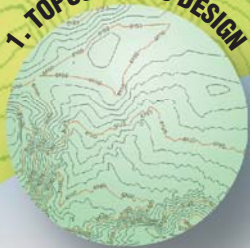


Carlson *Natural Regrade* with GeoFluv[™]

1. TOPOGRAPHIC DESIGN



2. EARTH MOVEMENT PLAN



3. OPTIMIZED MATERIAL PLACEMENT



4. COMPLETED LANDFORM



New Method

Carlson *Natural Regrade* software
with GeoFluv[™]

There is something new happening in
landform design. It's the future. It's natural.

Be a part of it.

Old Method

Don't fight the forces of
nature, go with the flow
with *Natural Regrade*.

Autodesk[®]
Authorized Developer
Authorized Unique Application Reseller
Authorized OEM Partner



Old method

- Based on conveying a single extreme discharge event
- Conveys only water discharge effectively at lower discharge
- Requires expensive off-site earth material, e.g., rip-rap
- Expensive on steep slopes
- Requires long-term maintenance
- Requires maximum backfill to lower slopes
- Provides minimal slope aspect diversity
- Visual affront
- Rigid design sideboards limit landscape alternatives
- Regulatory agencies not satisfied



Something just tells you it isn't right

Natural Regrade software with GeoFluv™

- Based on all discharges
- Natural channel morphology conveys water and sediment discharge; hydrologic balance
- Built with on-site materials
- Cost is significantly lower than gradient terraces and down drains on steep slopes
- Self-maintaining
- Can reclaim steep slopes in stable and suitable configurations, save money on material moving
- Increased slope aspect diversity promotes vegetation success and animal habitat
- Natural beauty
- Landscape designs can vary and provide alternatives
- Regulatory agencies embrace*
* (approach is award-winning)



U.S Dept. of Interior "National" and "Best of the Best" 2004 reclamation awards

The essence of the GeoFluv™ approach is to identify the type of drainage network, i.e., stream channels and valleys, which would tend to form over a long time given the site's earth materials, relief, and climate to achieve a stable landform, and to design and build that landform. The resulting slopes and stream

channels are stable because they are in balance with these conditions. They are a reclamation alternative to uniform slopes with terraces and down-drains. Rather than fight the natural forces that shape the land, GeoFluv™ helps the user create a landscape that harmonizes with these forces.

- Natural Regrade software replaces lengthy and tedious manual calculations with fast, efficient design
- Natural Regrade frees the user's creative design energies
- View topographic maps and three-dimensional images of the resulting landscape design
- One-button volumes and cut/fill material balance calculations for designs gives instant colored-coded feedback
- Rapid evaluation of many landscape design alternatives allows the user to select the optimum landscape design for bond alternatives, construction costs, changing mine plans, land use, etc.

Old method



Why limit your storm water conveyance designs to this?



- Requires long-term maintenance
- Provides minimal wildlife and plant diversity
- Is not visually satisfying



Long, constant-gradient slopes • Gradient Terraces
Rip-rapped drains

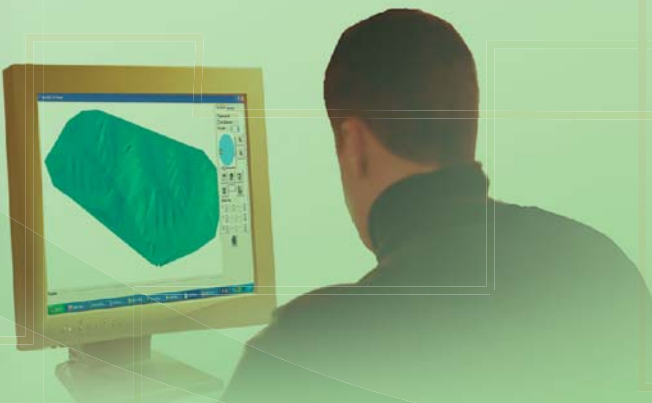
Natural Regrade software with GeoFluv™

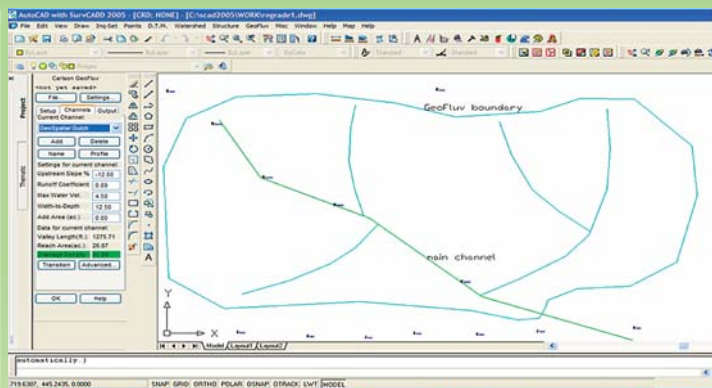


When you can design them like this using Natural Regrade?

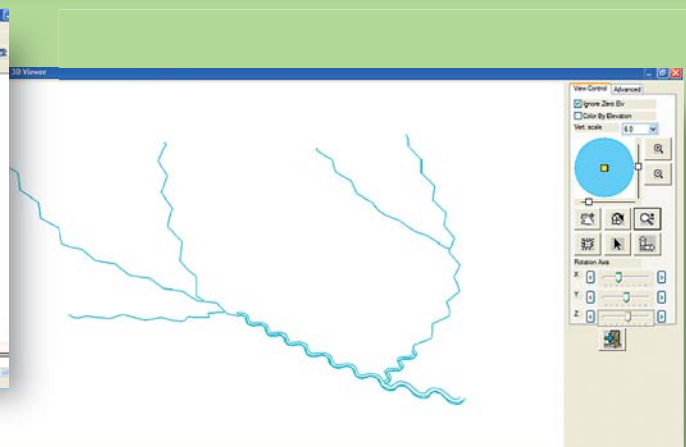


- Functional and stable against erosion
- Maintenance free
- Provides wildlife and plant diversity
- Can optimize lot view lines and sunlight exposures
- Can help you to enhance the value of every lot

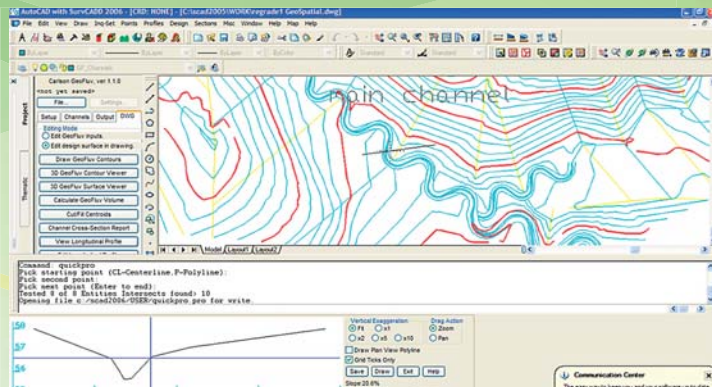




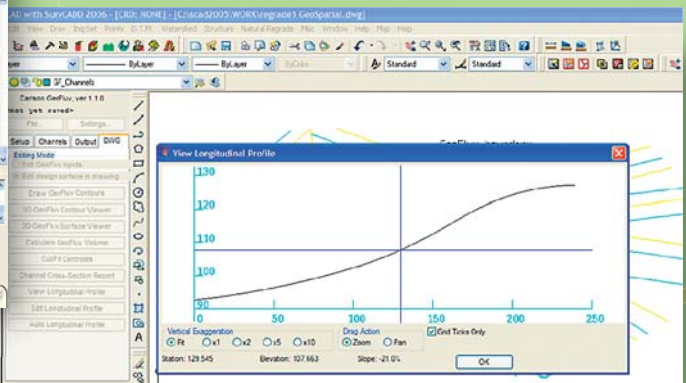
GeoFluv™ dialog box leads the user through the process



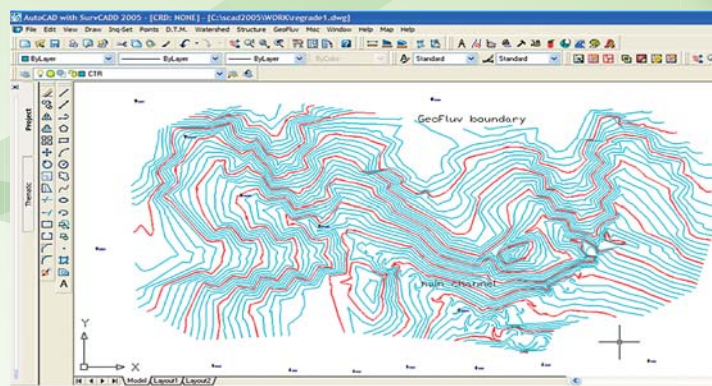
GeoFluv integrated 3D channel network using local empirically-determined drainage density



Plan view and cross-sectional channel geometry based on bankfull discharge has additional floodprone area



GeoFluv creates complex slope profiles with convex-to-concave inflection point determined locally

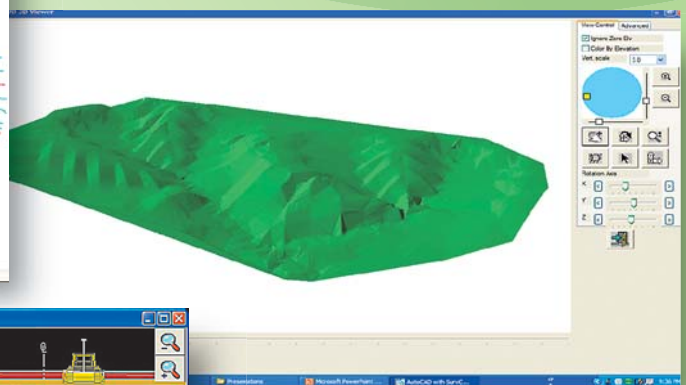


Natural Regrade creates a design for a stable landform that satisfies user inputs

Natural Regrade is ideal for integrating with Global Positioning System and machine control, for example Carlson Grade, to simplify and speed construction and reduce costs. The need to survey and stake the designs in the field is eliminated using these technologies.



Powerful 3D viewer aids final design editing of the draft landform



There is something new happening in landform design. It's the future. It's natural. *Be a part of it.*