

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
FACSIMILE TRANSMITTAL

DATE 1/13/07
TIME 4:05 pm

(Please complete in ink)

TO	NAME Dale Hoffman-Floerke	FACSIMILE PHONE NO. (916) <input type="checkbox"/> ATSS 654-4925
	OFFICE/ORGANIZATION/COMPANY Dept. of Water Resources	OFFICE PHONE NO. <input type="checkbox"/> ATSS
FROM	NAME David Lawhead	FACSIMILE PHONE NO. <input type="checkbox"/> ATSS
	UNIT Colorado Desert District	OFFICE PHONE NO. (760) <input type="checkbox"/> ATSS 767-4315
SUBJECT Salton Sea Ecosystem Restoration Program PEIR		NO. OF PAGES SENT INCLUDING TRANSMITTAL SHEET 12

- INFORMATION
- NOTE AND FILE
- NOTE AND RE-ROUTE
- FORWARDED PER REQUEST
- REPLY-MY SIGNATURE
- REPLY-CC ME
- COMMENT
- INVESTIGATE
- CONTACT ME

MESSAGE/REMARKS

Attached are Colorado Desert District (CDPR) comments on the draft PEIR for the Salton Sea Ecosystem Restoration Program. The original letter will follow via mail.

David Lawhead
Environmental Coordinator
Colorado Desert District
CA Dept. of Parks and Recreation



State of California • The Resources Agency

Arnold Schwarzenegger, Governor

DEPARTMENT OF PARKS AND RECREATION • 200 Palm Canyon Drive, Borrego Springs CA 92004

Ruth Coleman, Director

January 16, 2007

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836
Sacramento, CA 94236-0001

Salton Sea Ecosystem Restoration Program
Draft Programmatic Environmental Impact Report (SCH # 2004021120)

Dear Ms. Hoffman-Floerke:

The Colorado Desert District of the California Department of Parks and Recreation (State Parks) has completed its review of the Draft Programmatic Environmental Impact Report (PEIR) for the Salton Sea Ecosystem Restoration Program and offers the following comments and recommendations. As an agency with a vested interest in a Salton Sea restoration program, State Parks is committed to participating in the process to find the best solution to restore the sea to a stable condition that will continue to provide benefits to the biological resources that depend upon the sea, and to the general public for recreation and education experiences. State Parks is responsible for the management of the 18,000-acre Salton Sea State Recreation Area (SSSRA) along the eastern shoreline of the Salton Sea, and as a Trustee Agency under the California Environmental Quality Act (CEQA) we are responsible for safeguarding the natural, cultural and recreational resources on those lands. In addition, State Parks is a Responsible Agency under CEQA for projects proposed by other agencies that could impact the SSSRA.

State Parks is not advocating one particular solution or alternative to restore the Salton Sea at this time, but would support an alternative that emphasizes conservation and enhancement of biological resources, water quality, and provides for a large diversity of recreational opportunities for the general public. Alternatives that provide for boating and fishing opportunities in the northern portion of the sea, and allow the on-going operation of Varner Harbor at the SSSRA, would also be supported by State Parks. With the complexity of the Salton Sea ecosystem, and the wide array of alternatives offered in the PEIR, it is difficult to judge what might be the best alternative. There are a number of issues that need more study, especially in the area of water quality impacts or enhancements that might occur under the proposed alternatives. The data that these studies would provide are likely to prove key in deciding a final alternative design.

State Parks offers the following comments on the PEIR sections indicated:

Biological Resources

The proposed Salton Sea Ecosystem Restoration Program is designed to encompass the entire Salton Sea. Therefore, our comments on its biological aspects will not focus solely on its effects on lands managed by State Parks, but will address the overall restoration plan. The mission of the State Parks is, in part, to help preserve the State's extraordinary biological diversity and protect its most valued natural resources. The following comments have been prepared pursuant to this mission, and our authority as a Trustee agency. State Parks has two primary concerns with the draft PEIR in regard to biological issues: 1) the adequacy of the Significance Criteria to allow determination of the significant impacts of the project, and 2) the reliance on modeling to determine both potential habitat capacity and selenium toxicity risk associated with each alternative.

The methods used in applying the following Significance Criteria should be re-evaluated to ensure that significant impacts relative to the existing conditions are identified.

Substantial Reduction in the Value of the Salton Sea for Fish and Wildlife.

This is an important criterion because, as acknowledged in the draft PEIR, "...the Salton Sea ecosystem has become one of the most important wetlands for birds in North America..." (page ES-5). However, contrary to the way in which this criterion has been stated, its application has resulted in the conclusion that the impact of Alternative 8 (South Sea Combined) is less than significant even though, relative to the existing condition, the "...habitat capacity would be expected to decline by up to 50% for about half of the bird species evaluated." This much of a change in habitat capacity should be considered significant, particularly since the species evaluated are intended to reflect the range of habitat types and represent the anticipated change for the majority of species that currently use the Salton Sea. Therefore, the application methodology described on page 8-17 should be reworded to ensure that any substantial reduction in habitat capacity, particularly for bird species and numbers, is considered a significant impact.

Substantial Adverse Effect on Federally Protected Wetlands. The document indicates that these "are located in various areas above the shoreline around the margin of the sea...generally outside the influence of the restoration activities..." (Page 8-17). However, the potential for some of the alternatives to change the physical characteristics that support the adjacent unmanaged wetlands, such as groundwater level, should be addressed now, so the impacts can be considered in the selection of a preferred alternative.

Interfere Substantially with the Movement of any Resident or Migratory Fish or Wildlife Species. It appears that this criterion was applied only to the movement of desert pupfish. Due to the importance of the Salton Sea for migratory birds, this criterion should also be applied to these species.

Conflict with the Provisions of an Adopted HCP or NCCP. The document states that "Because there are no approved plans in place, this criterion was not applied." However, the Coachella Valley Multiple Species HCP/NCCP is in the process of being finalized, and will likely be final before any restoration activities begin on the Salton Sea. The discussion and analyses in the document need to be updated to reflect this, and the consistencies and conflicts between the Salton Sea restoration plan and the Coachella Valley MSHCP as currently proposed.

The analyses of both habitat capacity and selenium toxicity rely heavily on modeling. Although this approach has a number of advantages, it is always limited by the quality of the information and assumptions on which the model is based. While precision is not expected, the results of the models need to be predictive at a level that can provide a useful comparison between each of the alternatives and the existing conditions so that potentially significant impacts can be identified, and the alternatives compared at a level adequate to allow selection of a preferred alternative.

In the prediction of habitat capacity, some of the results seem contrary to what might be logically predicted. For example, Alternative 2 (Saline Habitat Complex II) and Alternative 4 (Concentric Lakes) provide similar habitat values on 75,000 and 88,000 acres respectively, but the predicted habitat capacity for Alternative 4, as compared to Alternative 2 (shown in Tables 8-12 and on page 8-16), is less for 5 of the 14 representative species used in the model. For *Aechmophorus* spp. (western and Clark's grebes), the predicted habitat capacity for Alternative 2 is a greater than 100% increase, while for Alternative 4 it is a 25-50% decrease. Since these alternatives both provide similar habitats (primarily shallow water), the results seem questionable. In addition, although one of the objectives of the project is "Restoration of long term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea" (page H-1), the model used the mean and median of the highest numbers of species recorded, rather than the highest. With an understanding that populations can experience wide fluctuations, and that the available data may not include the population high, this seems counter to this objective. Further, project features such as islands, snags, a wide range of salinities, etc. are not included in the analysis for all alternatives, even though it is noted that they are potential variations of the alternatives. In order to provide an equivalent comparison of the alternatives, all features that increase the capacity of the habitat should be included in the

analyses. Because of these issues, the results may be more attributable to the analysis methodology than to the merit of the alternatives. Therefore, the results of the modeling should be reconsidered and confirmed with a more conventional comparison between acreages of each habitat under the existing condition, compared to acreages of restored habitats with similar values for each of the alternatives.

The restored habitats cannot be expected to effectively support bird diversity or population levels if the ecosystem is contaminated with environmental toxins. Under current conditions the "...frequently-anoxic character of deep sediments in the Salton Sea acts to lock up most of the Salton Sea's selenium as biologically unavailable" (page F-6). The Marine Sea and similar deep-water components of several alternatives are expected to also behave in this way regarding selenium bioavailability. However, it has been "...hypothesized that water-column selenium concentrations could increase to as much as 400 ug/L (from a current average near 1 ug/L) if not held in the low redox sediments as reduced, insoluble compounds."(page F-6). In contrast to areas of deeper water, the Saline Habitat Complex and other restored shallow-water habitats are not expected to experience stratification and development of an anoxic layer near the bottom due to frequent mixing of the water column. The potential of toxins currently sequestered in deep sediments to become bioavailable as a result of creating shallow water habitats needs to be more thoroughly analyzed, and should be tested prior to selection of a preferred alternative. In addition, the document indicates that other contaminants are present and that interactive effects may occur. It further acknowledges a number of uncertainties with the model, some of which suggest the risk may be higher than predicted. Because environmental toxicity is such an important factor in the success of the restoration, these issues should be resolved before selection of a preferred alternative.

In addition to the above, State Parks also offers the following comments regarding the Biological Resources analysis:

One of the assumptions used in the analysis is: "Areas adjacent to the Salton Sea that provide habitat for wildlife, such as agricultural fields and refuges, would continue to provide similar habitat value in the future" (page 8-18). However, the value of a habitat can be substantially reduced or enhanced by the type of adjacent habitat(s) or land use. Since the location of the restored habitat features varies by alternative, this assumption may not be valid. The impact analysis needs to consider how the changes proposed in each alternative will affect adjacent habitat areas.

The basic assumption stated above that areas adjacent to the Salton Sea that provide wildlife habitat will continue to do so during restoration of the

sea may not be true. The Salton Sea Authority's Proposed Master Development Plan for the Salton Sea region indicates that significant development may be proposed around the sea, which could eliminate or remove lands currently considered wildlife habitat, especially agricultural lands. This should be considered in the analysis of future potential wildlife habitat around the Salton Sea.

Alternative 7 includes an Imperial Irrigation District (IID) reservoir. The relationship of this feature to the use of Colorado River water needs to be addressed. If there will be little or no habitat value associated with this reservoir, and this is water that otherwise would be available for use in the restoration of the Salton Sea habitats, this needs to be disclosed, and the effects of the reduced freshwater included in the analysis.

The introduction of sport fish should not be considered if this would adversely effect pupfish populations, either directly through predation, or by restricting genetic exchange. In addition, since pupfish are most abundant where extremes preclude non-native species, the location and effectiveness of project features for pupfish should be designed and evaluated based on this. This doesn't seem to have been considered in the design of some of the project alternatives.

Geology

Discussion of the general geologic setting and geologic history of the Salton Trough is overly simplistic given the complex tectonic history of plate interactions within the region. For example, the significance of regional detachment faulting in the formation of the rift is not addressed, and the age of the opening of the Trough is at least 4 million years older than stated in the document. These omissions and errors are primarily a result of the use of geological information that is in part out-of-date. The discussion would benefit from the recent works of Axen, Dorsey, Rockwell and others (see Dorsey 2006).

The treatment of stratigraphy and depositional history fails to include most of the formally named geologic sedimentary formations, especially those that crop out along the western margin of the basin. As stated by Winker and Kidwell (1996), the western margin of the Salton Trough contains the most complete record of regional geologic events. Furthermore, stratigraphic nomenclature and the ages of specific geologic units are incorrect. For example, the *Imperial* has been elevated from formation to group status and is mostly late Miocene in age, not just Pliocene. Also most researchers, including Blake (1907) who named the Lake Cahuilla beds, apply this name to the sequence of lake sediments deposited from latest Pleistocene through Holocene time, not to only the latest lake

present in the basin during the historic era (regardless of statements of the Salton Sea Authority 2006).

Paleontological Resources

The discussion of paleontological resources for the most part is current and inclusive. Impact assessment and measures are adequate and follow the Society of Vertebrate Paleontology (1991, 1995, 1996) national standard guidelines.

However, there are several errors in the document. In Table 16-3 under *Comments*, the terms *archaeological resources* and *artifact* should be replaced by *paleontological resources* and *fossils*. The Ocotillo Conglomerate contains Irvingtonian Age not Rancholabrean Age faunal remains (page 16-7).

Also, those deposits called Qc (Pleistocene non-marine) in Table 16-1 and classed there as *moderate to high* sensitivity do not appear on Figure 16-1. Qc deposits are known to crop out in and near the Bat Caves Buttes which is labeled Qs (dune sand) on Figure 16-1. Qs is classed as *low* sensitivity in Table 16-1.

Deposits mapped as Qal-Ql (alluvium and lacustrine sediments) on Figure 16-1 are listed as *low* sensitivity in the map Legend, but are ranked *low to high* in Table 16-1, and Ql on the Figure is listed as *low* but is classed as *low to moderate* in the Table. These differences between the map Legend and the Table are misleading. Furthermore, a deposit that is assessed as *low to high* in sensitivity should receive the same mitigation treatment as any highly sensitive deposit.

However more importantly, it is unclear why the Holocene deposits (Ql and Qal, including lacustrine, paralic and fluvial sediments) within the axial portion of the basin (page 16-3, Table 16-1) are assessed as *low* sensitivity. The paleontological content of most Holocene deposits in this part of the Trough is largely unknown (as is noted under *Data Limitations* page 16-2) even though the superficial sediments have been disturbed and exposed by agricultural activities. Rapid depositional rates in these areas should result in a very thick Holocene stratigraphic section, most of which should extend below the depth of agricultural trenches and canals (see *Axial Deposits* page 16-9). Furthermore, it is highly unlikely that any fossils encountered during the excavation/construction of these works would have been recognized or reported. Where exposed on the margins of the Trough, like the deposits near Salt Creek and west of Highway 86 (Jefferson 2005), or encountered in excavations, like those at La Quinta

(Whistler et al. 1995), these deposits yield invertebrate and vertebrate fossils (Bowersox 1972).

Holocene and late Pleistocene deposits contain significant paleontological remains (e.g. pollen, arthropods, mollusks or vertebrates) that could provide important proxy and/or direct paleoclimatic information, and delimit changes in past water temperatures or the paleosalinity of lakes that occupied the basin over the past 20 kyr (Li 2003). Furthermore, the distribution of various lacustrine taxa, that are presently found as fossils along the basin margin, may be used to reconstruct past basin-wide ecological conditions and local habitats. Such paleoecological information provides a long term environmental perspective that may be critical to the Salton Sea restoration efforts. The Holocene deposits that contain this record should be examined, sampled, and significant fossil remains recovered and conserved.

Also, Holocene and latest Pleistocene deposits may yield buried archaeological materials in mid-basin and/or in basin margin contexts. Clearly, the latest Lake Cahuilla beds preserve evidence of human activity, both along the high lake margin and as the lake receded to the playa floor. The buried paralic deposits of older lacustrine phases could contain such evidence as well as a human interface with extinct late Pleistocene megafauna at the base of the Holocene record. Although the Colorado River may not have been connected to the Salton Trough during Wisconsinan time (page 16-3), the presence of major lacustrine phases in the basin during the late Pleistocene is confirmed by ^{14}C dates on oncolite tufa from Travertine Point (Turner and Reynolds 1977, Li 2003).

This presumed absence of sensitive or significant fossils and or archaeological materials within mid-basin Holocene deposits is also used to set a depth of 30 feet through which ground disturbance or excavation is assumed to have no impact on paleontological resources (Table 16-2, item 3). Given that, where encountered in surface outcrops, Holocene deposits are fossiliferous, this figure should be lowered to 5 feet (in line with Table 16-2, item 2). Furthermore, it is not known at what depths potentially fossiliferous latest Pleistocene deposits may be encountered. Although it is presumed that they will be below 30 feet, which has not been demonstrated, adjacent to subsurface tectonic structures these materials could occur at relatively shallow depths, as does the mid-Pleistocene Brawley Formation.

Surface Water Quality

State Parks has concerns regarding the information and assumptions made in analyzing the surface water quality impacts of the various alternatives in the PEIR. Data limitations mentioned in the PEIR (page 6-

7) "...include the availability of information to determine the long term fate and sequestration of in-sea phosphorus and the effects of sediment sources on water column nutrients and oxygen demands." In addition, there are serious concerns regarding the release of selenium currently sequestered in the sediments of the Salton Sea if an alternative is implemented that reduces the anoxic conditions that keep the selenium sequestered. The PEIR makes the assumption that "waterborne selenium concentrations would be similar to Existing Conditions in all alternatives and is not considered in the water quality impact assessment." (Table 6-4, page 6-28). This assumption appears unjustified at this time, given the data that is available.

One of the primary conclusions in the PEIR regarding water quality is that additional studies are needed to address influent nutrient concentrations and relationships between nutrients in the inflows, sediment, and the water column (Table 6-5, page 6-29). State Parks believes that studies are also needed on the effects of changes in oxygen availability and salinity on possible toxic contaminants such as selenium. The PEIR should outline in more detail the specific water quality studies that are needed, the party responsible for conducting them, and a timeline to complete them.

Recreation

Although there is a recreation section in the PEIR (Chapter 13), a legal mandate to consider recreation as part of the ultimate decision on the preferred alternative does not exist. The Department of Water Resources is instructed to look mainly at water quality, air quality and wildlife habitat. The PEIR indicates that information on recreation was obtained from the California Department of Fish and Game, the U.S. Department of the Interior, and the U.S. Fish and Wildlife Service. It appears that State Parks, one of the primary providers of recreational opportunities at the Salton Sea was not consulted. This is unfortunate in that the SSSRA maintains long-term records of recreational activities on its lands, which could benefit the planning process. The PEIR states that Varner Harbor is currently the only year-round navigable marina on the sea but also states that boats are rarely in use. The harbor was closed in the fall of 2006 while awaiting the permits necessary to dredge the harbor channel. Before the harbor was closed there had been a resurgence of interest in boating on the sea. At the SSSRA we have seen boats of many types and sizes brought in, as well as personal watercraft and many kayaks.

Proposed Alternatives: In terms of the Salton Sea State Recreation Area maintaining viability over the next few decades, only alternatives 3,4,6 and 7 would allow State Parks to continue to offer the recreational opportunities it now does at the SSSRA.

Alternative 3 – Concentric Rings: According to this proposal, the first ring of water built into the seabed would provide enough water along the entire current shoreline of the SSSRA to allow for both motorized and non-motorized boating. Varner Harbor would essentially be preserved as is, with impact mitigation for water losses due to the IID Water Conservation and Transfer project – Table 13-5, and the campground would still provide access to water, hiking, and wildlife observing activities.

Alternative 4 – Concentric Lakes: From a public recreation perspective, this alternative would be less preferred by State Parks as most of the navigable water would be from Bombay Beach south. Some water as part of the second lake would be located at the SSSRA main headquarters area going north towards Whitewater, and there may be some water in the Salt Creek Area. However, the navigable water would be widely separated and much of the SSSRA current shoreline would be bermed to provide for brine sink. The real benefit of this alternative in terms of navigable water would not come into play until about 2040 when the third and fourth lakes would be formed and provide more extensive waterways. IID would be obligated to provide extensions to Varner Harbor to the second lake – although a question remains as to what types of recreation would still be available in that area. The third and fourth lakes would need to be accessed by ramps or bridges and would most likely be the responsibility of the U.S. Department of Reclamation if the area falls below -246 feet. It should also be noted that there is no air quality component addressed in this alternative.

Alternative 6 – North Salton Sea Combined: This alternative becomes more attractive to the SSSRA as a north marine sea and south marine mixing zone would be constructed and maintained, providing much more diverse recreational opportunities. Activities that could be provided by SSSRA would be motorized and non-motorized boating, fishing, hiking, camping, picnicking, swimming and wildlife observation. The developed campgrounds would still attract visitors and Varner Harbor would be useable but there would be no water access/availability from Salt Creek to Bombay Beach. There is a chance that sport fishing in the marine sea could be re-established that would extend to species beyond the tilapia that is currently available.

Alternative 7 – Combined North and South Lakes: This proposed alternative would provide for a larger, although shallower body of water in the northern portion of the sea so that only a few miles of shoreline below Salt Creek to Bombay Beach would be without water access. The water depth and salinity would probably be such that only tilapia would continue to thrive for fishing purposes. As in Alternative 6, the campgrounds and Varner Harbor would still provide access to the sea and so all activities currently available to visitors could still be available with this alternative.

From a recreational viewpoint, Alternative 6 or 7 would support human and wildlife interests in the most positive way. However, if allowed the consideration of combining different proposals in some fashion, the combining of Alternatives 3 and 6 would give the area some deep water in the north end for boating and sport fishing, provide concentric rings of water in the south end to support birds and other wildlife, and also benefit non-motorized boating such as kayaks and canoes. This combination would

potentially keep more of the Salton Sea bed moist and avoid the larger areas of exposed playa that create much of the air quality concerns. It would also maintain the viability of SSSRA for its best and highest uses.

Looking ahead to future trends for Riverside and Imperial Counties, the potential for recreational demand must be looked at as part of the overall scheme for Salton Sea. Both counties are growing at tremendous rates and the need for recreational outlets will only increase. As stated before, SSSRA has seen an increase in interest as a site for boating and fishing activities, which can be related in large part to upward economic trends and increasing population in this area. It is important that the Salton Sea Ecosystem Restoration Program plan for and include diverse recreational opportunities for the public before changes are made that preclude recreational options. A plan that does not include as many types of recreation as possible would not serve the overall environment in Southern California – a place where demand for open space and recreation continue to increase. Consideration of social and economic benefits as part of the Salton Sea plan would likely bring more widespread support for the project and possibly help secure funding.

As an aside – a correction should be made on the map that accompanies this section (Figure 13-1) that shows Anza-Borrego Desert State Park as extending into Imperial County and out to the Salton Sea. In reality, Anza-Borrego holdings end at the San Diego/Imperial County line and the other properties there are operated by Ocotillo Wells State Vehicular Recreation Area.

This concludes State Parks' comments and recommendations. We appreciate the opportunity to provide our input into this planning process. If you have any questions regarding these comments please contact David Lawhead, District Environmental Coordinator, at (760) 767-4315 or dlawhead@parks.ca.gov.

Sincerely,



Michael L. Wells, Ph.D.
District Superintendent
Colorado Desert District

References

Bowersox, R.J. 1972 Molluscan paleontology and paleoecology of Holocene Lake Cahuilla. Undergraduate Research Reports, Geology Department, San Diego State University, California 21:1-22.

Dorsey, R. 2006. Stratigraphy, tectonics, and basin evolution in the Anza-Borrego Desert region. In The Fossil Treasures of the Anza-Borrego Desert, edited by G.T. Jefferson and L. Lindsay, Sunbelt Publications, San Diego, California p. 89-104.

Blake, W.P. 1907. Lake Cahuilla, the ancient lake of the Colorado Desert. National Geographic Magazine 18:830.

Jefferson, G.T. 2005. Paleontological survey and resource management recommendations for the north east quarter of section 1 and the west margin of section 6, T11S R9E and T11S R10E, USGS Truckhaven and Kane Spring NW 1:24,000 quadrangles, Ocotillo Wells State Vehicular Recreation Area. Document on File, Colorado Desert District Stout Research Center, Department of Parks and Recreation, Borrego Springs, California 10 p.

Li, H-C. 2003. A 20-kyr climatic and hydrological history of Salton Basin, California recorded by geochemical proxies in lacustrine deposits. In Land of Lost Lakes, the 2003 Desert Symposium Field Trip, edited by R.E. Reynolds, California State University, Desert Studies Consortium in association with LAS Associates, Inc. p. 57-60.

Salton Sea Authority 2006. History chronology. Salton Sea Authority web page.

Society of Vertebrate Paleontology 1991. Standard measures for assessment and mitigation of adverse impacts to nonrenewable paleontological resources. News Bulletin 152:2-5.

Society of Vertebrate Paleontology 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontological resources-standard guidelines. News Bulletin 163:22-27.

Society of Vertebrate Paleontology 1996. Conditions of receivership for paleontological salvage collections (final draft). News Bulletin 166:31-32.

Turner, W., and R.E. Reynolds 1977. Dating Salton Sea petroglyphs. Science News 111(9):138.

Whistler, D.P., E.B. Lander, and M.A. Roeder 1995. First diverse record of small vertebrates from late Holocene sediments of Lake Cahuilla, Riverside County, California. Abstracts of Proceedings. 9th Annual Mojave Desert Quaternary Research Symposium, San Bernardino County Museum Quarterly 42(2):46.

Winker, C.D., and S.M. Kidwell 1996. Stratigraphy of a marine rift basin: Neogene of the western Salton Trough, California. In Field Conference Guide, edited by P.L. Abbott and J.D. Cooper, Pacific Section of American Association of Petroleum Geologists, GB 73, Pacific Section Society of Economic Paleontologists and Mineralogists, Book 80 p. 295-336.

cc: Kathy Dice – SSSRA
Dave Lawhead – CDD