Old River Control Sediment Diversion
Comments for Col. Thomas Julich
August 17, 2001 ***Final Draft 8/09/01, noon***

SLIDES	**TEXT**
1. Seal Obverse	Introductions, greetings.
2. Photo: aerial, ORC, including hydroelectric station	This meeting today centers on the Corps of Engineers' decision to re-establish the authorized distribution of sediment, in particular, large-grain sand, between the Mississippi and Atchafalaya rivers at the Old River Control Complex.
3. Photo: aerial, hi water, navigation, Morgan City	This will ensure the stability of the Mississippi River and Tributaries System, or the MR&T, for the sole purpose of safely passing floods and maintaining an efficient navigation system.
4. Photo: aerial, ORC	The Old River Control Complex is a major component of the MR&T and is located about 80 river miles north of Baton Rouge. It was built to prevent the Mississippi River from changing its course to the Atchafalaya, a shorter route to the Gulf of Mexico.
5. Photo: aerial, ORC	The Flood Control Act of 1954 mandates the Corps to operate the Old River Control Complex in a manner that distributes the flow and sediment in the Mississippi and Atachafalaya rivers at the levels that existed in 1950.

6. Graphic: 70/30 flow	In order to fulfill the requirements of the Act, the annual latitude division of flow and sediment between the Mississippi and Atchafalaya river must be 70%/30% . This means that 70% of the combined flow and combined sediment of the Red and Mississippi rivers above Old River continue down the Mississippi River below Old River, while 30% of the combined flow and combined sediment flows down the Atchafalaya River.
7. Photo: Low Sill structure w/red circle around damaged wing wall, 1973 flood	The Corps completed two of the three structures that make up the Old River Control Complex in 1963. During the 1973 flood, one of the structures, the Low Sill, was damaged. The Corps recognized at that time that the Low Sill was not diverting the amount of large-grain sand necessary to maintain the proper balance between the Mississippi and Atchafalaya rivers.
8. Graphic: Sediment Grade Scale (mm)	Allow me to briefly explain here the types of sediment found in the river. I've mentioned large-grain sand a couple of times now. As you can see on this chart, coarse silt picks up in millimeters where very fine sand leaves off at .062. The same pattern can be found where very fine silt leaves off at 0.004 mm and coarse clay picks up. Large-grain sand is heavy…it's channel bed-material sediment. It's heavier that the light stuff, like silt and clay. The large-grain sand is the sediment material that makes up and defines the river bottom.

9. Photo: Miss R	Studies done subsequent to the 1973 flood showed that the channel depths of the Mississippi and Atchafalaya rivers had changed dramatically since 1950. The Upper Atchafalaya had deepened 10 feet while the Mississippi had lost 5 feet of depth to sediment.
10. Photo: close up of Auxiliary Structure	It was an alarming indication that sediment transport balance between the two rivers was out of proportion. In 1986, the Corps built a third component, the Auxiliary Structure, in a sediment-rich location in the complex to allow large-grain sand to pass from the Mississippi into the Atchafalaya.
11. Photo: hydroelectric station	A satisfactory sediment balance was achieved until 1990, when the privately constructed Sydney A. Murray Hydroelectric Station came on line.
12. Photo: aerial of structure with emphasis on river	Because the hydroelectric station is situated in a sediment-lean area of the Mississippi River, it does not transport the required amount of large-grain sand to pass from the Mississippi into the Atchafalaya.

13. Photo: 1989 MOA

The Corps recognized the sediment imbalance early on and made representatives of the hydroelectric station aware of the problem. To ensure that sediment diversions would be in the best interests of the MR&T, the United States government and the hydroelectric station executed a contractual agreement in 1989 stipulating, among other things, that the owners of the hydroelectric station must augment, by dredging or other means, any sediment deficits caused by the operation of the station. The amount of sediment deficiency to be made up would be determined by the Corps.

14. Photo: Lower Mississippi River Sediment Model

Both the Corps and the hydroelectric station have since conducted detailed studies of sediment movement in the Mississippi River. Both studies included analysis of prototype data and mathematical and physical modeling conducted by the Waterways Experiment Station.

15. Graph: Change in Sand Concentration Diversion at Old River

These studies have led Corps experts to conclude that less large-grain sediment is passing through the hydroelectric station than would occur if water were diverted only through Corps structures. This chart shows that diversion of water has only slightly decreased, while there's a marked difference in the percentage of sand diverted. It has been determined that supplemental diversions are necessary to maintain the integrity of the MR&T.

16. Bullet:
Q: Why?
A: Too much to lose

Of all the questions to be asked, by far the most serious is "why do this?" Simply put, there is just too much to lose. The possible consequences of leaving the sand in the Mississippi are grave.

17. Bullet:
*Diminished flood flow capacity on Miss
*Necessity to raise MRL levees
*Navigation hazards from shift of channel
*Increased peril for Old River Control structures
*Greater danger of Miss changing course to Atch

Here is listed the chronological order of possible consequences if we fail to re-establish the proper sand balance. Do we know these things for certain? No, we do not. However, in addition to the studies mentioned above, we have reviewed extensive historical records on the Mississippi. And what we do know is that sand is not being diverted as it was intended. If we wait, corrective measures may not only be prohibitively expensive, but even impossible, and subsequent damages irreparable.

18. Photo: Red River Landing gage (doesn't matter what the gage reading is)

A recent indication of one of the problems associated with lack of sediment diversion is the 1997 flood. That flood produced the highest stage ever recorded at the Red River Landing gage located just below the Old River Control Complex. Yet the '97 flood was only the fifth largest flow on record. Lack of sediment diversion has raised flood stages on the Mississippi and could potentially reduce the levees' ability to pass floodwaters.

19. Photo: Aerial, Morgan City

Now let's address possible effects to the Atchafalaya and Morgan City. We'll look at flood control, navigation and the environment.

20. Photo: aerial, Atch in vic. of Krotz Springs	First, large-grain sand will not clog up the river and create a flood threat. The channel is very efficient in the vicinity of Krotz Springs and Butte la Rose and can handle the additional sediment. The Atchafalaya channel, and the nearby levees and floodwalls were designed for the level of sediment diversion.
21. Photo: navigation in Morgan City	Naturally, the sand has to go somewhere. We estimate that it will take about 20 to 30 years to reach Morgan City. Eventually, it will reach the Atchafalaya Bay, where dredging will probably increase in the Chene, Boeuf and Black navigation channels. However, more wetlands will be created because more material will reach the bay.
22. Photo: aerial, Atch Bay	As for navigation, we know that Morgan City has trouble with the phenomenon known as fluff. Let me assure you, large-grain sand does not create fluff. Fluff is a chemical soup created when far smaller clay particles come into contact with salt water.
23. Photo: scenic, Atch	Regarding the environment, we have performed an environmental assessment and don't expect any measurable effects associated with this plan.

24. Photo: Fishing in the Atch

For one thing, we do not expect the sand to adversely affect crawfishing and sport fishing. The sand's heavier weight will keep it in the Atchafalaya's main channel, while most of the fishing, crawfishing and other recreational endeavors take place away from the main channel in the shallow water bodies and back swamps. Furthermore, there won't be additional lighter sediments to wash into the back swamps. And finally, pollution attaches to finer clay particles, not sand, so there will be no added pollution.

25. Photo: hydroelectric station

The Corps and the hydroelectric station have reached different conclusions from their analyses of the studies performed. Essentially, the hydroelectric station concluded that the impacts of the Old River Control Complex, including the hydroelectric station, are small in comparison to the overall effects of the MR&T system. Therefore, in their opinion, no action is necessary at this time.

26. Photo: aerial, ORC

Conversely, the Corps has concluded that there is a need to re-establish the sediment balance that existed prior to the operation of the hydroelectric station.

27. Photo: Hydroelectric station
Bullet:
Divert 3.4 million cubic yards per year beginning in 2002

Hence, the Corps is directing the hydroelectric station to restore the sand deficit to the Atchafalaya under the authority of the 1989 Memorandum of Agreement. We are requiring the diversion of 3.4 million cubic yards per year beginning in 2002. This equates to 13 percent of the sand coming down the Mississippi River.

28. Photo: aerial of dredge at ORC, or in Atch.	If the hydroelectric station selects dredging as a means of sediment management, all National Environmental Policy Act documentation and compliance procedures and all permit processes are in place to support that action.
29. Seal obverse	This concludes my presentation. Are there any questions?