STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In re: Draft Order WR 2009-00XX-DWR	)	TESTIMONY OF CHRISTOPHER NEUDECK
	)	
	)	
Yong Pak and Sun Young	)	APN 131-180-07
	)	

INTRODUCTION/QUALIFICATIONS

I am Christopher H. Neudeck, P. O. Box 844, Stockton, California 95201. I am a registered Civil Engineer in the State of California and have worked with the Delta Islands including flood control, drainage and irrigation for the past twenty five (25) years. I am the District Engineer for numerous reclamation districts in the Sacramento/San Joaquin Delta (Delta) and I am familiar with the history of reclamation of lands in the Delta including the Upper Division of Roberts Island which is the area of concern in this proceeding. The engineering firm of Kjeldsen, Sinnock & Neudeck, Inc. of which I am a principal is the engineer for Reclamation District No. 544 which encompasses the area of concern and adjoining districts Reclamation District No. 17 and Union Island Reclamation Districts 1 and 2. I am very familiar with the area including the waterways, levees, drains and irrigation facilities. A statement of my qualifications is submitted as a separate exhibit.

My testimony involves two main areas. The first is the review and mapping of title and other documents. The second is a summary of the irrigation and drainage practices of the southern Delta, and how these practices evolved over time.

With regard to the first, I begin with the Chain of Title produced for the Pak and Young property by Central Valley Land Service Company. I understand the research and production of documents was done by Mr. Thurl Pankey, one of the principles of Central Valley Land Service Company and any of his associates.

The Pak and Young property is San Joaquin County Assessor's Parcel No. 131-170-03. The tax assessor parcel map showing this parcel is Exhibit 3A to this testimony. Hereinafter, I will refer to this property as either the "Parcel" or the "Pak Parcel."

When mapping this Parcel, I have ignored any deeds or indentures which date prior to the Parcel being patented from the State of California per instructions by counsel. By way of patent dated November 24, 1876, the State of California patented a very large tract of land to Mr. J. P.

Whitney. This large tract included the Parcel; see Exhibit 3B. For this Patent and other relevant deeds, the exhibit includes our mapping of the document.

On January 22, 1877, Mr. Whitney transferred a portion of the land patented to him to Mr. Morton C. Fisher; see Exhibit 3C. These transferred lands included the Parcel and were generally those lands west and north of what was know as High Ridge Levee/Duck Slough. I note that when mapping the Whitney to Fisher deed included the chain of title it was discovered that it described lands which did not include the Parcel (it was a similar deed between the two, but for the lands on the other side of Duck Slough). We easily found the correct deed, which is part of this Exhibit.

On June 20, 1877, Mr. Fisher transferred these lands to Glascow California Land Company; see Exhibit 3D. Again, the Parcel is within the gross area of land transferred.

On November 6, 1896, Glascow California Land Company transferred a portion of its lands to John N. Woods and E.W.S. Woods; see Exhibit 3E. Per the Assessor's maps included herewith (see Exhibit 3H below), sometime during the prior years the Woods brothers had also acquired a large tract of land on the other side of Duck Slough (generally east and south) which eventually included a portion of Section 1, T1S R5E which abutted Middle River. Hence, while the parcel was still abutting Duck Slough, (and without any gap in its riparian status) it also became attached to Middle River via common ownership. Thus it could have moved its place of diversion to a point on that main channel to exercise its riparian right.

Of further note in this 1896 deed is the language *"Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in any wise appertaining , and the reversion and reversions, remainder and remainders, rents, issues and profits thereof."*

Although the deed to the Woods brothers does not reference "Duck Slough," that feature was referenced in prior deeds such as Exhibit 3C.

On December 26, 1922, through the estate of E.W.S. Woods, the Parcel, along with other, substantial acreage of land were transferred to Alice Woods; see Exhibit 3F.

On December 10, 1928, through the Estate of Alice Woods certain lands went to Lloyd Woods et.al.; see Exhibit 3G. Again, the Parcel was part of the lands transferred.

The current Pak parcel was eventually subdivided sometime after 1928 per the documents in the chain of title. I have not mapped that event as it post dates the installation and operation of Parcel's current water supply system from the Woods Robinson Vasquez irrigation district.

I have also prepared further exhibits which provide additional historical background and facts as they may relate to the Parcel.

Exhibit 3H includes the San Joaquin County Assessor's maps for the years 1876 through 1919, with the years 1877, 1878, 1909 and 1910 missing. These records are from the Micke Grove Historical Society, which is not aware of the locations of the "missing" maps. The map for 1876, shows a "blue" line along what was known as Duck Slough/High Ridge Levee; see Exhibit 3I. This line stretches from Burns Cut-off all the way to Middle River. Other documents confirm and/or suggest this was the route of Duck Slough on Roberts Island. Based on my expertise in mapping and reading maps, I believe this line indicates that Duck Slough had water in it at the time the tax assessor map was drawn.

I would like to note the method by which the levees, such as the "High Ridge Levee" were created. To create a new levee or improve a "natural" one, soil must be piled up. The easy and economical source of such soil was the immediate area around and near the levee site. Hence, dredges (or even hand labor) would remove soil in the vicinity of the levee site and would pile it up on the existing berm or levee. The "borrow pits" which were the sources for this soil were commonly located along the route of the levee. When the levee followed an old slough, it was common for the soil to be taken from the slough. The removal of soil deepened/widened the existing slough channel as soil was removed to build up the levee. We know that in this particular area, due to the depth to groundwater, digging a hole/trench/canal immediately results in the channel filling with water seepage. When this was done to an existing slough, it created a larger source of open water fed from the main channel to which the slough connected.

In this case, we actually have a written source which confirms this enlargement of the slough abutting the Property. One of the early dredges (which were "floating steam shovels"), the *Sampson*, was actually used to create/improve the High Ridge Levee. The *Sampson* and its sister dredge the *Goliath*, were launched in 1875.

> The Sampson's first job was on Duck Slough and Burns' Cut-off levees of Roberts Island (FN), but the water was so low that the equipment could not make headway unless a channel 30 by 7 feet was dug.

The footnote from the above quote states:

> The levee followed the right bank of the slough southwestward toward Middle River from the slough's outlet on Burn's Cut-off. The present Honker Lake

Tract, the Pocket, and Roberts Island north of the Santa Fe right-of-way (including McDonald Island) would be north of the levee.

This quote is from *The Settlement Geography of the Sacramento-San Joaquin Delta, California*; at page 267. Exhibit 3J is the entire document, and Exhibit 3K is the subject page.

This description in the *Settlement Geography* confirms the process of using the slough itself as the borrow pit, and the deepening of the slough along High Ridge Levee; Duck Slough. Such deepening was necessary to transport the floating dredge which was improving the levee.

From this I conclude that from very early on (1875), Duck Slough (abutting the Parcel) was improved to the extent the Slough became a substantial waterway (with the very approximate dimensions of 30' wide by 7' deed').

Exhibit 3L is another of the Assessor's Maps, this one dated 1881-1882. As we can see, it includes a "blue" line along the dotted lines. I interpret these marks to be the Assessor's notation of both the High Ridge Levee and Duck Slough. Again, the Parcel abuts these features.

Exhibit 3M is the *Map of a Portion of Roberts Island* dated 1883 (owned by M. C. Fisher and produced by Tucker & Smith, Civil Engineers, Stockton) This map shows a hashed line which represents a levee (labeled "Cross Levee") from Burns-Cutoff (a portion of the San Joaquin River south of Rough and Ready Island) running, generally, southwest down to Middle River. In addition to the dashed levee line, there is also a solid line running along the same route. This line indicates a smaller waterway (as opposed to the larger waterways indicated by two solid lines). Thus we have an interior island slough which connects the San Joaquin River to Middle River. This supports the conclusion that the blue line on the 1876 Assessor's parcel map indeed represents a waterway. This slough and levee are the dividing line between Middle Roberts and Lower Roberts. Again, the Pak Parcel abuts High Ridge Levee/Duck Slough.

Exhibit 3N is the *California State Engineer Department Topography and Irrigation Map of San Joaquin County*, dated 1886. This map shows Duck Slough running from Township 1 North, Range 5 East, Section 12, Mount Diablo Baseline and Meridian to Township 1 North, Range 5 East, Section 27 Mount Diablo Baseline and Meridian. The Parcel is in the middle of Section 27 and abuts the Duck Slough line on this map.

Exhibit 3O is the 1894 Stockton-Bellota Drainage District map produced by the California Commission of Public Works This map also shows Duck Slough extending from Burns Cut-off.

Exhibit 3P is the *USGS Holt Quadrangle Map* of 1911. This map includes coloring of known waterways. As can be seen, the USGS noted that a waterway existed in this same Duck Slough, with water reaching also down into Section 27. It is evident from the countours marking depressions along the east side of High Ridge Levee that a wet slough was present along the length of the High Ridge Levee, although not all portions of the slough were drawn with blue ink on the 1911 USGS Holt Quadrangle Map of 1911.

We see that as of 1911, the Pak Parcel abutted the Duck Slough and was owned by J.N. and E.W.S. Woods. At this time the Woods family formalized their irrigation and drainage relationships among themselves and with those to whom they had recently sold property. They did this through a number of agreements which were recorded in San Joaquin County.

One of these agreements was entitled "Woods Irrigation Company to Woods, E.W.S. Contract to furnish water" dated September 29, 1911. This Agreement is attached hereto as Exhibit 3Q. The Agreement specifies that the Woods IC will deliver water to various lands held by E.W.S. Woods. Generally, these lands were west of those of the Wilhoit Douglass Tract. The Wilhoit Douglass lands (the subject of a similar agreement of the same date) were the eastern portion of the Woods Company service area while the E.W.S. Woods lands were the western portion (see map which is the last page of the Exhibit).

Within the E.W.S. Woods lands are an area described as

> Beginning at the common corner of Section Fifteen (15) Sixteen (16) Twenty-one (21) and Twenty-two (22) Township One (1) North, Range Five (5) East, Mount Diablo Base and Meridian; thence West 3102-5/10 feet to the center of Honker Lake Levee; thence along the center of said Levee in a Southerly and Southeasterly direction to its junction with the cross levee between "The Pocket" and Honker Lake Tract; thence along the center of said cross levee in an easterly direction to its junction with the High Ridge Levee; thence along the center of High Ridge Levee in a general Northeasterly direction to its intersection with East and West one-quarter (1/4) line passing through Sections Twenty-two (22) and Twenty-three (23) Township One (1) North Range Five (5) East; thence along said one-quarter (1/4) line to its intersection with the North and South line between Sections Twenty-one (21) and Twenty-two (22) Township One (1) North Range Five (5) East; thence North along said line to the place of beginning, containing 769-32/100 acres.

This legal description includes the Pak Parcel. Hence in 1911 the owner of the Pak Parcel preserved the ability to get water from a water course, indicating intent to

preserve a water right. This 1911 Agreement is written to indicate the irrigation (and drainage) canals were already in place. This is apparent not only from the text of the Agreement, but because the agreement references lands which were not able to get water from the system at the time of the agreement, but needed further improvements first.

From these facts, I conclude that the Pak Parcel abutted Duck Slough at the time it secured an alternate ability to get water via the Woods IC system. This conforms to the general practices of the area in which farmers first used the original sloughs and other waterways to deliver water to their lands, but over time changed to more current and reliable methods. As a result of these practices, the old sloughs were eventually filled in. At this time, we have not located any records which confirm when Duck Slough, or portions of it were filled in.

The final change in the point of diversion came in 1925 when the owners of the Pak Parcel formalized their relationship with their neighbors by forming the Woods Robinson Vasquez district, though the parties to that agreement were apparently operating the system before this date (see Testimony of Michael Robinson). I am informed that the specifics of that district are not relevant to this case and so have not prepared any detailed testimony regarding it.

Exhibit 3R is the *Map of California Delta of the Sacramento and San Joaquin Rivers* compiled by Captain Weathers and Captain Petzinger, and dated 1921. This map is important because it locates a major interior island slough that appears to open/connect to Middle River. This large slough does not reach the Parcel, but it is very near to it, reaching from Middle River northward to the old site of the Kingston School (founded no later than 1881). Confirming this large interior island slough, is the 1941 *Map of Lands Served by Woods Irrigation Company* attached hereto as Exhibit 3S. As we can see, even as late as 1941, there was a significant interior island slough in this location, meaning that water was available for use on the lands in the area. This slough, according to the 1941 map runs all the way to Trapper Slough.

Exhibit 3T is the *Denny's Pocket Map of San Joaquin County*, dated 1913. Besides showing cities and Sections, the map's legend indicates it also identifies "Roads, Private Roads, Railroads, Electric Railroads, Creeks and Ravines, *Canals*, and County Boundary Lines" (emphasis added). Clearly identified as a "canal" or "canals" are lines which follow Duck Slough/High Ridge and the slough running to and past Kingston School. These are connected by a short east-west canal from the School's location to approximately where the USGS and State Engineer Department maps show water in Duck Slough.

This interconnection between the slough running up from Middle River to Kingston School and the old Duck Slough is confirmed by the 1976 Department of Water Resources Areal Geology Sacramento-San Joaquin Delta map, attached hereto as Exhibit 3U. This map clearly shows that the water from Middle River is connected to the water in the slough abutting the Property, even as late as 1976.

I conclude that the two sources of water (Duck Slough and the slough running past Kingston School) were connected to the Parcel. Based on the *Denny's Pocket Map of San Joaquin County's* (Exhibit 3T) use of the term "canal," this water was intentionally provided to the lands along these waterways. As we see, these sources of water run directly by, and abut the Parcel. Any contrary conclusion is not supported by the facts. Since we know that the Kingston School slough existed through at least 1941, it is logical to conclude that water could be distributed through all the connecting canals.

I refer back to the description of the Sampson dredge's activities in building a levee along Duck Slough and its "creation" of a 30' wide by 7' deep channel to allow the dredge to float and be moved. The combination of designated waterways, enlarged waterways, interconnection with other waterways, canals and sloughs many years before the Parcel was separated from the main channels to many years after, the only reasonable conclusion is that the Property maintained a connection to the neighboring waterways and thus was ***not*** severed as of 1891.

For ease of reference, we have included Exhibit 3V which combines a number of references to water sources onto a map which also shows the outline of the Parcel.

I have also reviewed the testimony of Michael Robinson which indicates that the Parcel received water from Woods Irrigation Company sometime prior to 1925. He also states that in 1925, the current supply system was formalized, though it had functioned (supplied water to the Parcel) before that date.

The evidence for the Pak Parcel is overwhelming. Not only do we have numerous sources showing Duck Slough having water in it well past the date the Parcel was separated off from the main channels, we have water in it at least as of 1911, an agreement with Woods Irrigation Company securing/maintaining the ability to get water, then in 1913 (the Denny's Pocket Map) we have canals along Duck Slough and connecting to a slough that existed through 1941, and supply by Woods Irrigation Company up to the time the current system was installed. There can be little doubt the owners of the Parcel maintained a continuous connection to water for irrigation purposes from 1891 through the date of their current supply system used today.

The second part of my testimony deals with the historical irrigation and drainage practices of the area. Attached hereto as Exhibit 3W which is a copy of my testimony before this Board in the Term 91 ACL hearings held in February, 2003. I will only briefly summarize that testimony now, and can provide more detailed explanations/clarifications when called as a witness.

Briefly, the area in question, like much of the Delta was originally designated Swamp and Overflowed Lands during the original federal surveys of public lands in California. This designation was due to flooding that occurred during times of high flows on the San Joaquin, Sacramento, or other tributaries to the Delta. This regular process created innumerable waterways stemming from the main channels, including large sloughs, small sloughs, and smaller dendritic channels.

The banks of the channels were the natural high ground due to sedimentation of the materials carried by the high flows. The first farmers in the area used these high grounds locate their buildings and for farming. These farmers then attempted to construct levees to protect their lands from the high flows and to drain them (as necessary) for full reclamation. In this process, the natural high grounds along the sloughs and other channels were generally used as the foundation, or beginnings of the levee. This explains why many of the current surface features in the area are not straight lines, but followed the meandering courses of current or historic waterways.

As levees were constructed around the lands in the Delta, interior channels were dammed at the point they intersected the levee. At these dams they installed sluice or flood gates so that they could regulate the water in the slough being severed by levee construction.

The flood gates were constructed for two main reasons. The slough was used to drain the lands as necessary. This was done by allowing seepage to fill the slough, and then open the sluice gate during the low tide. Under those conditions, the slough would drain into the main channel and the desired drainage of the land was accomplished. The second purpose of the sluice gate was for irrigation. By opening the gate during high tide or high flow conditions, the slough would fill with water. This water was either pumped out of the slough, allowed to flow over the lands via natural gradients, or simply held in the channel to sub-irrigate the lands. The method used depended of course on the topography, and the extent of the improvements the landowners had installed and operated. Whichever method was used, the farmers certainly took advantage of this system and these capabilities because the application of water vastly improves crop production and minimizes the vagrancies of weather and river flow.

Since the southern Delta is mostly higher elevation than the central Delta, the sluice gates on old sloughs were probably used for irrigation more than drainage. However, the southern

Delta does have a high water table (directly connected to the water in the neighboring channels and the elevation of that water) and thus did require regular drainage.

As time passed, the farmers installed more modern and efficient systems, including pumps and the sluice gates were slowly replaced. They also eventually filled in the sloughs and so replaced them with smaller canals or pipelines.

This description of reclamation and irrigation practices in the Delta is not speculation. Besides the numerous historical references to these practices (both cited in my Term 91 testimony and in Mr. Nomellini's testimony) I have personally been involved in levee projects which have located, removed or filled in at least four (4) of these old sluice gates. In fact, I believe Mr. Nomellini's testimony identifies others still in operation. I have also had many conversations with local farmers who either knew of these gates and the practices I have referenced, or actually were involved in the operation of these gates.

There are other relevant circumstance pertaining to the Parcel. From both the USGS map referenced above and the materials cited/used by Mr. Lajoie, we see that the Parcel is at or below sea level, both as of the time it was separated from having a surface connection to the main channels through the present. This means that it was, and remains directly connected to the main channels of the Delta. When high flows or high tides occur, any old channel or slough fills to the same level as the neighboring channel. Before the Parcel was fully protected by levees, the water would inundate the land, both through surface and subsurface flow. After the construction of levees for reclamation purposes, the subsurface flows continue to saturate the reclaimed land. This area in general, and the Parcel in particular, operate drainage systems to deal with this saturation.

As you can in section II of my testimony submitted in the Term 91 hearings, the surrounding groundwater is directly connected to the waters in the neighboring channels. As I stated in that proceeding:

> This hydrologic conductivity is important to understand the local water supplies. The entire Delta is one big pool of water; some in the channel and some in the soils. There is no net difference in the amount of water in the Delta channels when local diverters take from neighboring channels, pump from shallow groundwater, or farm crops which draw from the shallow groundwater. Taking water from one place is virtually the same as from another. This is especially true during summer and fall months when the three tidal barriers are in operation as they hold high tide waters around Upper Roberts Island and thus prevent any depletion of the channel waters from causing low levels which might affect other diverters.

In conclusion, the pertinent records indicate that as the ownership of the Parcel changed over time, it was always either abutting a channel, or connected to a supply system which could deliver water to it.