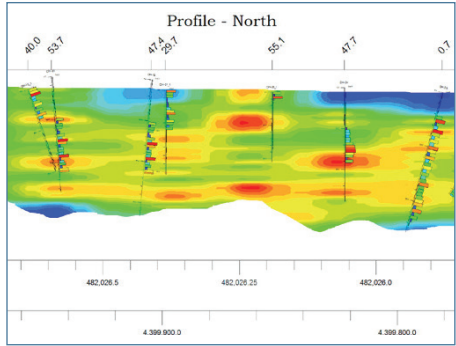
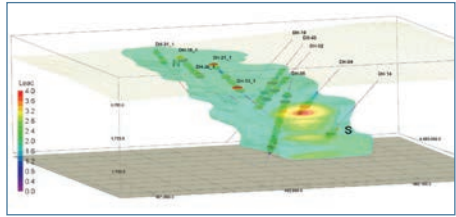
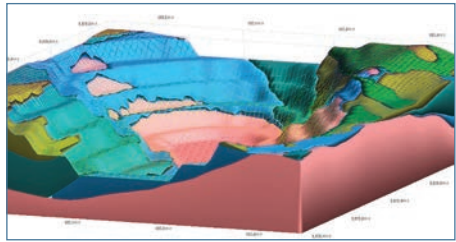
Borehole Database Tools

- Projected cross sections showing drillhole orientation
- Correlation panels: stratigraphy, lithology, grade/concentration, geophysics
- Drillhole logs in 2D and 3D with lithology, stratigraphy, bargraphs/disks, curves, color intervals, text
- Block model interpolation from XYZG point or drillhole data, display as voxels, isosurfaces, fence diagrams, 2D plan and section slices
- Surface model interpolation of stratigraphic units
- Downhole fracture display and modeling—closest fracture and closest fracture intersection
- Volume reports of lithologic, stratigraphic models
- Data imports: Excel, LAS, acQuire, Newmont, other databases

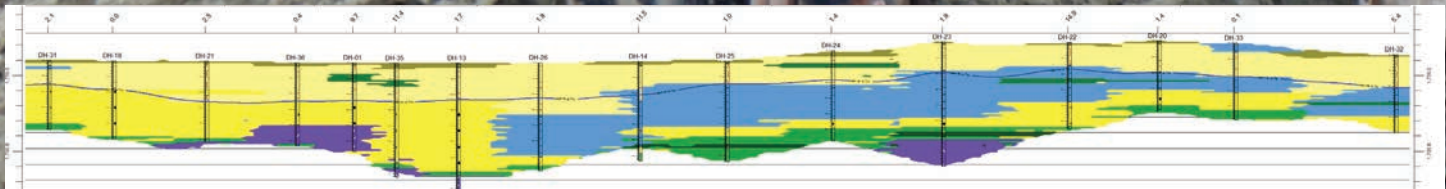
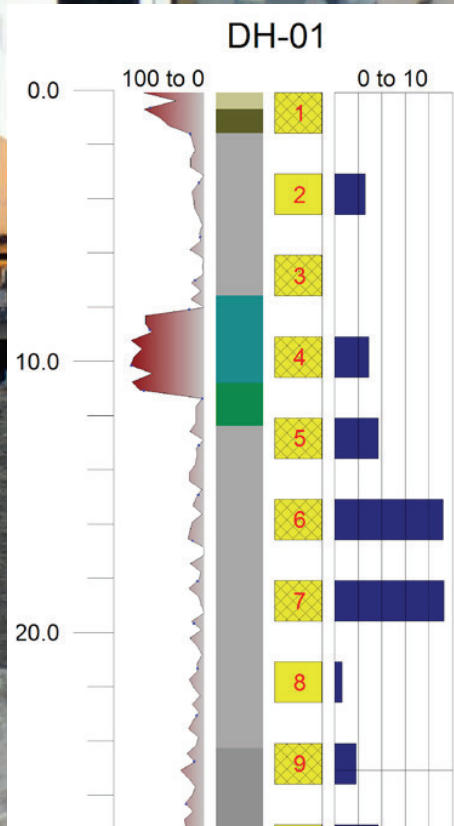


Other Tools

- Block model editor: 3D voxel/polyhedron editor or slice-based
- Volume calculations: grade statistics by level, extraction reports, GT calculators, floating cones model extraction tools
- Stereonet and rose diagrams, stereonet and rose maps
- Ternary diagrams, frequency histograms for source data and models
- Graphic output: 2D and 3D output to RockWorks, Google Earth
- 2D editing tools: contour lines, text, shapes, legends, images
- Composite scenes in 3D with maps, drillhole logs, surfaces, blocks, panels
- Page layout program for small to large format presentations and posters
- Exports to GIS Shapefiles, CAD DXF, raster formats, Google Earth
- Image import and rectification
- Program automation



Mining professionals rely on RockWorks point and contour maps, 2D and 3D log displays, projected sections, block model interpolating and editing, detailed volume calculations, and import/export tools in both exploration and production phases of their projects.



RockWorks offers geotechnical and civil engineers graphical and analytical tools for evaluating construction and excavation sites. Create borehole logs and cross sections, dozens of different types of maps, structural diagrams, geological/geotechnical/fracture/color models, volume reports and more.

Mapping Tools

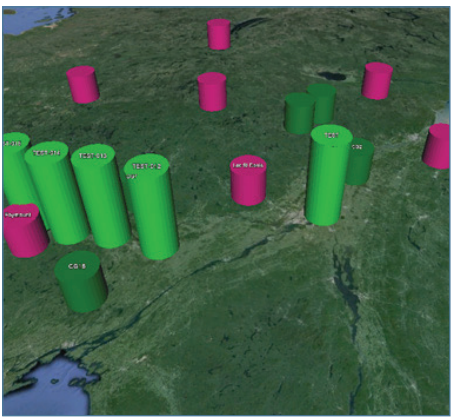
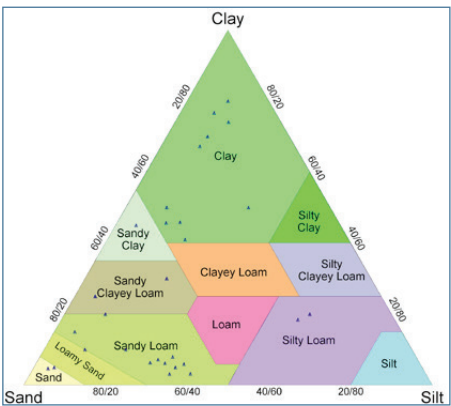
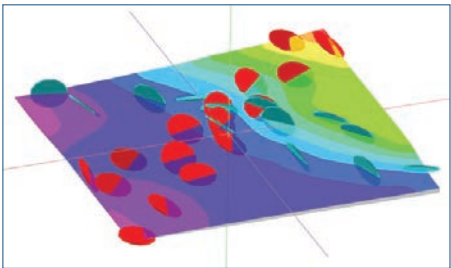
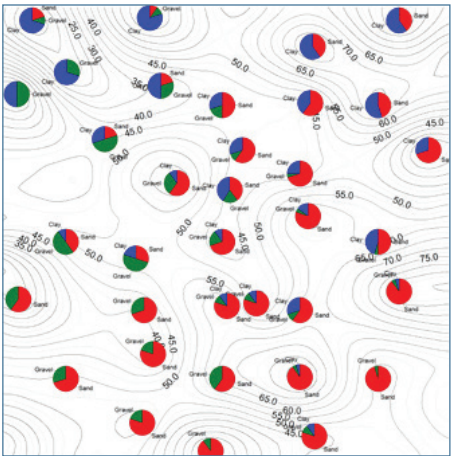
- Multiple components in piechart, spider maps
- Point maps with detailed data labels
- Topographic contour maps with lines and color fills, custom color tables
- 3D surface displays
- Strike and dip maps in 2D and 3D
- Coordinate systems/conversions: lon/lat, UTM, State Plane, local, custom

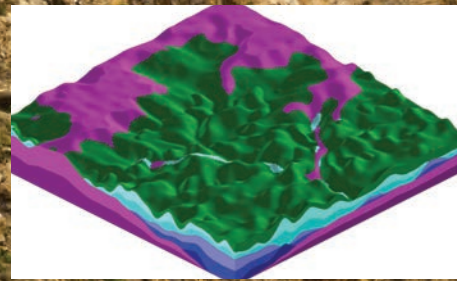
Borehole Database Tools

- Cross sections: multi-panel projected and hole to hole, with borehole logs and/or interpolated panels
- Correlations: model-based and "EZ" panels, snapping tools for hand-drawn correlations
- Borehole logs in 2D and 3D
- 3D fence diagrams
- Surface modeling of stratigraphic layers and water levels
- Solid modeling of lithologic materials, fractures, and geophysical, geotechnical, geochemical data, with display as voxel or isosurface diagrams, 2D plan and section slices
- Geology maps: plan slices from stratigraphy or lithology models
- Volume reports of lithologic, stratigraphic, excavation models
- Fracture display and modeling, stereonet maps, rose diagram maps
- Munsell colors for display in logs and interpolation into color models
- Data imports: Excel, AGS, Colog, Fugro CPT, gINT, LAS, Penetrometer, other databases

Other Tools

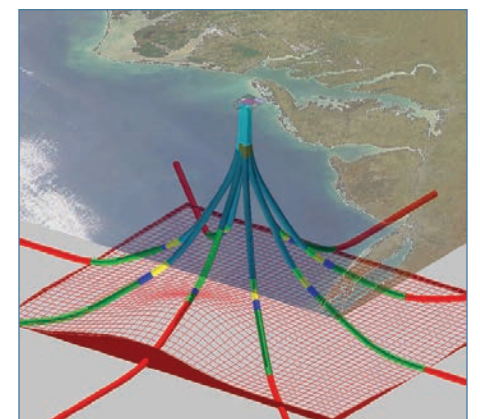
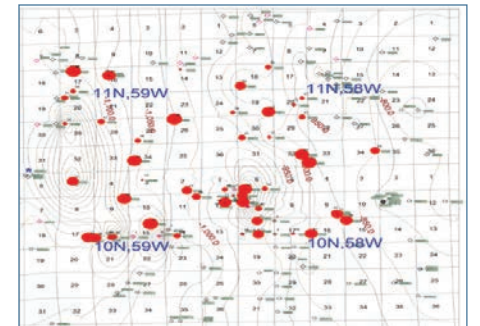
- Sieve diagrams, ternary diagrams with classification overlays
- Stereonet and rose diagrams
- Slope/aspect analysis on grid models
- Predictive tools: lithology materials from curves, interval data (porosities, strength, cohesion) from lithology
- 2D editing tools: contour lines, text, shapes, legends, images
- Composite scenes in 3D with maps, logs, surfaces, solids, panels, surface objects
- Page layout program for small to large format presentations and posters
- Exports to GIS Shapefiles, CAD DXF, raster formats, Google Earth
- Image import and rectification
- Program automation
- Google Earth output directly from data: points, cones, lines, polygons, images, flyovers





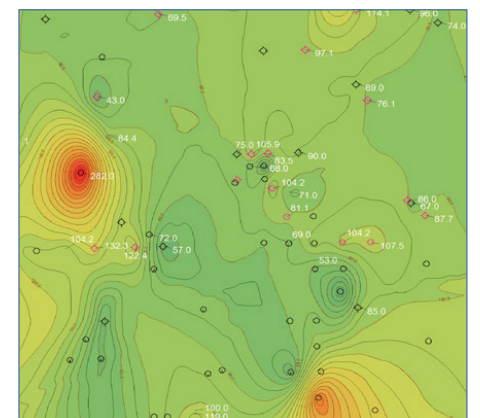
Mapping Tools

- Structure and isopach maps: contour maps with lines and color fills, custom color tables
- 3D surface displays
- Bubble maps of any well data (production, etc.)
- Well and lease spotting from Range, Township, Section descriptions
- Land grid and lease maps with section boundaries
- Coordinate systems/conversions: lon/lat, UTM, State Plane, local, custom
- Well location maps: customized symbols (e.g. well status), plan-view horizontal well traces
- Gridding algorithms: kriging, triangulation, inverse-distance, trend polynomial
- Grid model tools: filters, math operations, editor, imports and exports



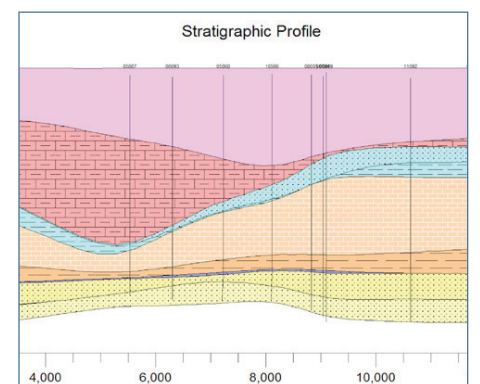
Well Database Tools

- Cross sections: hole to hole and projected
- 3D fence diagrams
- Correlations: model-based and "EZ" panels
- Horizontal and vertical wells: 2D and 3D, flexible log layout
- Stratigraphic modeling of all/selected formations
- Solid modeling of lithologic, geophysical, geotechnical, geochemical data, with display as voxel or isosurface diagrams
- Geosteering: optimal well paths based on target formations, lateral and 3D displays
- Well database for well locations and miscellaneous well data, formation contacts, raster images, geophysical data, lithology, well construction and production
- Data imports—Excel, LAS, LogPlot, IHS, KGS, Tobin, other databases
- Stratigraphic contacts from digital elog data or raster logs

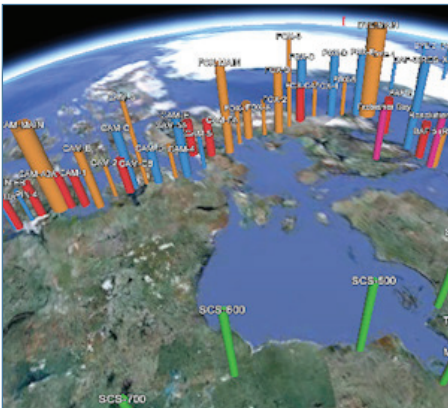


Other Tools

- Structural geology diagrams
- Graphic output: 2D and 3D output to RockWorks, Google Earth
- 2D editing tools: contour lines, text, shapes, legends, images
- Snapping tools for hand-drawn correlations
- Composite scenes in 3D with maps, logs, surfaces, solids, panels, surface objects
- Page layout program for small to large format presentations and posters
- Exports to GIS Shapefiles, CAD DXF, raster formats, Google Earth
- Image import, rectification, depth-registration
- Program automation



RockWorks gives the petroleum geologist the tools to get the job done: well spotting, mapping (bubble, structure, isopach, land grid, log maps), cross sections, stratigraphic modeling, reservoir modeling and much more.

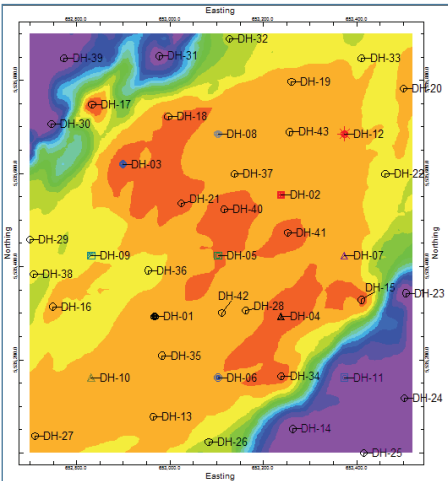


RockWorks is offered with three different feature levels: Basic, Standard, and Advanced.

All three levels include the RockWorks Datasheet and the Modops, Utilities and Graphics menus. These menus offer numerous programs for mapping XYZ data, modeling XYZG points, creating stereonet and rose diagrams, creating Piper, Stiff and Durov plots, and much more. This is the general RockWorks "toolbox."

All feature levels also include the three Graphic Output programs: RockPlot2D, RockPlot3D and ReportWorks.

All three levels also include the Borehole Manager and its local database for storing and managing borehole-based data.



RockWorks Basic

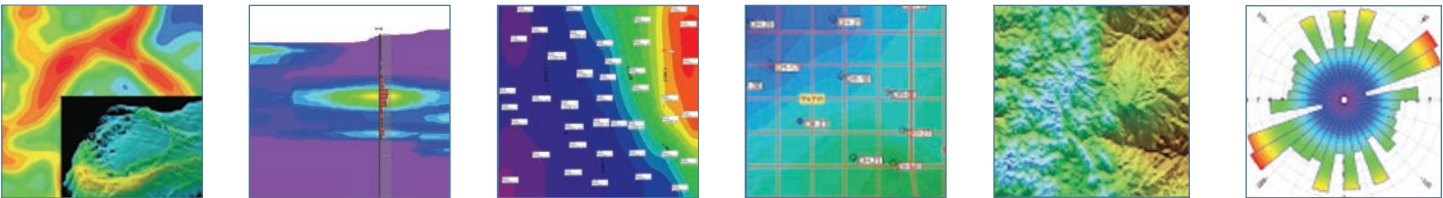
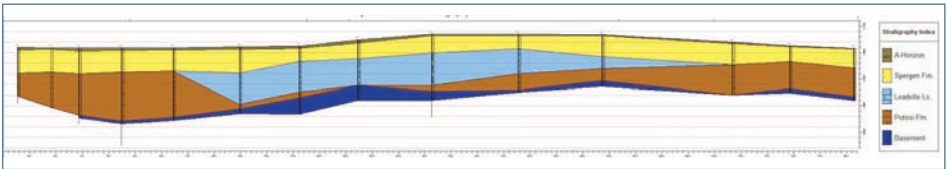
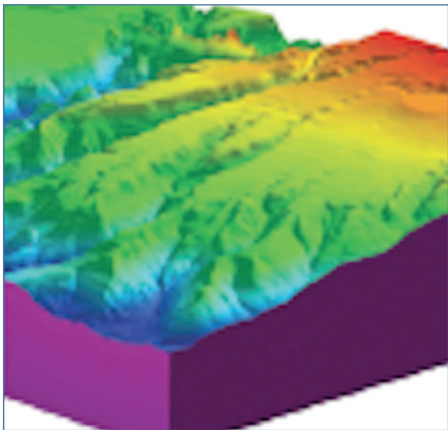
With Basic, the borehole processing tools are limited to observed data—no modeling: Borehole location maps, 2D and 3D strip logs, and striplog profiles and cross sections. Simple correlation panels are offered for Stratigraphy, I-Data and P-Data in 2D section diagrams. 5 items per playlist and 3 faults.

RockWorks Standard

All Basic level tools, plus Borehole Manager modeling: lithology, stratigraphy, geophysical/geochemical/geotechnical, aquifers, colors, fractures. 5 items per playlist, 3 faults.

RockWorks Advanced

All Standard level tools, plus SQL-server database support, program automation (scripting), Borehole Manager petroleum production diagrams. Unlimited items per playlist, unlimited faults.



RockWorks Feature Levels

Download free trial at rockware.com

License Level	Basic	Standard	Advanced
Single License price starting at	\$1,500	\$3,000	\$5,000
-or- Network License price starting at	\$2,625	\$5,250	\$8,750
-or- Annual Rental price	\$650	\$1,300	\$2,200
ModOps, Utilities and Graphics menus	✓	✓	✓
Logs and Sections	✓	✓	✓
Borehole-Based Modeling		✓	✓
SQL Server; Command Script Automation			✓
Playlist Automation	5 items	5 items	unlimited
3D Faults	3 faults	3 faults	unlimited

