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# The Dream

One model to rule them all and ~~in the~~  
~~darkness bind them...~~

show them the path to enlightenment

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# SWG Activities

- Navigation Improvements
- Flood Control / Flood Damage Reduction
- Shoreline Protection
- Ecosystem Restoration
- Beneficial Use of Dredged Material

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# Navigation Improvements

- Deepening and Widening
  - Increased salinity and erosion
  - Affects bay and estuary species
  - Tidal changes
- Placement and designs of Beneficial Use sites (islands, terraces etc.)
- Effectiveness of salinity control structures
- Jetty dynamics (e.g. increased erosion)



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# Flood Control / Damage Reduction



- Modeling hydrodynamic changes due to project
- Ecologically kinder and gentler channel designs
- Impacts to riparian, wetland (fresh-saline), and wet prairie habitats
- Altered inflows to bays and estuaries



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# Shoreline Protection



- Shorelines including Beachfront, GIWW, Bays, Estuaries, Rivers, Tributaries
- Wind fetch, vessel traffic etc.
- Determining what design/material works best for a given project/location without breaking the bank
- Model overflow heights and frequencies



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# Ecosystem Restoration



- From Wet Prairie to Sea Grasses
- Any and all bodies or flows of fresh, intermediate, brackish, saline waters are potential projects
- Transect / variable data – develop protocol and geodatabase design for use in GIS



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# Modeling Wish List



- User friendly desktop interface
- Automatically tracks changes and updates
- Scalable ecological model – from small shoreline project to deep draft channel projects
- Standardized – nationwide?!?!?!?
  - Well, maybe at least the internal processes (acre projections, landuse trends etc.)

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# Wish List cont'd

- Model reduced/increased productivity in an affected habitat
  - Modified flows in streams and tributaries
  - Hydrodynamic changes in bays and estuaries
- Turbidity considerations and sediment transport
- Future land use projections (when and how much forest to urban)
- Switching between habitat types mid-way through project life (from fresh to intermediate marsh at TY 26 in a deepening/widening project)



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# Wish List cont'd

- Giant project areas that can contain radically different ecosystems
- Realistic in terms of field data collection
- Possibility to have contractor that would attend meetings to provide data entry and capture content of meetings



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# Interactive With ArcGIS



- Surface and subsurface water flows
- Quantifying and qualifying habitat values for with and without project conditions
- Interactive display that illustrates benefits/impacts to mapped areas
- On the fly – capture/illustrate effects when changing project designs/alternatives



# What I Really, Really Want For Christmas

- GIS Interactive Basin Model
- GIS Interactive Bay Model
- Interactive suite of tools instead of many isolated stand-alone models that may or may not generate comparable results
- Make them linkable
- Set parameters and drop a project in.