Field Notes
Relative to
Photographs of
Flood Damages
"Otay Investigation"

# LEVEL BOOK.

No. 410 T

W81

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San Diego, Calif.

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# TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING
ROADWAY 20 FEET WIDE. SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

*Copyright, 1902. No. 39340.*

| | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 10.0 | 10.1 | 10.2 | 10.3 | 10.4 | 10.5 | 10.6 | 10.7 | 10.8 | 10.9 | 0 |
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| 6 | 16.0 | 16.1 | 16.2 | 16.3 | 16.4 | 16.5 | 16.6 | 16.7 | 16.8 | 16.9 | 6 |
| 7 | 17.0 | 17.1 | 17.2 | 17.3 | 17.4 | 17.5 | 17.6 | 17.7 | 17.8 | 17.9 | 7 |
| 8 | 18.0 | 18.1 | 18.2 | 18.3 | 18.4 | 18.5 | 18.6 | 18.7 | 18.8 | 18.9 | 8 |
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| 7 | 27.0 | 27.1 | 27.2 | 27.3 | 27.4 | 27.5 | 27.6 | 27.7 | 27.8 | 27.9 | 17 |
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| 4 | 34.0 | 34.1 | 34.2 | 34.3 | 34.4 | 34.5 | 34.6 | 34.7 | 34.8 | 34.9 | 24 |
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| 0 | 50.0 | 50.1 | 50.2 | 50.3 | 50.4 | 50.5 | 50.6 | 50.7 | 50.8 | 50.9 | 40 |

Calculated by F. E. Paradis, C. E.

Notes on

Photographs

of

Flood Damages

in

San Diego County

Damages done in

January 1916

Photographs taken

May and June

1916

by W.C. Earle

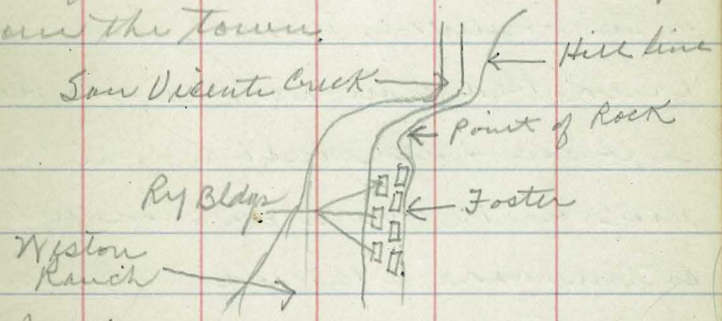
1. May 1-1916 Clear
E4/5

No1-1 View of landslide on E. side of River 1000 feet south of depot at Foster. Soil was washed off to bedrock carrying with it trees and boulders which are shown in the foreground. This slide missed a house by but 100 feet to the south, the road was covered with deposit several feet deep in places. This slide is but typical of the hillsides from Eastside to Foster and on up to the top of Mussey Grade, the Hway up Mussey grade being covered in many places by such slides as this. Slides all indicate that the soil was in a semi-liquid form note. Slope is not very steep



No1-2 View of ranch Bldgs. on H.Q. Weston dairyranch at Foster. S.D. & S.E. Ry. washed out in foreground. This picture taken from same point as No1-1 but looking in opposite direction. Of 222 acres in this ranch 20 acres were washed out and away and balance covered with sand deposit from 1 to 3 feet deep. Formerly in alfalfa, now badly cut and sand and rock covered - Feed destroyed 90 head of cattle taken to Norma and La Mesa - 23 head lost in flood and several carloads of feed. Water came in rush so men could not get from barn to house, 4 days before entrance to horse barn could be had. Flood high Jan 27-7:30 A.M. First flood Jan 16 did no damage swept small wash. This is San Vicente Creek

No 1-3 San Diego and South Eastern Ry. Station Bldgs. at Foster. The land in foreground was formerly cultivated but now washed out to gravel bottom. Beyond these buildings and at the base of the hill is the residence of Mr. Joe Foster, supervisor. The hills were washed fairly clean of soil and boulders and the valley land (gardens, yards etc) are covered with deep deposit of soil and rock. The canyon shown back of the water tank is Nussey canyon, water came out of this canyon 30 feet deep. Ranchers in the canyon attempted to warn the people at Foster by phone but could not on account of wires being down or line washed out. The only thing that saved the town of Foster from probably being entirely washed out was a point of rock that projects into the river just above the Foster residence which is the one furthest north in the town, thereby diverting the force of the flow to the west or away from the town.




Mr. Joe Foster, according to his daughter-in-law, has lived at Foster 36 years and has never before seen such runoff and slides.

No 1-4 View on San Vicente Creek looking north toward Foster. The Weston dairy ranch Bldgs and land covered with sand are seen in the left and the San Diego and Southeastern Ry track in the foreground. The Hway shown is of recent construction, the Hway formerly being on the left of the railway track where the creek bed now is, the old Hway is shown approaching the creek bed on the right in line with cottonwood trees and telephone pole. The hills in the background had many slides

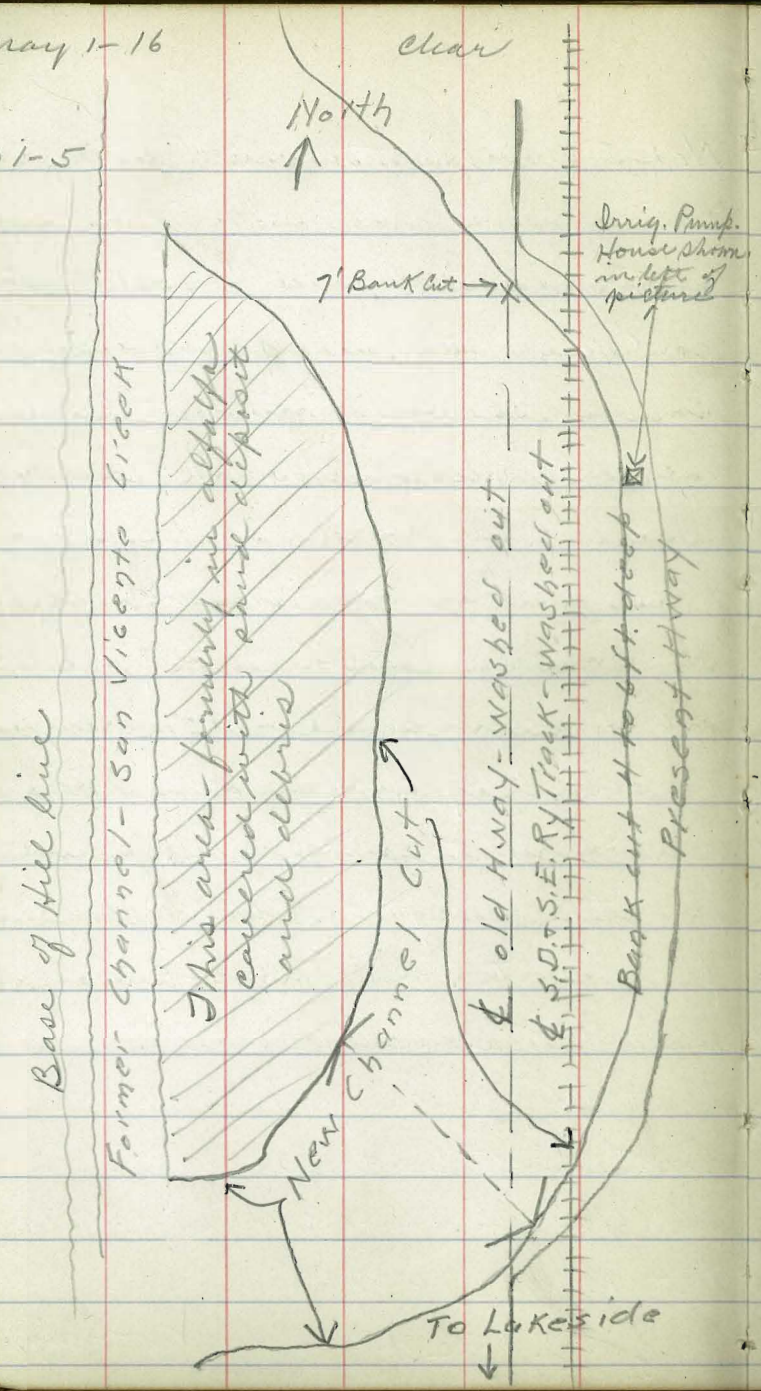


No 1-5 San Vicente creek - looking south along former center line of Hway which is shown in foreground and can be traced by telephone posts in background. This picture taken approx 1 mile south of Foster. River channel was formerly on extreme right at base of hill and channel shown is now wash out from 4 to 6 ft. deep. This was formerly traversed by Hway and by tracks of S.D. & S.E. Ry. which can be seen and traced by line of Right of Way fence posts. This land was formerly in alfalfa, further wash was prevented by placing sand sacks and rock. Level land on right formerly alfalfa, now sand covered. Bldg. on left houses irrigation pump and engine. Note debris on left & right

See sketch next page

7 May 1-16 clear

No 1-5






No 1-6 View south on San Vicente creek back of south Bldgs. on the Levi ranch approx 1½ miles south of Foster. Note collapsed barn in left foreground. The channel shown is new cut, formerly alfalfa field and corral. Old channel was to right of trees in background and can be seen at either end. This ranch contained 117½ acres all in cultivation - 35 acres were washed out entirely and 50% of the balance covered with sand deposit, several Bldgs destroyed and cement pipe irrigation system badly damaged.

I May 1-1916 clear
Exp 2-3

No 1-7,8 & 9 Panoramas taken at junction of San Vicente Creek and San Diego River. Practically all of the river channel as shown was formerly cultivated fields. The old channel of the San Vicente followed close in to the Hwy and grain field shown in the foreground. The San Vicente channel was greatly enlarged and deepened. The channel shown on the left extending to the left towards the hills is entire new channel of the San Diego River where it broke through and formed new junction with the San Vicente this year, part of the flow of the San Diego river really emptying into the enlarged former channel of the San Vicente. The town of Lakeside is in the extreme right. The Hwy Lakeside to Foster and S.D. & S.E. Ry. formerly traversed this land from the extreme left, where Ry. track can be seen to the trees and white building in the center. Several Bldgs were destroyed here besides the washed out land one house is shown as destroyed and land in the background is shown as covered with sand etc. Note slide on the hills on extreme left. In center back ground of right picture is shown old Hwy truss bridge, which was paralleled by S.D. & E. Ry. bridge both of which spanned former main channel of San Diego River and both of which were partly destroyed

11 May 1-1916 clear
Ext 16

No1-10 View looking east up new channel of San Diego River north of Lakeside where it intersects the channel of the San Vicente creek. Note slides in background, destroyed house in channel and S.D. & S.E. Ry. track, near white building, dropping into the river bed. This Ry. track and the Hway, Lakside to Foster, formerly traversed this washed out land. San Diego River can be seen in background beyond line of trees.

Ext 16 12

No1-11 View showing slides on South side of San Diego River one half mile above Cuyamaca Water Company's North pump Station above Lakeside. The horizontal line that can be traced along the hill side is the flume line of the Cuyamaca Water Company. The pole line shown on the left bank is the power line of the San Diego Consolidated Gas & Elec. Co. and before the flood was on the opposite or south bank and was washed out.

May 3-16 Clear

No 1-12 View of Cape Horn showing flow of river (San Diego) May 3, 1916. The Hway (Lakeside to the Diverting Dam formerly passed around this point and can be seen on either side, it is now washed out here and at many points above and is impassible on this date above this point, below this or toward Lakeside, a great deal of the Hway was washed out and is rebuilt in new location further up on side hill From here to N. line of E 1 north much most of road is in new location, fields washed out and sand deposited.



No 2-1 View looking west or down San Diego River one mile below Cape Horn, showing channel change of river, all of the river bed in the picture was formerly cultivated field and traversed by County Hway, Lakeside to Diverting dam. This picture was taken from center of Hway, which is shown in foreground, and extended to trees in extreme right background. The Horizontal line on hillside in background is flume line of Cuyamaca Water Company. This is a typical scene from Cape Horn to Lakeside

 May 3-16 Clear

No 2-2 View taken north across San Diego River from S. D. & S. E. Ry. bridge (shown in foreground) at Lakeside showing Hway bridge on right. Both bridges were partially washed out. The old main channel of the San Diego River was spanned by these bridges (there are two more trusses on Hway bridge like those shown) These bridges extended towards truss shown in center background, the old channel was practically checked by debris and sand deposit and practically all of channel shown beyond the bridges is new channel. Note slides on hills in background and debris against Ry bridge and Hway bridge.

Ex 10



No 2-3 View taken from North end of Hway bridge, shown in No 2-2, across new channel of San Diego River toward San Vicente creek Entire washed portion shown is new channel. This picture taken from opposite point where pictures (panoramana) No 1-7, 8 & 9 were taken. S. D. & S. E. Ry. paralleled this bridge and crossed to truss in center background. Both Hway and Ry. track washed out

No. 2-4 View looking downstream on San Diego River two miles below Lakeside showing width of present river channel. The former channel here was much narrower and lined with heavy growth of cottonwood trees, nearly all of which were washed out. Santee is on the extreme left in background and this side the river cut in and washed out Hway (Santee to Lakeside) S.D. & S.E. Ry. tracks and large area of cultivated land



No. 2-5 View upstream on San Diego River two and one half miles below Lakeside showing channel change and wash out referred to in No. 2-4. River was formerly on left of trees shown in left foreground but broke through in line with furthest flat car and washed out S.D. & S.E. Ry. Co's tracks, Hway and land. New highway shown on right, old traversed wash and is now used to some extent and Ry. track is rebuilt in former location

No 2-6 View downstream on San Diego River from same point that picture No 2-5 was taken showing how river washed the land. Everything shown in this picture is new wash, the old channel being back of the trees shown in extreme right background. This land was formerly in dairy pasture or cultivated and is now washed out and covered with sand and debris. Water extended up to and covered tracks of S.D.& S.E. Ry. Co. showing in foreground. Dupree dairy ranch at Santee is shown in left center background to right of first power line pole. This area flooded in this picture came from the break as shown in No 2-5.



No 2-7 View taken looking upstream on San Diego River below Santee from the next ranch west of the Scripp's "Fanita Ranch" one of the ranch Bldgs showing in center background. All of the channel shown in this picture is new the old channel being to the left of the trees shown in left of picture. This land was formerly all in alfalfa and is now washed out and covered with sand, the cut being several feet deep in center. The land shown is owned by the La Mesa, Lemon Grove and Spring Valley Irrigation District and is part of its reservoir site for impounding water if dam should be constructed in Mission Gorge.

21 May 3-16 Clear

No 2-8 View upstream on San Diego River one half mile above Old Mission Dam showing overflowed and sand deposited land, the former channel was on the extreme left of the picture. Note slides on the hills and uprooted trees in the river bed

May 4-16 Clear 22

No 2-9 View of rebuilt Los Angeles and San Diego Beach Ry bridge (the furthest on pile bridge) and the Atchison, Topeka and Santa Fe Ry bridge across the San Diego River at Oldtown. The former bridge was washed out, also the approaches to the Santa Fe bridge but the girders on the Santa Fe bridge were saved by standing loaded freight cars on same. The river left its channel here and flowed across the flats into Mission Bay all of the land beyond the bridge being flooded and many houses being destroyed. There was as much greater flow of water in the San Diego river on May 3 at Cape Horn than on this date at this point

Mar 4-16 clear

Nov-10 View showing collapsed concrete bridge built by the City of San Diego across the San Diego River at Old town and the new pile bridge constructed since the collapse of the former bridge. The approach or dyke to the former bridge was also washed out to the first pole shown on left side from the approach shown to the new bridge in this picture being a new fill. The city isolation hospital in the right background was flooded to the second story



Nov-11 View just on upstream on San Diego River taken from the City of San Diego's Mission Valley pump station showing formerly cultivated land now covered with sand deposit. The old channel was to the left of the power pole line shown in the center of the picture Note the depth of sand deposit in the foreground

Mar 4-16 clear

No 2-12 View upstream on San Diego river taken one half mile further upstream than No 2-11 showing land covered with sand deposit. Channel was formerly to extreme left



No 3-1 View of two pile bridge across San Diego River at the Old Mission or what was known as the Murphy company or Escondido bridge, also showing one truss of old bridge remaining. Three like trusses each one hundred feet in length were washed out. The San Diego Mission can be seen in background and the land shown covered with sand was formerly a chinese vegetable garden

Ex 12

Mar 4-16 clear

No 3-2 Same as No 3-1 taken along center line of old truss bridge, between point of camera and remaining span there were washed out three one hundred foot truss spans on steel cylinders filled with concrete



Ex 13

No 3-3 View of land slides on north bank of San Diego River one fourth mile upstream from Old San Diego Mission. This picture is typical of hillsides along the San Diego River, nearly every draw or gully along the San Diego River has a slide or slides of greater or less extent. In this picture the rain that caused these slides was only that which fell on the surface shown, there was no drainage from above for from the crest, as shown in the picture, the drainage was in the opposite direction The river channel is at the base of the hill but the land was overflowed to a point in excess of 500 feet back of the camera

Mar 4-16 clear

No 3-4 & 5 View upstream on San Diego River two miles above the Old San Diego Mission. All land shown white or covered by sand was formerly cultivated fields, alfalfa, etc. The old channel of the river was to the left of trees in left background. At present in addition to the old channel there are five separate and distinct channels through the land in foreground. The Hway up the valley and thro Mission Canyon extended across the center of right picture following pole line shown to house at base of hill. The sand deposit is from 1 to 5 ft. deep. Land is badly cut up and several Bldgs washed out



No 3-6 Picture of section of old Mission aqueduct just below Old Mission Dam (First Ave) This aqueduct is over 150 years old and has stood intact until the floods this year when practically all of it was washed out, there remaining only sections here and there

May 4-16 Clear but shadows
Ex 14

No 3-7 View of section of Old Mission aqueduct 300 feet below dam. Square white faced tile is stood on corner at end of section, another square tile is held at high water mark which was 15 feet above the aqueduct bed which is built in solid rock at this point



No 3-8 Another view of Old Mission aqueduct. Square tile stood on corner and white handkerchief on stick denote section of aqueduct and white tile is held at high water mark. From point of camera to white handkerchief entire aqueduct washed out

May 5-16 Hazy & windy

No 3-9 View looking north across Tia Juana River Valley one fourth mile east from its mouth. During flood stage the river extended from a point 50 ft. in advance of camera to grove of trees in left center background width approximately three miles. This entire area was badly washed and covered with sand deposit and debris



Ex 4

No 3-10, 11 & 12 Panoramic view of Tia Juana River Valley one mile east of the Pacific Ocean. All the land in the foreground and back to the trees and ridge in background was formerly intensly cultivated, now practically no cultivation, it is badly cut by channels and covered with sand and debris. Many ranch Bldgs were washed out & land full of muscle draws and washes Crops were destroyed, irrigation systems washed out and land practically swept bare, only the larger and stronger built buildings remaining

May 5-16 Hazy & windy

No 4-1 View of destroyed ranch & Building in Tia Juana River Valley 2 miles south of Nestor Note house destroyed, other Bldgs were washed away. The channel through here is now the old channel being 1500 ft. to the north. The land was formerly on same level in all directions as land to left of house and intensely cultivated land now cut in all directions and covered with sand deposit. Portion of orchard can still be seen beyond auto. Note in background how land is covered with sand



No 4-2 View of temporary bridge across Tia Juana River 1 3/4 miles south of Nestor. This picture was taken from about center of area covered by water and looking North towards Nestor. River was here 1.6 miles wide. In center foreground can be seen white steel cylinder pier and that remains of old trusa bridge across river. Land on either side of bridge was in high state of cultivation, now badly cut, washed out and covered with sand. Note sand deposits in background. This picture was taken 1500 feet North of point where picture No 4-1 was taken and was old main channel of Tia Juana River

May 6-16 clear

Exp 13

No 4-3 Picture of remains of old adobe wall at Old San Diego Mission showing how San Diego River widened its channel and cut away adobe wall. This wall formerly extended from right of picture to last tree in left center foreground. Now only a small portion remains at either end - land in foreground was formerly in gardens. This wall built at the time of the Old Mission and land in foreground is washed out to depth of from 4 to 6 feet deep.



Exp 4-6

No 4-4, 5, 6, 7 & 8. Panorama of San Diego river valley taken from top of cliff back of Old Town showing how Mission Valley was flooded. All light colored land is sand deposit. Hwy in right and left foreground was flooded and entire area shown beyond the last two bridges at extreme left and northward to Mission Bay. Water was up to second story in Isolation Hospital

May 8-16 Hazy & windy

No 4-9 View looking south across Sweetwater Valley south of National city showing main Highway to Tia Juana washed out which followed line of telephone poles. Long bridge spanned old channel on south side of valley and was washed out. The Hway was on a fill of from 3 to 6 feet and as widened but little remains. Parallel to and 1/4 mile west of this Hway the San Diego and Arizona Ry fill and two bridges were washed out. This fill was from 10 to 15 feet high and the bridges approximately 250 feet long.



Ent 8

No 4-10 View across Tia Juana River Valley 1/4 mile below San Ysidro Valley looking west at time of flood water extended from S.D. & S.E. Ry. track in foreground to base of hills in background, approx. 3 miles. All land in foreground was in very high state of cultivation & many houses and buildings were upon it which were washed away. On this land was located the colony of Little Landers. Practically all buildings were washed away, land badly cut and covered with sand & debris. The channel shown in foreground is new, old channel being beyond the trees in center background

May 8-16 Hazy

No 4-11 View looking upstream on Tia Juana River 1 mile north of San Ysidro. This picture was taken from center of County paved Hway to Tia Juana which is shown in foreground as partly washed away. The channel shown in foreground is new and can be traced back to the old channel. The new channel occupies formerly cultivated land and paved Hway also the tracks of the San Diego & S.E. Ry. Note how land was washed out beyond present channel as shown. At time of flood the ranch buildings shown in center were completely surrounded by water, channel on all sides



No 4-12 This picture was taken downstream from point 300 feet above point where No 4-11 was taken. Everything shown as channel in this picture is washed out cultivated land it being a continuation of the new channel shown in No 4-11 - Note County paved Hway and tracks of S.D. & S.E. Ry washed out in foreground. These two pictures are but typical of the meanderings and damages done by this river from the International line to the mouth of the river

May 9-16 Hazy

No 5-1 View looking upstream on Sweetwater River at Bonita, all of channel shown is new wash formerly cultivated fields and traversed from point of camera to trees in center by Hway also by tracks of S. D. & P. E. Ry Old channel was on left of trees in left foreground. Sweetwater Water Co's pipe line was washed out here as was the City of San Diego's Bonita pipe line 1/2 mile downstream, also Concrete Hway bridge near city pipe line. All bottom land was badly cut by channel changes and heavy deposits of sand were made



No 5-2 View looking south from center of new earthen dam on south side of Sweetwater Reservoir showing damage done by breaking of old earthen dike or dam. Soil was stripped to bedrock. Note high water mark.

May 9-1916 Hagy

No 5-3 View downstream on Sweetwater river 1/4 mile below the Sweetwater dam showing washed out track of S.D. & S.E. Ry note overturned flat cars washed out rock quarry plant in entire (left) foreground Hwy bridge was washed out and valley land below flooded and covered with sand which formerly was in cultivation



No 5-4 View upstream on Sweetwater river from Bonnie Brae ranch just above junction of Sweetwater river and flow from broken earthen dam on south side of Sweetwater reservoir This picture shows cut and flooded land of valley. All land in picture was in high state of cultivation, vegetable gardens predominating, the S.D. & S.E. Ry Co's track formerly crossed this land but is now completely washed out as was a concrete bridge just below this point. Channel shown is new, the old one formerly being on extreme right

May 10-16 Hazy & Cloudy

Est 28

No 5-5 View looking North across Sweetwater river at lower end of Jamacha valley showing new bridge and river channel. This bridge is on main highway to Jamacha Valley via Campo and old bridge was washed out. River channel was here cut down from 6 to 8 feet the former river bed was on same level as land seen at far end of bridge, this channel cut extends up and down the river for miles. the former channel being scoured out and greatly deepened and also widened

Est 28



No 5-6 View upstream from center of bridge shown in No 5-5 showing how river channel was cut down and out, the former river bed here was practically level and extended from base of tree in right to base of tree on left the channel was cut down 16 feet at first tree on right

May 10-16 Hazy

Ent 17

No 5-7 View downstream on Sweetwater river in Jamacha Valley Sefton Hog ranch shown on right where palms are seen all land shown as channel was formerly in alfalfa, bank on extreme right is from 6 to 12 feet deep and flood waters extended above and beyond this bank - 40 acres were here washed out and Hwy crossed this land from point of camera to point beyond trees in center background, several Bldgs were washed out, old channel was to left of any point shown in this picture



No 5-8 Same view as No 5-7 but taken back from river bank 400 feet showing entire area washed out. Everything shown as having been washed was formerly cultivated fields. The Hway shown in the background crossed this area to a point 400 feet to the left or south of point of camera All land in foreground and up to and beyond last palm tree shown on extreme right was flooded and considerable sand deposit was made in places.

May 10-16 Cloudy

No 5-9 View looking upstream on Sweetwater River at about center of Sec. 21-R. 1 E- T. 16. S. The entire channel shown is new and a good portion of same was formerly cultivated, now destroyed by river. The old channel was to the right of trees shown down center of picture



Cont 21

No 5-10, 11 & 12 View of Sweetwater River at Old Dehesa (Center of Sec 16) Practically all land shown here except channel in extreme background is new channel, the old channel was beyond the trees shown in center and right background. Everything this side of the trees was washed out. The cut shown on either side of the camera is in excess of 20 feet deep. This land was all in cultivation mostly in bearing olive and orange orchards, olive trees can be seen on either side and also uprooted in stream bed. At flood stage water was over point of camera and made heavy sand deposit on orchard land in rear of camera, trees now imbedded in sand (beyond lower branches)

May 11-16 Hazy

No 6-1 View looking up Sweetwater river showing from an elevation same section as is shown in pictures No 5-10, 11 & 12. Old river channel hugged close to the point shown in center of picture. Practically all of channel as shown was formerly in cultivation, mostly orchards of olives and oranges and was washed out. The olive orchard shown in right foreground and orange orchard shown on extreme left were covered with heavy sand deposit up into the branches





No 6-2 View looking downstream on Viejas Creek, a tributary of the Sweetwater, taken directly back of the buildings at the "Willows" This picture is typical of erosion on the headwaters of the Sweetwater river this picture being taken 5 miles from the source of the creek. The former creek bed was at the base of the trees shown on right bank and was but a slight depression in the ground, the camera was held but two feet above former river bed and the depth of cut immediately in advance of the camera was 32 feet. Where this channel now is was formerly a vegetable garden. Channel cut as shown extends up and down stream for practically entire distance. Viejas valley is cut and cross cut by channels as above

May 11-16 Hagy

No 6-3 Destroyed - Two exposures on 1 film

No 6-4 View on Sweetwater river at Hulbert ranch. This is a picture of a side wash, ground formerly was perfectly level. Depth of cut, which is 18 feet deep, is illustrated by man standing in wash in foreground. The water causing this wash out was drainage from area not to exceed 100 acres and slopes are not steep. Side washes such as this are numerous on headwater of Sweetwater river. Rainfall record kept at Hurlbert ranch show over 30 inches of rain fall in Jan 1916



No 6-5 View downstream on Sweetwater river at Halbert ranch taken from same point as No 6-4 showing how river washed. The entire channel as shown is new, the old channel being beyond the extreme left of picture. The side wash (Picture No 6-4) is shown entering in foreground. The land washed out was formerly used for pasturage and water overflowed the field as shown up to base of hills, possibly high water can be traced on picture by sand deposit

May 11-16 Ext 28 Cloudy

No 6-6 View looking downstream on Sweetwater river 1 mile above Descanso, 10 miles approx. from source of river. This picture shows old channel in right foreground to the right of and beyond boulders in foreground all other channel shown to left is new channel washed out. The old channel shown here averaged 25 feet wide and 6 feet deep. New channel averages from 10 to 15 feet deep and 300 feet wide. Through this entire section this river deepened and widened old channel or cut new channel in above proportions.

May 12-16 Hazy



No 6-7 View of San Diego and Arizona Ry. bridge across Tia Juana River at Hot Springs, Baja California (Mexico) This bridge as shown is rebuilt, old bridge of same type was washed out - Bridge is 70 spans long, each span 15 feet - length 1050 ft. below and above this bridge the river spread very wide and after cutting out considerable land left heavy sand deposit (light sand deposit in foreground) The fill at south end of bridge shown in right foreground saved the hotel Bldgs at Hot Springs from being washed away, the barn and some outbuildings were washed away and high water mark on hotel is five feet from ground or 6 inches below window sills

May 12-16 Hazy

Ent 7

No 6-8 View of 30 ft steel deck plate girder on south bank of Tia Juana River which was a part of the San Diego and Arizona Ry. bridge across the Tia Juana River at Tunnel #1. This girder was washed out and carried by the flood water to the point where shown which is about 2 miles below the bridge. The channel shown is new channel, the old channel being on the other side of the hill shown in center background.



Ent 7

No 6-9 View of San Diego and Arizona Ry. steel deck girder bridge on steel towers and concrete piers, across the Tia Juana River 1/6 mile West of Tunnel #1 or about 1¼ miles East and south of Tia Juana. This bridge was washed out by the flood and some of the 30 ft. steel girders were carried downstream 2 miles as shown in other pictures. See girder on river bottom in right foreground. Engr. Williams of S. D. & A. Ry says that the concrete piers in stream bed were built to a point 7 ft. above highest known water and at time of flood water was 4.8 ft above top of piers or 5.5 ft. higher than highest known water. Two steel towers have never been found

May 12-16 Hazy

No 6-10 Another 30 ft steel deck plate girder with tower attached from bridge shown in picture No 6-9 carried downstream from bridge site nearly one mile

May 13-16 Clear 

No 6-11 View looking downstream on San Diego River out of Old Mission canyon into head of Mission Valley All land on left of picture in valley flooded and badly cut and covered with sand, formerly all cultivated, several buildings were washed out on this land. Note slides on hills in right background which was caused by fast rainfall on slope shown. In lower right foreground at base of hill old Mission aqueduct was intact until this year Scarcely any of aqueduct left now. The old channel of river is fairly well defined by trees down center of picture.

May 16-16 Ex 28 Clear

No 6-12 View looking upstream on Sweetwater river at about center of Sec 11-Tsp 16 S.-R. 2 E. showing span of bridge labeled "Sacatero Bridge 2 Mesa 7 miles, Descanso 10½ miles". This bridge is intact and consists of 4-50 ft spans, like the one shown, on concrete abutments and steel cylinder piers. This bridge formerly spanned the channel of the river but this year the river cut a channel around each end of the bridge (lost channel is shown) west. channel is practically the same. The old channel under the bridge also carried its full quota of water. The bridge stood but water was one foot over the floor which is 14 feet above water that this date



May 17-16 Ex 17 Clear

No 7-1 View looking downstream on Sweetwater river approx. 5 miles below source, on at head of Green Valley. Temporary bridge is shown in center of picture where concrete ford was washed out. The former channel was but a small depression in the ground here, now the channel throughout Green Valley is from 50 to 200 feet wide and from 8 to 10 ft. deep and throughout is cut to boulders or gravel. The banks shown in picture were covered with water over 2 feet deep at time of flood. The drainage area here on the west is small the divide paralleling the stream from 1/2 to 1 mile.

May 17-16 Ext 17 Clear

No 7-2 View looking upstream on branch of Sweetwater river, from Samagatumas valley, two miles east of Discanso. The channel shown is practically an entire new channel, the old channel being but a small depression on top of the ground the channel is now from 15 to 20 feet deep and from 75 to 200 feet wide



Ext 18

No 7-3 View downstream from point 500 feet below point where No 7-2 was taken. This picture was taken from the center of Highway (Discanso to Campo) which formerly crossed at this point. The depth of cut in foreground is 38 feet and water during the flood covered the Highway

May 17-16 clear

Exp 6

No 7-4 View of Pine Valley and Pine Valley Creek at Junction at west side of valley where use feeders come together just before creek enters the canyon, showing how water cut out the soil to bedrock. The depth of cut in foreground at junction of the two cuts is 34 feet. This point is within 4 miles of the source of the river. Highway shown on right is main Hway Descanso to Campo which formerly crossed the creek and came out at a point to left and 10 feet below camera. This highway is now washed out in many places in valley and the old road shown on left extending down the east



side of the valley is now used. The old creek channel can be seen in line with and beyond the road shown on extreme left. This valley is badly cut throughout by channels of which this picture is typical.

May 17-16 Clear

E46

No 7-5 and 7-6 View looking up two new channel cuts in Pine Valley, both pictures taken from same point but of different channels, taken at junction of two channels as shown in picture No 7-4 below two pine trees in right center



May 20-16 Cloudy

No 7-7 View looking north along state (paved) Highway north of Del Mar at crossing of San Dieguito River. The Highway and bridge were here washed out, a portion of the bridge remaining shown in the center background. At time of flood the water extended and covered the pavement for ½ mile to rear of point of camera. The Santa Fe bridge which paralleled the state Highway approx. 1000 feet to the east was washed out also. This bridge as rebuilt consists of 75-15 ft. spans of pile trestle - length 1125 feet.

May 20-16 Cloudy

No 7-8 View on Escondido creek West of West line of San Dieguito Rancho showing new channel and bridge washed out. The most of old channel was on the other side of the trees shown in right foreground



No 7-9 View looking across Escondido creek valley 500 feet east of Santa Fe tracks showing width of creek during flood stage which extended from the old straw stack shown in center foreground to the base of the hill in background. Width a little over one mile

May 22-16 clear

No 7-10 View upstream on San Dieguito River taken from new highway bridge at Bernardo. The channel shown is a new channel of the river, the old channel still remains and is beyond the extreme left of picture. The land where channel is now shown was formerly in pasture or in cultivation. Sand deposits on right designate the height of water



No 7-11 View of new bridge across the San Dieguito River at Bernardo. Except for the truss this is a new bridge and much longer than the old bridge which was washed out. The pile trestle on this end of the bridge replaces two 50 foot truss spans on steel cylinder piers filled with concrete that were washed out. All of the bridge beyond the truss is new bridge and spans new channel that was cut, there being no bridge there previously. The land in foreground was all under water at time of flood the picture was taken from high water mark.

May 22-16 Clear

No 7-12 View downstream on San Dieguito River at lower end of San Pasqual valley. The river at flood stage extended from pine trees on right to above sand deposit on left bank and up to base of road on edge of alfalfa field in immediate foreground. All land shown was badly cut and covered with sand as was the entire San Pasqual valley. The river channel changed and cut out large areas & large sand deposits were left. Many bad side washes. The bridge at upper end of valley was washed out. This bridge was apprx 200 ft. long. In replacing it 31 feet of bridge was necessary to span the channel



No 8-1 View across Santa Ysabel river just beyond or east of head of San Pasqual Valley showing how river cut out channel. Everything the other side of trees in center is new channel. The old channel was between trees and camera and was greatly widened and deepened besides the new channel cut on far side. The depth of cut in advance of camera is 25 feet. The portion cut out was covered with orchard, bank on opposite side in deepest place 28 ft.

May 22-16 Clear

No 8-2 View downstream on Santa Ysabel river. Head of San Pasqual Valley shown in far background, all of the river bottom through here except the small river channel was in cultivation, channel now greatly widened and deepened and balance of land covered with heavy sand deposit. Land in front of farm house on right bank was formerly garden & orchard. Note how cultivated land in ranch in foreground is covered with sand. This is last ranch at head of valley river here enters canyon



No 8-3 View of Pamo Valley from Pamo-Ramona grade showing how Santa Ysabel river washed in valley. Valley land here formerly in cultivation, badly washed and covered with sand. All streams in San Diego County during flood seasons cut banks and carry enormous quantities of silt and their beds are built up of this material from a great depth. During low water willows, poplars and cottonwoods grow in the river beds and on the banks that catch the silt for a time & give security to the banks. When extra high water comes the trees are uprooted and form temporary barriers that deflect the current and scouring commences, the end of which no one can foresee.

May 22-16 Clear

No 8-4 View looking downstream on San Vicente Creek 2 miles above Jaeger showing formerly cultivated land covered with sand and the land cut out at either end of the concrete bridge which formerly spanned the creek at this place (Mussey). Within 500 feet to the east Padre Creek empties into the San Vicente and was spanned by the same type of bridge but one half as long. The land on either side of this bridge was also washed out. At time these bridges were erected they were undoubtedly considered adequate to carry the flow of the river but this year the channel extended on both sides of bridges and washed out



May 23-16 Very Cloudy

No 8-5 View looking south on Carrizo Creek, 3 miles from the source showing how creek washed out channel and made sand deposit up into branches of trees. The headwaters of this creek are in the saddle in Nts. shown in center of this picture. The former channel was but a few feet deep (from 3 to 8.) and from 10 to 20 feet wide. This creek is the south tributary of the San Luis Rey on Warners ranch.

May 23-16 Very Cloudy

No 8-6 View upstream taken from same point as No. 8-5 looking north across Warners ranch. Note how creek deposits sand around Oak tree. This ranch was badly cut by different small streams running through it and a great portion of the low level valley land was covered with water. Away from Warners down site down San Luis Rey canyon is impossible having been badly washed out and on



May 24-16 Very cloudy & Windy

No 8-7 View of erosion in small draw 2 miles south of south line of Warners ranch on road to Santa Ysabel. Formerly there was no cut here, it is now 33 feet deep in deepest place, to bedrock, and from 25 to 100 feet wide. Drainage from approx 600 acres came down this draw. Many such washes as this are found throughout the San Luis Rey basin. Creek into which this water discharged was carrying creek water which is shown in center of picture along line of trees.

May 24-16 Cloudy & Windy

No 8-8 View of Santa Ysabel river taken from Warners ranch - Santa Ysabel highway 7 miles north of Santa Ysabel showing erosion. The old river bed can be seen on left in line with first poplar tree all wash & bank cut on right is new and much deeper & wider than old channel. Bridge on this highway, 100 feet to left of camera washed out and is seen lodged between the two poplar trees in center of picture. Picture taken 5 miles approx. from source. All streams & side washes from Warners to Santa Ysabel are in about same condition as this



May 25-16 Clear

No 8-9 View upstream on unnamed creek that empties into San Luis Rey River opposite Bonsall. This picture taken 1 mile above mouth of creek, the source of creek is south of Fallbrook and picture taken approx. 5 miles from source stream has small drainage area The old channel was on extreme right between pond and line of brush, note how stream left its channel and overflowed & left sand deposit. From here nearly to Fallbrook the stream cut the land badly as did the side washes, the Hway (Inland Route to Los Angeles) was washed out in many places From here to Bonsall this picture is typical of river bottom

May 25-16 Clear

No 8-10 View of San Luis Rey River from east side of Monserate Mountain showing sand deposit left by river. The Highway from Pala to Bonsall followed the river on other side of this Mt. being built on the canyon side. This Hway was completely washed out and detour has to be made on the Mt.
The valley west of Monserate Mt. is badly cut and covered with sand. The source of this creek is south of Rainbow The sand deposit on the cultivated land in this picture which is toward the camera from the line of brush along the river is from 2 to 6 feet deep.



No 8-11 View downstream on San Luis Rey River, showing portion of river and base of Monserate Mt. in background. The Bonsall-Pala Hway followed the base of this Mt. along the river and was completely washed out. All land between camera & Mt. was formerly an alfalfa field now washed out to depth of 4 feet. This picture is taken from a point 1200 feet east of the Mt. on the Hway and at point of camera water was 4 feet deep Back of camera is sand deposit shown in Picture No 8-10

May 25-16 Clear

No 8-12 View showing slides on Mountain side on North side of San Luis Rey River two miles below Pala. From Monserate Mt. to the source of the river the mountains are covered with slides



May 29-16 Clear

No 9-1 View of remains of concrete Highway bridge across the San Luis Rey River north of Ocean side. - Note permanent concrete bridge washed out and temporary pile bridge to right. Santa Fe bridge 1/4 of a mile downstream also washed out.

May 29-16 Clear

No 9-2 View looking south across Santa Margarita River show new temporary bridges replacing washed out bridges, on left A.T.& Santa Fe Ry and on right the state Highway bridge. The Santa Fe bridge was a steel truss bridge, truss shown imbedded in river Plate on this truss says same was erected in 1897. The Highway bridge was a truss bridge on steel cylinders filled with concrete. The highway beyond the bridge was flooded to base of hill in center background



No 9-3 Washed out permanent reinforced concrete bridge on State Highway five miles north of Oceanside. Drainage for which this bridge was built is for approx. 1 square mile. No water course is shown on the Government (U.S.) Geological Survey topographical map. The Santa Fe Ry. pile bridge immediately to the left was also washed out

May 29-16 Clear

No 9-4 View taken from center of State Highway across Las Pulgas canyon creek north of Las Flores showing washed out State Highway Bridge. This was a truss bridge on steel cylinders filled with concrete Note the two steel cylinders and I Beam at base of far bank Another I Beam will be noted under far end of temporary bridge Steel from this bridge is strewn downstream for considerable distance. Most of bank cut shown is new wash the old channel bed being approx 25 feet higher than the present



No 9-5 View of Santa Fe concrete arch bridge parallel to and 50 feet east of destroyed Highway bridge shown in No. 9-4. This picture taken from same point as No 9-4 Fill was washed out on either side of the arches, which has been replaced on right by new fill and on left by pile trestle Note how apron and wing walls were undermined and washed away. This is Bridge No A-219. Former river bed was same level as floor of arch all below that new cut. Fill washing away on either side of arches indicate that this opening was too small to carry off the water.

May 29-16 Clear.

No 9-6 View downstream on San Luis Rey River 1½ miles below Bonsall. showing how river washed out and then sand deposited. Bank on right of picture is not bank wash but is large deposit of sand and top of this deposit is 17 feet above present level of water.



May 31-16 Clear

No 9-7 Wash #1 - 1½ miles west of Rincon
" -8 " #2 - 100 ft " " #1.
" -9 " #3 - 900 " " " #2
" -10 " #13 - 3.8 miles " " Rincon
" -12 " #16 - 5 " " " "

From Rincon to Pala there are 23 washes on the North side of the San Luis Rey River of which the above pictures are typical. These washes are mostly new or greatly enlarged old washes and the drainage area is small the Mts. being from ½ to 1½ miles back from the river indicating a tremendous runoff. Most of the rock and boulders shown in the washes were washed down from the Mt. sides, the level land being quite free from rock. Trees from these hillsides, pine

May 31-16 clear

Cont'd

were uprooted and passed down the washes and river many of them passing Oceanside and going into the Pacific Ocean. The Mountain slopes are covered with large slides, probably 25 % of the slope area being scarred with large and small slides



No 9-11 View downstream on San Luis Rey River 7 miles west of Rincon and at bottom of bluff from the top of which No E-3 was taken. The picture was taken from high water mark which is 32 feet above present level of water and high water mark can be seen on bank to right. Note debris and uprooted trees in river channel - also sand deposit

May 31-16 clear

No 10-1 View of reconstructed bell tower at Pala Mission. Inscription on bell states that bell was hung in 1816.
This year the rains so softened and weakened the foundations of this bell tower, the foundation being of adobe, that the tower collapsed.



June 1-1916 clear

No 10-2 View showing slides on south side of mountain at Junction of Pantero and Cottonwood Creeks.

June 1-16 Clear

No 10-3 View of Imperial Valley Highway 1/4 mile above Junction of Portrero and Cottonwood Creeks. The highway formerly was on top of the bank as shown which is now cut 25 feet channel cut and sand deposit shown. The worst road traversed in this county on this work during the past month has been the Highway to Imperial Valley from about the west line of the Jamul Ranchos to Campo, the condition of the road being due to wash outs and washes



No 10-4 View of Campo creek at Campo. The creek as shown is in entire new channel. The Highway from San Diego to Campo used to pass and part of same was located where creek channel now is. The deepest part of the cut is 28 feet. The Bldg on the left is the store at Campo.

June 1-16 Clear

No 10-5 View downstream on Cottonwood Creek in Cottonwood valley 2 miles below Buckman Springs and approx 6 miles from the source. The former channel was very small and one of the channel shown on the left of the uprooted tree in the center of the channel is new cut, the bank at the point of greatest cut is 14 feet deep.



June 2-16 Clear

No 10-6 View upstream on Cottonwood Creek at Buckman Springs - The old channel can be seen on the left of cottonwood tree, the new channel curves to the right and is 50 feet wide, its bed is 2-7 feet below the bed of the old channel

June 2-16 Clear

No 10-7 View upstream on Cottonwood River 1/2 mile North of Buckman Springs This picture was taken from the center of County Highway which shows in the foreground and highway was located where channel now is, it may be seen on far side near live oak tree in background (right) The old channel was on the extreme left and the depth of the cut at the end of the Highway in the foreground is 23 feet



June 3-16 Clear

No 10-8 View downstream on Viejas creek 2 miles east of Alpine taken from center of Highway (Alpine to Descanso) showing where Highway was formerly located in the foreground. This picture was taken six miles from the source of the creek. The channel here was formerly but a small depression in the ground. The channel cut at end of Highway in foreground is 49 feet deep.

June 3 - 1916 Clear

No 10-9 This picture taken from same point as No 10-8 but looking upstream. Creek at this point makes a bend of about 90 degrees

Railroads Washed Out, in Whole or part.

Santa Fe Fallbrook Branch, practically all, followed drainage of Santa Margarita R.

San Luis Rey Sugar Beet Branch all, followed drainage of San Luis Rey River - Oceanside to San Luis Rey

Escondido Branch, very little crossed drainage and was on high ground

Main line - Does not follow any but crosses all drainage Bridges, track, fill etc washed out at nearly all points where drainage was crossed



San Diego & Southeastern Ry.

Santee to Lakeside, entire, followed drainage of San Diego River.

Lakeside to Foster, entire, followed drainage of San Vicente Creek

Sweetwater Valley Branch, entire, followed drainage of Sweetwater River - washed out in many places after leaving river bank.

Tia Juana Branch - 50 to 75% washed out along drainage of Tia Juana River

San Diego & Arizona Ry. Did not follow drainage but crossed many, washed out at points where drainage was crossed

Highways Abandoned

| | |
|---|---|
| Lakeside to Padre Barona Valley | 6 miles |
| Sycamore Canyon | 15' |
| Foster north W. of Mussey Grade | 5' |
| Riverview to Foster | 4" |
| Alpine Hts to Descanso | 18" |
| Alpine over into N. Fork | 9" |
| Pine Valley to Laguna | 15" |
| Jamul to Barrett via Lyons Peak | 13" |
| Viejas Valley to Kings Canyon Cr | 7" |
| Rattlesnake Valley to Pine Valley | 5" |

June 2-16 clear

Ef 2 1

No F. & View on Cottonwood Creek approx 2 miles north of Buckman Springs showing new channel cut, picture taken approx. 3 miles from source of creek. This picture was taken (tripod set) on former creek bed which shows in foreground as covered with weeds and vegetation, beyond which can be seen the new channel which was cut out. In center of picture the bed of new channel as cut down is 32 feet below former creek bed and channel is here 110 feet wide

June 1-16 clear
Ex 19

No. F-3. View showing land slides on east and south slopes of Mother Grundy Peak. The line shown along the side of the mountain is the city of San Diego water conduit down Cottonwood creek and these slides indicate to an extent how badly this conduit was washed out



May 31-16 Hazy

No F-2. View looking South across San Luis Rey Valley two miles above Bonsall showing area flooded by High water which extended from the base of the hill shown in foreground to beyond the white barn shown in left center background and to the base of the hill on edge of cultivated field to right of barn. Note channel cut and sand deposits in this field. This picture taken 1/2 mile below No F-1

No F-1 View on San Luis Rey River 1½ miles above Bonsall, looking south, showing flooded area, On the right the river cut a channel on both sides of the willow trees and large deposits of sand were left.



No. E-4 View on San Luis Rey River ½ mile above Pala. The channel shown on right is new channel, note how it cut down to boulder gravel. The old channel was on extreme left. Note bank wash, on extreme right, uprooted trees in river bed etc. An old trestle bridge is in river bed to left of this picture (not shown) which was washed down river from near Rincon. This picture was taken from mouth of wash No. 13.

May 31-16 Hazy

No. E-3 View upstream on San Luis Rey River approx 7 miles west of Rincon showing land overflowed and present and old channel of river. Note heavy deposit of sand after river bed was cut down and cut to boulders gravel, also uprooted trees and debris. This is a typical scene on this river in all undeveloped sections from Rincon to the ocean except that the area shown here flooded is not so extensive on account of contraction in the river. Area covered by trees on left was flooded and heavy sand deposit left over the land



May 29-16 Clear

No E-2 View of San Luis Rey River Valley approx 1½ miles west of San Luis Rey Mission. Practically all of land in foreground covered with sand was formerly cultivated land. Note bank on extreme right showing how water cut out the land. Everything shown this side of trees as having been covered with water is a new channel cut. The old channel was beyond the trees and buildings shown in center. On the right (extreme) water covered land beyond the cut shown and up to base of hills approx ½ of a mile beyond cut and left heavy sand deposits. Many buildings were destroyed in center of picture

shown in this picture was in a high state of cultivation, very little of which is now being worked. A branch of the Santa Fe Ry. crossed the flat in foreground but is now badly washed out from junction with main line across to far end of valley. The old channel was at base of hills on far left background



May 2-9-16 Cloudy

No. E-1. View of San Luis Rey Valley looking east or upstream, picture taken one mile approx. east of Oceanside. White buildings shown in right center background, beyond Highway are San Luis Rey Mission. This picture shows how land was flooded and covered with sand. Note abandoned farm house and collapsed barn in left foreground. The large pumping plant of South Coast Land Co. was in center foreground and washed out. The highway shown on right was flooded and water extended beyond to foot of hills. In places on this highway sand deposits over three feet in depth were made. Practically all the valley land

May 29-16 Cloudy

No. D-4 View of San Dieguito River taken from Inspiration Point directly back of hotel at Del Mar. Entire valley land shown here was flooded at time of high water and sand deposit shows extent of high water. Note new channel cut through the land. The highway extending up the south side (right) of this valley was completely washed out. This is a typical scene of all valley land on the San Dieguito River. Picture No B-4 was taken from the point shown protruding into river in center background.



May 29-16 Cloudy

No D-3 View of Paleadad Valley 3 miles south of Del Mar. This picture was taken from top of bluff one half mile south of the summit of Torrey Pine Grade. This valley was flooded at time of high water the water extending up to the Highway shown on the west side or far side. The Santa Fe Ry grade and bridges shown down through the center of the valley was washed out. Note how valley bottom is covered with sand.

farm land, rejoining the river on extreme right where highway is shown. River bed throughout from Rincon to Oceanside is greatly widened, as here shown, and covered with heavy sand deposits, uprooted trees and debris. Picture No D-1 was taken from opposite bank and about 1 mile further downstream and shows in extreme right where water through above break re-entered river



May 24-16 Clear

No. D-2 View on San Luis Rey River taken from north Bank directly west from Bonsall. The bridge shown is a new bridge and replaces old bridge which was washed out. This bridge is much longer than the old bridge. The river channel, as everywhere on the stream, is greatly widened and deepened. Note sand deposits all up and down the river and especially in foreground to right of bridge which shows height of water. The river broke through draw seen in background in line with north end of bridge and flowed down back of hill on which trees are shown to right of far end of bridge and washed out a great deal of highly developed

advance of the camera and was washed out but has been recently restored. The depth of cut of river channel at this point is 28 feet



May 24-16 Clear - windy

No. D-1 View from South Bank of Dam Luis Rey River one mile below Bonsall showing how river overflowed its channel and left large deposits of sand and debris. The old river channel here was bordered on both sides with heavy growth of trees most of which were uprooted and washed out. Note uprooted trees on edge of channel at base of standing trees in right center. The channel here was greatly widened and deepened and then built up to a great extent by sand deposit. The bank seen on opposite side is sand deposit dumped as water was receding and is over 6 feet high. The Highway (Escondido to Bonsall) was at the base of the hill in

No. C-4 View of Santa Ysabel River in Pamo Valley. The river here greatly widened and defined its old channel - Pamo townsite is down gorge which river enters at extreme left. Across river channel as shown was formerly a ranch with heavy growth of oak trees, all top soil was washed out (see bank on opposite side) and most of trees, heavy sand deposit left throughout valley. The former channel now in present one but much smaller, present river bed cut down to gravel & boulders. Note high water mark by sand deposit on extreme right



May 22-16 Clear

No C-3 View on San Dieguito River 1/2 mile above the Hway Bridge at Bernardo showing new channel and wash back of, on this side of trees, mentioned in notes concerning picture No C-2 - All this land was badly cut and sand deposited. Most of this land was formerly cultivated, the old channel was beyond the willow trees shown down center of picture

flood stage covered the highway where the automobile stands in center foreground. The trees shown in center of picture were formerly as thick as grove shown in extreme left but were mostly uprooted and washed out, many are shown as strewed in this picture



May 22-16 Clear

No. 6-2 View on San Dieguito River 1½ miles above Hwy bridge at Bernardo. Fenton Ranch house seen on extreme right and lower end of San Pasqual Valley in extreme right background. This picture shows how land was flooded & covered with sand deposit and debris, trees uprooted etc. On extreme left water flooded and washed out farm land back of trees and highway as far as the Bridge at Bernardo. This is the same channel shown in picture No. 7-10 The old river channel near at base of hills in background and can be seen in left. The river at

No C-1 View on Escondido creek one half mile east of the A.T.&S.F. Santa Fe Ry track - San Diego to Los Angeles - The river formerly flowed in a small channel on far side of valley; all bottom land shown in picture was flooded, badly scoured and received heavy deposit of sand and debris. High water mark is shown by line of debris on extreme left. The highway in same location as one shown, was washed out the one shown was built since the floods. Note debris still clinging to top wire of fence on right, high water completely submerged this bridge



No. B-4 View on San Dieguito River at Junction of La Jolla canyon which is shown in water background - The river as shown is not in its old channel which was at far side at base of hills. Note how valley was inundated, badly cut and sand deposited. This valley land was all in a high state of cultivation. From this point to the ocean all bottom valley land is in same condition Note land slides on hills All white shown is sand deposit from 6 ft to 4 ft deep

No B-3 View of channel cut on east side of Pine Valley. This is but one of many channels cut through Pine Valley. This is an entire new channel and is from 100 to 300 feet wide and from 3 to 12 feet deep. This picture was taken where ford is made on old, now temporary, road from Deseanso to Campo



No B-2 Same view as No. B-2 but taken from a point higher on the hillside. Note washes coming into the large wash from both left and right. The old channel can be seen across top of land between the two washes on right center. The new Highway Deseanso to Campo is shown at base of hill in immediate foreground - Road shown on left on opposite side of wash is old road which is now used on account of new Highway being washed out in many places by washes such as shown

May 17-16 Ex 4 clear

No. B-1 View of mno washout in Pine Valley just above point where Pine Creek leaves the valley and enters the canyon. The depth of cut in foreground is 31 feet. This picture was taken approx. four miles from the source of the Creek. Pine Valley is cut and crossed cut with channels of which this is typical.



May 13-16 Ex 20 clear

No A-4 View upstream on San Diego River approx. one mile west of mouth of canyon. Everything shown as covered with sand is now channel of river, the old channel being beyond the trees shown in center. This land was all in high state of cultivation but is now badly cut and today there is a flow of water in five different channels through this land. With the recession of the waters large deposits of sand were made, which has practically ruined the land. Several Bldgs were also washed out.

May 13-16 clear

No A-2 View of San Diego River canyon showing North bank and portion of Old Mission aqueduct remaining and portion (to right, washed out. This aqueduct was intact throughout the canyon until the flood thru canyon

No A-3 Same view as No A-2 but taken upstream approx 700 feet The water during flood stage was from 5 to 6 feet above the aqueduct as shown in these pictures which were taken approx 1/4 mile from mouth of canyon



Panoramoma Pictures

May 12-16 Hagy Ent 18

No. A-1 View of Tia Juana River at Garcia on San Diego & Arizona Ry. 1 mile approx. east of Tia Juana The entire area shown in this picture as gravel is new channel The river cut out this new channel to a depth of 26 feet (back to left) The former channel was beyond the slight raise or bank shown in right center background. In right foreground in center of channel will be seen 30 ft. steel girder with steel tower attached. This girder and tower are from the S. D. & A. Ry. bridge shown in Picture No 6-9 and as there shown were washed downstream over two miles. In bar center background can be seen junction of old and new channel

8

## TANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

| 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.00 | 7.15 | 7.30 | 7.45 | 7.60 | 7.75 | 7.90 | 8.05 | 8.20 | 8.35 | 0 |
| 8.50 | 8.65 | 8.80 | 8.95 | 9.10 | 9.25 | 9.40 | 9.55 | 9.70 | 9.85 | 1 |
| 10.00 | 10.15 | 10.30 | 10.45 | 10.60 | 10.75 | 10.90 | 11.05 | 11.20 | 11.35 | 2 |
| 11.50 | 11.65 | 11.80 | 11.95 | 12.10 | 12.25 | 12.40 | 12.55 | 12.70 | 12.85 | 3 |
| 13.00 | 13.15 | 13.30 | 13.45 | 13.60 | 13.75 | 13.90 | 14.05 | 14.20 | 14.35 | 4 |
| 14.50 | 14.65 | 14.80 | 14.95 | 15.10 | 15.25 | 15.40 | 15.55 | 15.70 | 15.85 | 5 |
| 16.00 | 16.15 | 16.30 | 16.45 | 16.60 | 16.75 | 16.90 | 17.05 | 17.20 | 17.35 | 6 |
| 17.50 | 17.65 | 17.80 | 17.95 | 18.10 | 18.25 | 18.40 | 18.55 | 18.70 | 18.85 | 7 |
| 19.00 | 19.15 | 19.30 | 19.45 | 19.60 | 19.75 | 19.90 | 20.05 | 20.20 | 20.35 | 8 |
| 20.50 | 20.65 | 20.80 | 20.95 | 21.10 | 21.25 | 21.40 | 21.55 | 21.70 | 21.85 | 9 |
| 22.00 | 22.15 | 22.30 | 22.45 | 22.60 | 22.75 | 22.90 | 23.05 | 23.20 | 23.35 | 10 |
| 23.50 | 23.65 | 23.80 | 23.95 | 24.10 | 24.25 | 24.40 | 24.55 | 24.70 | 24.85 | 11 |
| 25.00 | 25.15 | 25.30 | 25.45 | 25.60 | 25.75 | 25.90 | 26.05 | 26.20 | 26.35 | 12 |
| 26.50 | 26.65 | 26.80 | 26.95 | 27.10 | 27.25 | 27.40 | 27.55 | 27.70 | 27.85 | 13 |
| 28.00 | 28.15 | 28.30 | 28.45 | 28.60 | 28.75 | 28.90 | 29.05 | 29.20 | 29.35 | 14 |
| 29.50 | 29.65 | 29.80 | 29.95 | 30.10 | 30.25 | 30.40 | 30.55 | 30.70 | 30.85 | 15 |
| 31.00 | 31.15 | 31.30 | 31.45 | 31.60 | 31.75 | 31.90 | 32.05 | 32.20 | 32.35 | 16 |
| 32.50 | 32.65 | 32.80 | 32.95 | 33.10 | 33.25 | 33.40 | 33.55 | 33.70 | 33.85 | 17 |
| 34.00 | 34.15 | 34.30 | 34.45 | 34.60 | 34.75 | 34.90 | 35.05 | 35.20 | 35.35 | 18 |
| 35.50 | 35.65 | 35.80 | 35.95 | 36.10 | 36.25 | 36.40 | 36.55 | 36.70 | 36.85 | 19 |
| 37.00 | 37.15 | 37.30 | 37.45 | 37.60 | 37.75 | 37.90 | 38.05 | 38.20 | 38.35 | 20 |
| 38.50 | 38.65 | 38.80 | 38.95 | 39.10 | 39.25 | 39.40 | 39.55 | 39.70 | 39.85 | 21 |
| 40.00 | 40.15 | 40.30 | 40.45 | 40.60 | 40.75 | 40.90 | 41.05 | 41.20 | 41.35 | 22 |
| 41.50 | 41.65 | 41.80 | 41.95 | 42.10 | 42.25 | 42.40 | 42.55 | 42.70 | 42.85 | 23 |
| 43.00 | 43.15 | 43.30 | 43.45 | 43.60 | 43.75 | 43.90 | 44.05 | 44.20 | 44.35 | 24 |
| 44.50 | 44.65 | 44.80 | 44.95 | 45.10 | 45.25 | 45.40 | 45.55 | 45.70 | 45.85 | 25 |
| 46.00 | 46.15 | 46.30 | 46.45 | 46.60 | 46.75 | 46.90 | 47.05 | 47.20 | 47.35 | 26 |
| 47.50 | 47.65 | 47.80 | 47.95 | 48.10 | 48.25 | 48.40 | 48.55 | 48.70 | 48.85 | 27 |
| 49.00 | 49.15 | 49.30 | 49.45 | 49.60 | 49.75 | 49.90 | 50.05 | 50.20 | 50.35 | 28 |
| 50.50 | 50.65 | 50.80 | 50.95 | 51.10 | 51.25 | 51.40 | 51.55 | 51.70 | 51.85 | 29 |
| 52.00 | 52.15 | 52.30 | 52.45 | 52.60 | 52.75 | 52.90 | 53.05 | 53.20 | 53.35 | 30 |
| 53.50 | 53.65 | 53.80 | 53.95 | 54.10 | 54.25 | 54.40 | 54.55 | 54.70 | 54.85 | 31 |
| 55.00 | 55.15 | 55.30 | 55.45 | 55.60 | 55.75 | 55.90 | 56.05 | 56.20 | 56.35 | 32 |
| 56.50 | 56.65 | 56.80 | 56.95 | 57.10 | 57.25 | 57.40 | 57.55 | 57.70 | 57.85 | 33 |
| 58.00 | 58.15 | 58.30 | 58.45 | 58.60 | 58.75 | 58.90 | 59.05 | 59.20 | 59.35 | 34 |
| 59.50 | 59.65 | 59.80 | 59.95 | 60.10 | 60.25 | 60.40 | 60.55 | 60.70 | 60.85 | 35 |
| 61.00 | 61.15 | 61.30 | 61.45 | 61.60 | 61.75 | 61.90 | 62.05 | 62.20 | 62.35 | 36 |
| 62.50 | 62.65 | 62.80 | 62.95 | 63.10 | 63.25 | 63.40 | 63.55 | 63.70 | 63.85 | 37 |
| 64.00 | 64.15 | 64.30 | 64.45 | 64.60 | 64.75 | 64.90 | 65.05 | 65.20 | 65.35 | 38 |
| 65.50 | 65.65 | 65.80 | 65.95 | 66.10 | 66.25 | 66.40 | 66.55 | 66.70 | 66.85 | 39 |
| 67.00 | 67.15 | 67.30 | 67.45 | 67.60 | 67.75 | 67.90 | 68.05 | 68.20 | 68.35 | 40 |

Calculated by F. E. Paradis, C. E

65¢

## DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING

Roadway 16 Feet Wide. Side Slopes 1½ to 1.

For Single Track Embankment.

| | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 8.0 | 8.2 | 8.3 | 8.5 | 8.6 | 8.8 | 8.9 | 9.1 | 9.2 | 9.4 | 0 |
| 1 | 9.5 | 9.7 | 9.8 | 10.0 | 10.1 | 10.3 | 10.4 | 10.6 | 10.7 | 10.9 | 1 |
| 2 | 11.0 | 11.2 | 11.3 | 11.5 | 11.6 | 11.8 | 11.9 | 12.1 | 12.2 | 12.4 | 2 |
| 3 | 12.5 | 12.7 | 12.8 | 13.0 | 13.1 | 13.3 | 13.4 | 13.6 | 13.7 | 13.9 | 3 |
| 4 | 14.0 | 14.2 | 14.3 | 14.5 | 14.6 | 14.8 | 14.9 | 15.1 | 15.2 | 15.4 | 4 |
| 5 | 15.5 | 15.7 | 15.8 | 16.0 | 16.1 | 16.3 | 16.4 | 16.6 | 16.7 | 16.9 | 5 |
| 6 | 17.0 | 17.2 | 17.3 | 17.5 | 17.6 | 17.8 | 17.9 | 18.1 | 18.2 | 18.4 | 6 |
| 7 | 18.5 | 18.7 | 18.8 | 19.0 | 19.1 | 19.3 | 19.4 | 19.6 | 19.7 | 19.9 | 7 |
| 8 | 20.0 | 20.2 | 20.3 | 20.5 | 20.6 | 20.8 | 20.9 | 21.1 | 21.2 | 21.4 | 8 |
| 9 | 21.5 | 21.7 | 21.8 | 22.0 | 22.1 | 22.3 | 22.4 | 22.6 | 22.7 | 22.9 | 9 |
| 10 | 23.0 | 23.2 | 23.3 | 23.5 | 23.6 | 23.8 | 23.9 | 24.1 | 24.2 | 24.4 | 10 |
| 11 | 24.5 | 24.7 | 24.8 | 25.0 | 25.1 | 25.3 | 25.4 | 25.6 | 25.7 | 25.9 | 11 |
| 12 | 26.0 | 25.2 | 26.3 | 26.5 | 26.6 | 26.8 | 26.9 | 27.1 | 27.2 | 27.4 | 12 |
| 13 | 27.5 | 27.7 | 27.8 | 28.0 | 28.1 | 28.3 | 28.4 | 28.6 | 28.7 | 28.9 | 13 |
| 14 | 29.0 | 29.2 | 29.3 | 29.5 | 29.6 | 29.8 | 29.9 | 30.1 | 30.2 | 30.4 | 14 |
| 15 | 30.5 | 30.7 | 30.8 | 31.0 | 31.1 | 31.3 | 31.4 | 31.6 | 31.7 | 31.9 | 15 |
| 16 | 32.0 | 32.2 | 32.3 | 32.5 | 32.6 | 32.8 | 32.9 | 33.1 | 33.2 | 33.4 | 16 |
| 17 | 33.5 | 33.7 | 33.8 | 34.0 | 34.1 | 34.3 | 34.4 | 34.6 | 34.7 | 34.9 | 17 |
| 18 | 35.0 | 35.2 | 35.3 | 35.5 | 35.6 | 35.8 | 35.9 | 36.1 | 36.2 | 36.4 | 18 |
| 19 | 36.5 | 36.7 | 36.8 | 37.0 | 37.1 | 37.3 | 37.4 | 37.6 | 37.7 | 37.9 | 19 |
| 20 | 38.0 | 38.2 | 38.3 | 38.5 | 38.6 | 38.8 | 38.9 | 39.1 | 39.2 | 39.4 | 20 |
| 21 | 39.5 | 39.7 | 39.8 | 40.0 | 40.1 | 40.3 | 40.4 | 40.6 | 40.7 | 40.9 | 21 |
| 22 | 41.0 | 41.2 | 41.3 | 41.5 | 41.6 | 41.8 | 41.9 | 42.1 | 42.2 | 42.4 | 22 |
| 23 | 42.5 | 42.7 | 42.8 | 43.0 | 43.1 | 43.3 | 43.4 | 43.6 | 43.7 | 43.9 | 23 |
| 24 | 44.0 | 44.2 | 44.3 | 44.5 | 44.6 | 44.8 | 44.9 | 45.1 | 45.2 | 45.4 | 24 |
| 25 | 45.5 | 45.7 | 45.8 | 46.0 | 46.1 | 46.3 | 46.4 | 46.6 | 46.7 | 46.9 | 25 |
| 26 | 47.0 | 47.2 | 47.3 | 47.5 | 47.6 | 47.8 | 47.9 | 48.1 | 48.2 | 48.4 | 26 |
| 27 | 48.5 | 48.7 | 48.8 | 49.0 | 49.1 | 49.3 | 49.4 | 49.6 | 49.7 | 49.9 | 27 |
| 28 | 50.0 | 50.2 | 50.3 | 50.5 | 50.6 | 50.8 | 50.9 | 51.1 | 51.2 | 51.4 | 28 |
| 29 | 51.5 | 51.7 | 51.8 | 52.0 | 52.1 | 52.3 | 52.4 | 52.6 | 52.7 | 52.9 | 29 |
| 30 | 53.0 | 53.2 | 53.3 | 53.5 | 53.6 | 53.8 | 53.9 | 54.1 | 54.2 | 54.4 | 30 |
| 31 | 54.5 | 54.7 | 54.8 | 55.0 | 55.1 | 55.3 | 55.4 | 55.6 | 55.7 | 55.9 | 31 |
| 32 | 56.0 | 56.2 | 56.3 | 56.5 | 56.6 | 56.8 | 56.9 | 57.1 | 57.2 | 57.4 | 32 |
| 33 | 57.5 | 57.7 | 57.8 | 58.0 | 58.1 | 58.3 | 58.4 | 58.6 | 58.7 | 58.9 | 33 |
| 34 | 59.0 | 59.2 | 59.3 | 59.5 | 59.6 | 59.8 | 59.9 | 60.1 | 60.2 | 60.4 | 34 |
| 35 | 60.5 | 60.7 | 60.8 | 61.0 | 61.1 | 61.3 | 61.4 | 61.6 | 61.7 | 61.9 | 35 |
| 36 | 62.0 | 62.2 | 62.3 | 62.5 | 62.6 | 62.8 | 62.9 | 63.1 | 63.2 | 63.4 | 36 |
| 37 | 63.5 | 63.7 | 63.8 | 64.0 | 64.1 | 64.3 | 64.4 | 64.6 | 64.7 | 64.9 | 37 |
| 38 | 65.0 | 65.2 | 65.3 | 65.5 | 65.6 | 65.8 | 65.9 | 66.1 | 66.2 | 66.4 | 38 |
| 39 | 66.5 | 66.7 | 66.8 | 67.0 | 67.1 | 67.3 | 67.4 | 67.6 | 67.7 | 67.9 | 39 |
| 40 | 68.0 | 68.2 | 68.3 | 68.5 | 68.6 | 68.8 | 68.9 | 69.1 | 69.2 | 69.4 | 40 |

Calculated by F. E. Paradis. C. E.

No 4-2

1-1.00 J. S/P

80' Tr.

25
6
150

300
12.5
150) 3750 (25
300
750

240

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240) 2280 (9.5
2160
1200

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1750
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5250