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CERTIFIED FOR PUBLICATION

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

FIRST APPELLATE DISTRICT

DIVISION FOUR

OAKLAND HERITAGE ALLIANCE, Plaintiff and Appellant, v. CITY OF OAKLAND, Defendant and Respondent; OAKLAND HARBOR PARTNERS et al., Real Parties in Interest and Respondents.	A126558 (Alameda County Super. Ct. No. RG06280345)

Oakland Harbor Partners, LLC, Signature Properties, Inc., and Reynolds & Brown (collectively Real Parties) are the proponents of a project proposed to be built along Oakland's estuary. The City of Oakland (the City) certified an environmental impact report (EIR) for the project. Oakland Heritage Alliance (the Alliance) challenged this action, and the trial court granted its petition for writ of mandate, finding, among other things, that the EIR's discussion of the project's seismic risks was inadequate. The City revised the EIR and certified it as revised. The trial court then discharged the writ.

The Alliance challenges this action on appeal, contending the City's treatment of seismic impacts did not meet the requirements of the California Environmental Quality Act (CEQA), (Pub. Resources Code,[1] § 21000 et seq.). We shall affirm the order discharging the writ.

[1] All statutory references are to the Public Resources Code.

I. BACKGROUND

Real Parties proposed a project to develop approximately 64 acres along the Oakland Estuary and the Embarcadero, converting a maritime and industrial area into residential, retail/commercial, open space, and marina uses (the "project" or the "Oak to Ninth Project"). Building heights would range from six to 24 stories.

In its discussion of seismicity, the EIR noted that the project site was approximately three and one-half miles from the Hayward Fault Zone and 15 and one-half miles from the San Andreas Fault Zone, both active fault zones capable of generating major earthquakes, and that other faults were also capable of producing significant ground shaking at the project site. The EIR identified various seismic hazards; of particular relevance here were the potential for strong ground shaking and liquefaction.

In its discussion of ground shaking, the EIR noted that the 1906 San Francisco earthquake, produced by the San Andreas Fault Zone, had an estimated magnitude of 7.9 and produced strong to violent shaking intensities, and that the 1989 Loma Prieta earthquake, generated by the same fault zone, produced strong shaking intensities. The EIR described the Modified Mercalli (MM) Intensity Scale for the intensity of earthquakes. The highest intensity value is MM-XII. An event with an intensity value of MM-X is described thus: "Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks." In an earthquake with an intensity value of MM-IX, damage in specially designed structures would be "considerable," and it would be "great" in "substantial buildings, with partial collapse"; well-designed frame structures would be thrown out of plumb; and buildings would be shifted off foundations. At a level of MM-VIII, damage to specially designed structures would be slight, and to "ordinary substantial buildings" would be "considerable." At level MM-VII, damage in buildings of good design and construction would be "negligible," and in "well-built ordinary

structures" would be slight to moderate.[2] The intensity of the 1906 San Francisco earthquake was level VIII to IX; that of the 1989 Loma Prieta earthquake was level VIII. The EIR noted that the presence of artificial fill and bay mud in the project area could intensify the effects of ground shaking during an earthquake.

Liquefaction occurs when saturated soil is transformed from a solid to a liquefied state, particularly as the result of an earthquake. Ground failure caused by liquefaction can damage roads, pipelines, underground cables, and buildings with shallow foundations. The project site is located within a Seismic Hazard Zone for liquefaction, as designated by the California Geological Survey (CGS).

The EIR identified several seismic impacts of the project. The two at issue here are impacts F.1 and F.2. The EIR described impact F.1 in this manner: "In the event of a major earthquake in the region, seismic ground shaking could potentially injure people and cause collapse or structural damage to proposed structures." This impact was designated as "[p]otentially [s]ignificant." The EIR's discussion of this impact noted that an earthquake in the Bay Area could produce ground accelerations at the project site ranging from strong (MM-VII) to very violent intensity (MM-X), with a possible intensity of MM-X as a result of a 7.1 earthquake on the Hayward fault. Such an earthquake "would cause considerable structural damage, even in well-designed structures." Based on a master plan-level geotechnical investigation, the EIR recommended as a mitigation measure: "A site-specific, design level geotechnical investigation for each site area (which is typical for any large development project) shall be required as part of this project. Each investigation shall include an analysis of expected ground motions at the site from known active faults. The analyses shall be in

[2] With an earthquake with an intensity of MM-XI, "[f]ew, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly." With an event with an intensity value of MM-XII: "Damage [is] total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air."

accordance with applicable City ordinances and policies and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from known active faults. In addition, the investigations shall determine final design parameters for the walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks). The investigations shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer and geotechnical engineer shall be included in the final design. Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the project design phase, shall be incorporated in the project. The final seismic considerations for the site shall be submitted to and approved of by the City of Oakland Building Services Division prior to the commencement of the project." After mitigation, the EIR concluded this impact would be less than significant.

The EIR also identified Impact F.2: "In the event of a major earthquake in the region, seismic ground shaking could potentially expose people and property to liquefaction and earthquake-induced settlement." This impact was likewise considered potentially significant. According to the EIR, the geotechnical investigation had identified a potential for liquefaction at the site and had recommended specific foundation types and pile specifications to mitigate the adverse effects of liquefaction. The EIR recommended the following mitigation measure: "Prepare an updated site specific, design level geotechnical investigation for each building site to consider the particular project designs and provide site specific engineering recommendations for mitigation of liquefiable soils. Liquefiable soils under the conditions described in the geotechnical report shall be mitigated using various proven methods to reduce the risk of liquefaction. Liquefaction mitigation measures include subsurface soil improvement, deep foundations, structural slabs, and soil cover. Site improvement methods to address potential liquefaction include dynamic compaction, compaction grouting, jet grouting, and vibroflotation can [*sic*] significantly reduce the risk of liquefaction. Deep foundations extending below the liquefiable layers can be designed to support structures

despite the occurrence of liquefaction. Structural slabs are designed to span across areas of non-support, such as in the case of liquefaction or settlement. The presence of a sufficiently thick, engineered fill layer over liquefiable soil can reduce the potential for damage at the ground surface due to liquefaction by helping to bridge across isolated liquefaction zones. Other methods of mitigating potential liquefaction hazards suggested in the *California Geological Survey's (CGS) Geology Guidelines for Evaluating and Mitigating Seismic Hazards (CGS Special Publication 117, 1997*) include edge containment structures (berms, dikes[,] sea walls, retaining structures, compacted soil zones), removal or treatment of liquefiable soils, modification of site geometry, lowering the groundwater table, in-situ ground densification, deep foundations, reinforced shallow foundations, and structural design that can accommodate predicted displacements [citation]. [¶] These measures shall be evaluated during the site specific geotechnical investigation and the most effective, practical and economical methods should become part of the project. Prior to incorporation into the project, geotechnical engineering recommendations regarding the mitigation and reduction of liquefaction for each site shall be reviewed for compliance with the CGS Geology Guidelines. The purpose of these guidelines is to protect the public safety from seismic effects such as liquefaction." With this mitigation measure, the EIR concluded the impact of liquefaction would be less than significant.

The City certified the EIR, adopted mitigation measures F.1 and F.2, and, with modifications not relevant here, approved the project.

The Alliance filed a petition for writ of mandate alleging numerous violations of CEQA. Among them, the Alliance alleged the City had violated CEQA by certifying the EIR and adopting CEQA findings although the mitigation measures would not reduce the effects of ground shaking, liquefaction, and earthquake-induced settlement to a less than significant level.

The trial court granted in part and denied in part the petition for writ of mandate. On the seismic risk findings, the court found the EIR contained no meaningful analysis to support the findings that the risks of ground shaking and liquefaction would be reduced to

a less than significant level, and the findings were not supported by substantial evidence in the record. According to the trial court, neither the impact statements nor the mitigation measures established which mitigation techniques would actually be used and how they would reduce the impacts of a major earthquake. Mitigation measure F.1 stated that the *analysis* for expected ground motions would be consistent with the California Building Code (Building Code), but did not require that the measures finally approved would meet or exceed the structural design requirements set forth in the Building Code. Measure F.2 did not require that the final design and engineering specifications for the buildings would meet a particular standard or that any of the methodologies mentioned in the mitigation measure to reduce liquefaction impacts *would* be used at the site; nor was there an analysis of how the mitigation measure would reduce the impact to a less than significant level. The court concluded that the geotechnical report, which had been prepared by Treadwell & Rollo, did not provide the necessary analysis to allow the City to conclude that the mitigation measures would reduce the effects of a major earthquake to a less than significant level. Moreover, the court stated, "the measure [did] not commit the City to implementing any particular building technique, to follow any specified standard (other than Building Code requirements), or incorporate the recommendations made by Treadwell & Rollo." The trial court directed the City to void its certification of the EIR, CEQA findings and statement of overriding considerations, and the approval of the project, and remanded the matter to the City.

In response to the trial court's order, the City revised the EIR.[3] Like the earlier version of the EIR, the Revised EIR stated that under CEQA, a project would have a significant seismic effect if it would: "Expose people or structures to geologic hazards, soils, and/or seismic conditions so unfavorable that they could not be overcome by special design using reasonable construction and maintenance practices. Specifically, [¶] Expose people or structures to substantial risk of loss, injury, or death involving:

[3] The City prepared and circulated "Revisions to the Analysis in the Oak to Ninth Project EIR" (Revisions). We shall refer to the EIR as revised by the Revisions as the "Revised EIR."

[¶] – Rupture of a known earthquake fault . . . ; [¶] – Strong seismic ground shaking; [¶] – Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or [¶] – Landsides[.]" According to the Revised EIR, "[t]he significance criteria do not require elimination of the potential for structural damage from seismic hazards. Instead, the criteria require an evaluation of whether the seismic conditions on a site can be overcome through engineering design solutions that will reduce to less than significant the substantial risk of exposing people or structures to loss, injury or death. State and local code requirements ensure buildings are designed and constructed in a manner that, although the buildings may sustain damage during a major earthquake, will reduce the substantial risk that buildings will collapse resulting in a potential for injury or death. As discussed below, the potentially significant seismic impacts on the Oak to Ninth project site could be reduced to less than significant through conformance to existing state laws, City ordinances, and application of accepted, proven construction engineering practices."

The Revised EIR included an extensive discussion of the mandates of various state and City laws bearing upon seismic safety, including the Seismic Hazards Mapping Act (§ 2690 et seq.), the Building Code (which is found in title 24 of the California Code of Regulations), and various City ordinances.

The Revised EIR explained that for certain large projects, like the proposed Oak to Ninth Project, the applicant conducts a preliminary or " 'Master Plan' " geotechnical investigation to determine overall engineering feasibility and to inform the preliminary designs. At this stage, geotechnical engineers "acquire a broad understanding of the site conditions while delimiting areas on the site that are especially favorable for development or could be problematic from a soils engineering perspective." This level of investigation is not sufficient to generate the " 'design-level' " data needed to make final grading or structural designs. The Revised EIR explained that it was not effective to conduct a design-level investigation at this stage because the project could change considerably during environmental review. However, according to the Revised EIR, this type of preliminary geotechnical study in most cases provides enough detail to evaluate whether geologic or seismic impacts exist and whether mitigation would be necessary. The

geotechnical investigation discussed in the Revised EIR is not a final site-specific, design-level study, but rather "determine[d] project feasibility in light of the site geotechnical conditions and identifie[d] areas of development opportunity and areas of development constraint."

The Revisions revised mitigation measures F.1 and F.2. As revised, measure F.1, for seismic ground shaking, provided that before the issuance of a building permit for any portion of the project site, the project sponsor "shall" submit a "site-specific, design level geotechnical investigation" for each parcel, which would comply with all applicable state and local code requirements, and "a) Include an analysis of the expected ground motions at the site from known active faults using accepted methodologies; [¶] b) Determine structural design requirements as prescribed by the most current version of the California Building Code, including applicable City amendments, to ensure that structures can withstand ground accelerations expected from known active faults; [¶] c) Determine the final design parameters for walls, foundations, foundation slabs, utilities, roadways, parking lots, sidewalks, and other surrounding related improvements." The measure required project plans for foundation design, earthwork, and site preparation to incorporate all of the mitigations in the site-specific investigations. In addition, the project structural engineer must "review the site specific investigations, provide any additional necessary mitigation to meet Building Code requirements, and incorporate all applicable mitigations from the investigation in[to] the structural design plans and shall ensure that all structural plans for the project meet current Building Code requirements." Additionally, a registered geotechnical engineer must "review each site-specific geotechnical investigation, approve the final report, and require compliance with all geotechnical mitigations contained in the investigation in the plans submitted for the grading, foundation, structural, infrastructure and all other relevant construction permits." Finally, the City Building Services Division "shall review all project plans" for the relevant permits "to ensure compliance with the applicable geotechnical investigation and other applicable Code requirements." With this mitigation, the Revised EIR concluded the impact of seismic ground shaking would be reduced to a less than significant level.

Revised mitigation measure F.2, for liquefaction and earthquake-induced settlement, likewise required the project sponsor to submit a site-specific, design-level geotechnical investigation, which would comply with all applicable state and local code requirements. The investigation would also: "a) Provide site specific engineering requirements for mitigation of liquefiable soils; [¶] b) Specify liquefaction mitigations that shall use proven methods, generally accepted by registered engineers, to reduce the risk of liquefaction to a less than significant level such as: [¶] – subsurface soil improvement, [¶] – deep foundations extending below the liquefiable layers, [¶] – structural slabs designed to span across areas of non-support, [¶] – soil cover sufficiently thick over liquefaction soil to bridge liquefaction zones, [¶] – dynamic compaction, [¶] – compaction grouting, [¶] – jet grouting, [and] [¶] – mitigation for liquefaction hazards suggested in the [CGS] Guidelines for Evaluating and Mitigating Seismic Hazards (CGS Special Publication 117, 1997), including edge containment structures (berms, dikes, sea walls, retaining structures, compacted soil zones), removal or treatment of liquefiable soils, modification of site geometry, lowering the groundwater table, in-situ ground densification, deep foundations, reinforced shallow foundations, and structural design that can withstand predicted displacements." This measure also required the geotechnical investigation to evaluate these mitigations and identify the most effective and practicable mitigation methods for inclusion in the project plans and to have the identified mitigations reviewed to ensure compliance with CGS Geology Guidelines related to protection of public safety from liquefaction; that project plans for foundation design, earthwork, and site preparation incorporate all mitigations in the site-specific investigations; that the project structural engineer review the site-specific investigations, provide any additional mitigation necessary to meet Building Code requirements, incorporate all applicable mitigations from the investigations in the structural design plans, and ensure that all structural plans meet current Building Code requirements; that the City's registered geotechnical engineer review each site-specific geotechnical investigation, approve the final report, and require that the plans for grading, foundation, structural, infrastructure, and other relevant construction permits comply with all

geotechnical mitigations contained in the investigation; and that the City Building Services Division review all project plans for grading, foundations, structural, infrastructure, and all other relevant construction permits to ensure compliance with the applicable requirements of the geotechnical investigation, as well as other applicable code requirements. After this mitigation, the Revised EIR concluded that the impact of liquefaction and earthquake-induced settlement would be less than significant.

The Alliance submitted a comment letter taking the position that revised mitigation measures F.1 and F.2 failed to reduce seismic impacts to a less than significant level. In particular, the Alliance argued that building codes provide for a " 'life safety' " performance standard, under which building occupants would not be crushed by a collapse of a building in even a severe earthquake, but that buildings might be rendered uninhabitable. According to the Alliance, higher performance standards are already mandated in California for schools, hospitals, police, and emergency response buildings, and such standards could be specified for this project, though at a higher cost than " 'code' performance standards."

Prior to a public hearing on the Revised EIR, the Alliance submitted further correspondence regarding its concerns about the Revised EIR's analysis of seismic impacts. The correspondence included a letter by a geotechnical consultant, Alan Kropp. Kropp had reviewed the Project Description and the Geology, Soils and Seismicity sections of the Draft and Revised EIR for the project. He had formed the opinion that it was insufficient for the revised EIR to "simply rely[] on the Building Code for the subsequent structural design of the facilities." According to Kropp, "Building Code provisions for earthquake resistive design are generally only intended to avoid building collapse and loss of life in a large earthquake. Major building damage, which may even necessitate the building be demolished after the earthquake, is an acceptable outcome of a code-based design." Kropp suggested that it would be appropriate instead for the project

to use a "performance-based design approach."[4] Furthermore, according to Kropp, it was not clear that the impacts of a large earthquake on other parts of the project, such as new streets, parks, utility corridors, and other non-building elements, would be mitigated even if structures were well designed.

After the public hearing, the City approved the Revisions and recertified the EIR as revised by the Revisions and responses to comments. In doing so, it found that revised mitigation measures F.1 and F.2 reduced the effects of ground shaking, liquefaction, and settlement to a less than significant level.

The City and Real Parties moved the trial court for an order discharging the writ and terminating the suspension of the project approvals. The trial court granted the motion. In doing so, it concluded the EIR as revised did not improperly defer mitigation of seismic effects, finding "the statutory scheme described in the Revised EIR—designed to address the evaluation and mitigation of earthquake-related impacts—does provide a sufficient standard of performance under CEQA. Further, the Revised EIR commits the City to mediation [*sic*] of seismic impacts by compliance with this statutory scheme (and other specified requirements stated in the mitigation measures), and thus the Revised EIR

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[4] An attached April 2008, newsletter from the National Earthquake Hazards Reduction Program noted that in recent years a "performance-based approach to design and construction" had emerged, under which "individual buildings or classes of structures can be designed to perform at levels commensurate with applicable hazards, risks, and risk tolerances." The newsletter stated, "As it relates to seismic design, this approach has been termed Performance-Based Seismic Design (PBSD). Development of PBSD began in the mid-1990s, largely for use in evaluating and upgrading existing buildings." The Federal Emergency Management Agency (FEMA) had been leading efforts to develop a "new generation of PBSD procedures," and had completed a report (FEMA 461) describing laboratory testing protocols that could be used to determine the "fragility functions" of various building systems and components. According to the newsletter, "[f]ragility functions express in mathematical terms the likelihood that a component will sustain a specified level of damage when exposed to a specified level of demand (e.g., force, acceleration, displacement). . . . [¶] Next-generation PBSD procedures are being developed so that building stakeholders can reliably know, before choosing from among design options, how those options will affect seismic performance." The protocols in FEMA 461 were intended as "interim methods that will be finalized over time as they are used and evaluated by researchers nationwide."

does not improperly defer mitigation in violation of CEQA." The court also found that substantial evidence supported the City's finding that the mitigation would reduce seismic impacts to a less than significant level. This timely appeal ensued.

II. DISCUSSION

A. Earthquake Damage to Structures

The Alliance contends the City violated CEQA by failing to evaluate the risk of seismic damage to structures as an adverse impact of the project.

Under the significance criteria for seismic-related impacts in the Revised EIR, "[a] project would have a significant effect if it would: [¶] Expose people or structures to geologic hazards, soils, and/or seismic conditions *so unfavorable that they could not be overcome by special design using reasonable construction and maintenance practices*. Specifically, [¶] Expose people or structures to substantial risk of loss, injury, or death involving: [¶] – Rupture of a known earthquake fault . . . ; [¶] – Strong seismic ground shaking; [¶] – Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or [¶] – Landslides[.]" (Italics added.) The Alliance first contends that the italicized language quoted above is improper because it sets a higher significance threshold than that found in Appendix G of the CEQA Guidelines.[5] The Alliance appears to argue that a public agency may depart from the CEQA Guidelines only if it adopts a significance standard by ordinance or rule after a public hearing process.

It does not appear that this issue was raised at any earlier stage of the proceedings, and it has therefore not been preserved for appellate review. (See *Bakersfield Citizens for*

[5] The CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.) implement the provisions of CEQA. (*Jones v. Regents of University of California* (2010) 183 Cal.App.4th 818, 822, fn. 3 (*Jones*).) Appendix G of the CEQA Guidelines is an "Environmental Checklist Form" that may be used in determining whether a project could have a significant effect on the environment and whether it is necessary to prepare a negative declaration or an EIR. (Cal. Code Regs., tit. 14, § 15063, subd. (f).) The "Geology and Soils" section of Appendix G asks in pertinent part, "Would the project: [¶] a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving" rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. (Cal. Code Regs., tit. 14, § 15387, subd. (VI).)

Local Control v. City of Bakersfield (2004) 124 Cal.App.4th 1184, 1199.) In any case, we reject this contention on the merits.

The Alliance relies on section 15064.7 of the CEQA Guidelines, which encourages public agencies to develop and publish thresholds of significance, and provides that such thresholds adopted for general use in the agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation after a public review process. (Cal. Code Regs., tit. 14, § 15064.7, subds. (a) & (b).) This regulation does not *require* a public agency to adopt such significance thresholds, however, and it does not forbid an agency to rely on standards developed for a particular project. Furthermore, even if the City were required to use the CEQA Guidelines' significance criteria, the threshold of significance used for the project was effectively coextensive with the CEQA Guidelines. The Revised EIR specifies that a project would have a significant seismic effect if it would expose people or structures to "substantial risk of loss, injury, or death," which is, in substance, the language of Appendix G, advocated by the Alliance.[6]

We also reject the Alliance's contention that the Revised EIR "sidestep[ed]" mitigation of earthquake damage to structures. According to the Alliance, although Appendix G, and the significance standard set out in the Revised EIR, treat as significant an effect that would expose people *or structures* to substantial risk of loss, injury, or death involving seismic events, the City did not consider damage to buildings in its analysis of seismic effects. The Alliance points out that in its comments on the Revisions, it argued that building codes provide for a " 'life safety' " performance standard, which the Alliance claimed, "discourage design and construction to higher performance standards, such as immediate reoccupancy." According to the Alliance's comment letter, " 'Life safety' means that in an earthquake of likely intensity and duration, even a severe one, building occupants would not be crushed by the collapse of

[6] The significance criterion set forth in Appendix G asks whether the project would "[e]xpose people or structures to potential substantial adverse effects including risk of loss, injury, or death" from seismic activity.

the building, or by debris falling from the building. Life safety contemplates that the structure and/or critical systems of a building may nevertheless be severely damaged, rendering it uninhabitable." The City responded that "[t]he standard of significance for potential seismic impacts is the exposure of people or structures 'to substantial risk of loss, injury or death.' Compliance with the stringent life safety requirements of state law will reduce to a less-than-significant level the substantial risk of building loss and injury or death. [The Alliance] recognizes this effect of the building codes by stating, ' "Life safety["] means that in an earthquake of likely intensity and duration, even a severe one, building occupants would not be crushed by the collapse of the building or by debris falling from the building.' This result meets the significance criterion of substantially reducing the risk . . . that occupants would be injured or killed. There is no CEQA requirement to avoid repair to structures or to ensure that all buildings can be occupied immediately after an earthquake." The Alliance contends the City failed to proceed in the manner required by law "by avoiding—and therefore failing to analyze and evaluate—mitigation of structural damage impacts."

The parties disagree on whether we should review this claim de novo or whether we should determine only whether there is substantial evidence to support the City's determination that the seismic impacts of the project are less than significant after mitigation. " 'In reviewing an agency's compliance with CEQA in the course of its legislative or quasi-legislative actions, the courts' inquiry "shall extend only to whether there was a prejudicial abuse of discretion." (Pub. Resources Code, § 21168.5.) Such an abuse is established "if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence." [Citations.]' " (*Jones, supra*, 183 Cal.App.4th at p. 824.) " 'Courts are "not to determine whether the EIR's ultimate conclusions are correct but only whether they are supported by substantial evidence in the record and whether the EIR is sufficient as an information document." [Citation.]' [Citations.]" (*San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 653 (*San Joaquin Raptor*).)

" 'The substantial evidence standard is applied to conclusions, findings and determinations. It also applies to challenges to the scope of an EIR's analysis of a topic, the methodology used for studying an impact and the reliability or accuracy of the data upon which the EIR relied because these types of challenges involve factual questions.' [Citation.] Substantial evidence is defined in the CEQA Guidelines [fn. omitted] as 'enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.' (Cal. Code Regs., tit. 14, § 15384, subd. (a).)" (*San Joaquin Raptor*, *supra*, 149 Cal.App.4th at p. 654.) It also applies to "factual dispute[s] over 'whether adverse effects have been mitigated or could be better mitigated[.]' " (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435; see also *Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 131.) Where a claim is predominantly one of improper procedure rather than a dispute over the facts, however, we review the agency's action de novo, " 'scrupulously enforc[ing] all legislatively mandated CEQA requirements[.]' [Citation]." (*Ibid.*)[7]

We do not read the Revised EIR as ignoring impacts to structures. Mitigation measure F.1 required the investigation for each development parcel to "[d]etermine structural design requirements as prescribed by the most current version of the California Building Code, including applicable City amendments, *to ensure that structures can withstand ground accelerations expected from known active faults*," and mitigation measure F.2 required the project sponsor to submit a site-specific, design-level geotechnical investigation that would use proven methods to reduce the risks associated with liquefaction to a less than significant level, and listed a number of possible methods, including subsurface soil improvement, deep foundations, and structural slabs. Whether

[7] " 'An appellate court's review of the administrative record for legal error and substantial evidence in a CEQA case, as in other mandamus cases, is the same as the trial court's: the appellate court reviews the agency's action, not the trial court's decision; in that sense appellate judicial review under CEQA is de novo. [Citations.]' [Citation.]" (*Jones*, *supra*, 183 Cal.App.4th at p. 824.)

these mitigations were in fact *sufficient* to reduce seismic risks to a less than significant level is a factual question subject to review for substantial evidence.

We do not accept the premise implicit in the Alliance's argument, that under CEQA, as a matter of law, seismic impacts are significant unless buildings could be repaired and ready for occupancy after a major earthquake. Nothing in CEQA, the cases interpreting it, or common sense compels such a conclusion. A less than significant impact does not necessarily mean no impact at all. (See *National Parks & Conservation Assn. v. County of Riverside* (1999) 71 Cal.App.4th 1341, 1359; Cal. Code Regs., tit. 14, § 15064, subd. (b).) As the Modified Mercalli intensity scale makes clear, an earthquake of the highest intensity values could result in destruction of even well-built structures. Nothing in the record suggests that feasible design standards would necessarily protect against building damage in such an earthquake. In the circumstances, the question of what design standards to use is properly a policy question for the City; and the question of whether seismic impacts can be, or have been, mitigated to a less than significant level is properly treated as one of fact.

We are not persuaded otherwise by the Alliance's reliance on *Berkeley Keep Jets Over the Bay Com. v. Board of Port Cmrs.* (2001) 91 Cal.App.4th 1344 (*Berkeley Jets*). The petitioners there contended that an EIR for an expansion of the Oakland Airport failed to address the impacts of noise resulting from increased nighttime air cargo operations. (*Id*. at pp. 1349-1350, 1372.) The EIR used a significance standard based on the Community Noise Equivalent Level (CNEL), the 24-hour average sound level, in decibels, obtained from the accumulation of all sound sources, with an additional weighting of sound levels during evening and nighttime hours. (*Id*. at p. 1373.) A standard of 65 CNEL was used as the threshold for treating aircraft noise as significant, regardless of the change in noise that might be caused in quiet neighborhoods as a result of the project. (*Id.* at pp. 1373, 1381.) The petitioners claimed that the EIR should have included an analysis of the project's impact on the sleep of nearby residents. (*Id*. at p. 1377.) Division Two of the First Appellate District agreed with the petitioners, pointing out that the EIR's analysis lacked "any meaningful analysis of existing ambient noise

levels, the number of additional nighttime flights that will occur under the [airport expansion], the frequency of those flights, to what degree single overflights will create noise levels over and above the existing ambient noise level at a given location, and the community reaction to aircraft noise, including sleep disturbance." (*Id*. at pp. 1381-1382.) Noting that the CEQA Guidelines had adopted a "site-sensitive threshold of significance for noise" (*id*. at p. 1380), the court concluded that the potential noise impacts of increased nighttime flights required further study (*id*. at p. 1382). *Berkeley Jets* does not assist the Alliance. Unlike the general significance standard utilized in *Berkeley Jets*, the significance criteria here are based not on a static, bright-line rule, but on an evaluation of conditions on the project site, and require additional parcel-specific investigation and recommendations for each structure to be built.

B. Substantial Evidence

We next consider whether substantial evidence supports the City's finding that seismic impacts have been mitigated to a less than significant level. The Alliance argues that the Revised EIR requires only "code compliance and 'good practice,' " and that the evidence does not show that code compliance would mitigate structural damage to a less than significant level. In evaluating this contention, we bear in mind that we "may not set aside an agency's approval of an EIR on the ground that an opposite conclusion would have been equally or more reasonable. [Citation.] A court's task is not to weigh conflicting evidence and determine who has the better argument when the dispute is whether adverse effects have been mitigated or could be better mitigated. We have neither the resources nor scientific expertise to engage in such analysis, even if the statutorily prescribed standard of review permitted us to do so." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 393.) Moreover, "a public agency may choose between differing expert opinions. [Citations.] An agency may also rely upon the opinion of its staff in reaching decisions, and the opinion of staff has been recognized as constituting substantial evidence. [Citation]." (*Browning-Ferris Industries v. City Council* (1986) 181 Cal.App.3d 852, 866 (*Browning-Ferris*).)

1. The Revisions to the EIR and Supporting Evidence

According to the Revised EIR, "[s]tate and local code requirements ensure buildings are designed and constructed in a manner that, although the buildings may sustain damage during a major earthquake, will reduce the substantial risk that buildings will collapse resulting in a potential for injury or death." Because the project is in a liquefaction zone, it must comply with the Seismic Hazards Mapping Act and the guidelines for evaluating and mitigating liquefaction hazards prescribed under CGS Special Publication 117, which contains the "methods and procedures" for evaluating seismic hazards related to ground shaking and determining mitigation methods that "the State Mining and Geology Board, the Seismic Hazard Mapping Act Advisory Committee, and its Working Groups have determined are currently representative of quality practice." Furthermore, under California Code of Regulations, title 14, section 3724, a regulation promulgated under the Seismic Hazards Mapping Act, a project may be approved only when its seismic hazards have been evaluated in a geotechnical report prepared by a registered civil engineer or certified engineering geologist, and appropriate mitigation measures proposed.

The Revised EIR included an extensive discussion of the requirements of the Building Code. As the Revised EIR explained, the 2007 version of the Building Code, which was in effect at the time the Revised EIR was prepared, required the preparation of a foundation and soil report if certain conditions existed, including questionable soils, expansive soils, or the use of pile and pier foundations.[8] (Cal. Code Regs., tit. 24, §§ 1802.1, 1802.2, 1802.2.1, 1802.2.2, & 1802.2.4.) Where a structure was in certain "seismic design categories," the Building Code established requirements for the soils investigation, including a determination of the lateral pressure on basement and retaining walls due to earthquake motions, as well as an assessment of the potential consequences of any liquefaction and soil strength loss, based on an evaluation of peak

[8] The 2007 Building Code was in effect when the Revised EIR was prepared. Unless otherwise noted, citations to the Building Code will be to the 2007 version of the code.

ground acceleration as determined from a site-specific study. The assessment must address mitigation measures, including ground stabilization, selection of appropriate foundation type and depths, and selection of appropriate structural systems. (Cal. Code Regs., tit. 24, § 1802.2.7.) Moreover, as the Revised EIR noted, the Building Code required geologic and earthquake engineering reports for all proposed construction, prepared by a California-certified engineering geologist in consultation with a California-registered geotechnical engineer, the purpose of which was to "identify geologic and seismic conditions that may require project mitigations." (Cal. Code Regs., tit. 24, §§ 1802.7.1 & 1802.7.2.) The report must "contain data which provide an assessment of the nature of the site and potential for earthquake damage based on appropriate investigations of the regional and site geology, project foundation conditions and the potential seismic shaking at the site." (Cal. Code Regs., tit. 24, §§ 1802.7.2.) The Building Code also required a geotechnical report, which would "provide completed evaluations of the foundation conditions of the site and the potential geologic/seismic hazards affecting the site," and must include "site-specific evaluations of design criteria related to the nature and extent of foundation materials, groundwater conditions, liquefaction potential, settlement potential and slope stability, . . . contain the results of the analysis of problem areas identified in the engineering geologic report," and "incorporate estimates of the characteristics of site ground motion provided in the engineering geologic report." (Cal. Code Regs., tit. 24, § 1802.8.) [9]

[9] The 2007 version of the Building Code contained a number of other pertinent provisions. As the Revised EIR noted, section 1802.7.1 required the engineering geologic report to include "[g]round-motion parameters, as required by Section 1613 . . . ." Section 1613.1 of the 2007 Building Code, in the "Structural Design" chapter, provides that, with certain exceptions, "[e]very structure, and portion thereof, . . . shall be designed and constructed to resist the effects of earthquake motions . . . ." The ensuing sections contain technical site class definitions (Cal. Code Regs., tit. 24, Table 1613.5.2), site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters (Cal. Code Regs., tit. 24, § 1613.5.3), site classifications for seismic design (Cal. Code Regs., tit. 24, § 1613.5.5), and standards for determining seismic design category (Cal. Code Regs., tit. 24, § 1613.5.6).

The City's ordinances required developers to file reports identifying soil conditions that might create hazards and identifying measures to avoid such hazards and to prevent grading from creating unstable slopes. Other City ordinances required preliminary soil reports identifying any characteristics of the soil that could cause hazards and recommending measures to avoid the hazards. If the preliminary report indicated the presence of soil problems that could lead to structural damage, a soil investigation must be made after grading by a registered civil engineer, and a report must be submitted recommending corrective action to prevent structural damage to each proposed structure.

According to the Revised EIR, the preparers of the EIR relied on the Draft Geotechnical Investigation prepared for the Oak to Ninth District Master Plan in 2002 by Treadwell & Rollo (Geotechnical Investigation).[10] The Geotechnical Investigation was "not a final site-specific, design-level geotechnical study, rather, it determine[d] project feasibility in light of the site geotechnical conditions and identifie[d] areas of development opportunity and areas of development constraint." It considered the potential for "strong ground shaking, ground rupture, liquefaction, lateral spreading, and differential compaction," and identified areas that could present ground failure hazards beneath project structures during an earthquake. The Geotechnical Investigation concluded that deep foundations systems would be required for all substantial structures in the proposed project. The Revised EIR reported that the Geotechnical Investigation included numerous requirements for installing these foundations, depending on the specifics of the final project design, and that all of the remedial methods and design measures were "standard, accepted and proven engineering practices used throughout the Bay Area to overcome unfavorable soil conditions." These methods included "dewatering requirements, installation of wick drains through any dredged fill, specifications for the size and strength of pile foundations, preliminary lateral load capacities for piles, specifications for pile installation and indicator piles, monitoring requirements for pile installation, . . . site grading requirements including soil moisture

[10] The Geotechnical Investigation is included in the record.

content and fill material requirements, requirements for conditioned Bay Mud, utility trench backfill requirements, landscaping limitations, slab on grade construction requirements, trenching and excavation requirements, seismic design requirements for structural designs, . . . and materials requirements to avoid soil corrosivity." In addition, site-specific investigations would be required before final project design, and remedial methods adjusted as necessary. These site-specific investigations would be used for final design of the foundation systems for each structure, which must take into consideration the "engineering properties beneath the proposed structure and the projected loads (weight of the structure)." The site-specific investigations would "more precisely determine the depth of the artificial fill and Bay Muds at each building site, which influences the distribution of deep foundation piles. In addition, site-specific information would specify exact design coefficients that are needed by structural engineers to determine the type and sizing of structural building materials."

According to the Revised EIR, all the methods suggested in Mitigation Measures F.1 and F.2 were "standard engineering approaches, which are accepted in the geotechnical engineering community and proven on sites throughout California." Moreover, CGS Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, contained "guidelines for mitigation measures developed by experienced geotechnical practitioners based on extensive research about effective geotechnical solutions."

2. Substantial Evidence Supports the City's Findings

The Alliance contends this evidence is insufficient to support the City's findings that revised mitigation measures F.1 and F.2 reduced the effects of ground shaking, liquefaction, and settlement to a less than significant level.

We are guided in our analysis by *Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912 (*Tracy First*). As pertinent here, the court in *Tracy First* considered whether an EIR had adequately studied the energy impacts of a new store. (*Id*. at pp. 916, 930.) Section 21100, subdivision (b)(3) required an EIR to include a statement concerning mitigation measures, including " 'measures to reduce the wasteful, inefficient,

and unnecessary consumption of energy.' " (*Tracy First*, 177 Cal.App.4th at p. 930.) The EIR's analysis of energy issues included a discussion of the environmental setting, the regulatory framework applicable to energy resources, the standards for determining whether there was a significant energy impact, and a discussion of the energy impact of the project. It concluded mitigation was not required because there was no significant energy impact. (*Id*. at pp. 930-931.) Tracy First challenged the project, arguing that it was improper for the City of Tracy to rely on state building standards in determining whether an energy impact was significant. (*Id*. at p. 933.) The Court of Appeal disagreed, saying, "[t]he California Building Energy Efficiency Standards [found in title 24 of the California Code of Regulations] are meant to promote energy efficiency, as the name implies. In other words, they 'reduce the wasteful, inefficient, and unnecessary consumption of energy.' (§ 21100, subd. (b)(3).)" (*Tracy First*, 177 Cal.App.4th at pp. 933-934.)

Similarly here, the relevant provisions of the Building Code are intended to promote structural safety in the event of an earthquake. (See Cal. Code Regs., tit. 24, § 1613.1) Moreover, the Geotechnical Investigation evaluated the seismic considerations at the project site and concluded that "[f]rom a geotechnical standpoint, . . . the site can be developed as planned." The Geotechnical Investigation noted the geotechnical concerns at the site, such as the presence of compressible weak bay mud, the potential for settlement, and the potential for strong ground shaking and liquefaction, and made recommendations regarding foundation support and seismic design, among other things. To the extent the site-specific, design-level investigations for each development parcel reveal the need for mitigation, any recommendations must be included in the final design of each structure.[11] We agree with the City that compliance with the Building Code, and the other regulatory provisions, in conjunction

[11] According to the Revised EIR, registered geotechnical engineers are required to "comply with the [Building Code] and local codes while applying standard engineering practice and the appropriate standard of care for the particular region in California, which, in the case of the proposed project, [is] the San Francisco Bay Area."

with the detailed Geotechnical Investigation, provided substantial evidence that the mitigation measures would reduce seismic impacts to a less than significant level. We will not interfere either with the City's findings or with its policy decision to rely on the relevant codes and ordinances.

The Alliance relies on *Californians for Alternatives to Toxics v. Department of Food & Agriculture* (2005) 136 Cal.App.4th 1, 16-20, to argue that compliance with regulations is not a substitute for compliance with CEQA's mitigation requirements. There, this division concluded that an EIR prepared by the Department of Food and Agriculture (DFA) did not adequately analyze the environmental effects of the use of pesticides to eradicate a pest that threatened vineyards where it relied exclusively on a regulatory program of another agency, the Department of Pesticide Regulation (DPR): "[S]ole reliance on DPR's registration of pesticides and its regulatory program, including safety regulations for employees handling pesticides [citation], is inadequate to address environmental concerns under CEQA. DFA is responsible for analyzing the environmental impacts of proposed pesticide use under the [pest control plan], notwithstanding that DPR must also register pesticides before they can be used in this state. DPR's registration does not and cannot account for specific uses of pesticides in the [pest control plan], such as the specific chemicals used, their amounts and frequency of use, specific sensitive areas targeted for application, and the like." (*Id*. at p. 16.) Here, on the other hand, the site-specific seismic and soil investigation and mitigation *do* account for the specific conditions on the project site.

In support of its argument, the Alliance points to the evidence it submitted, particularly the letter from Kropp suggesting it would be appropriate to use a "performance-based design approach" such as that outlined in the April 2008, newsletter from the National Earthquake Hazards Reduction Program. In doing so, the Alliance essentially asks us to substitute our judgment for that of the City. This we may not do. (See *Better Alternatives for Neighborhoods v. Heyman* (1989) 212 Cal.App.3d 663, 672; see also *Browning-Ferris*, *supra*, 181 Cal.App.3d at pp. 865-866 [sufficient evidence supported city's approval of EIR, although project opponent had submitted contrary

evidence]; *Association for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720, 734-735 [evidence submitted by project opponent regarding soil stability raised issue of construction technique that was satisfactorily addressed by standard building code requirements].)

Two other points about the evidence the Alliance submitted are also pertinent. First, as we have noted, even the newsletter the Alliance submitted shows that performance-based seismic design guidelines are still being developed. This evidence does not show that standards currently exist that would increase the seismic safety of the project. Even if it were appropriate for us to reweigh the evidence, we would not be persuaded by the Alliance's contention. Particularly in light of the preliminary nature of the performance-based guidelines the Alliance advocates, the choice of seismic construction standards is properly treated as a policy decision. Second, the evidence the Alliance submitted also indicates structures designed in conformity with current seismic design codes can be expected to resist minor earthquakes without damage, resist moderate earthquakes without structural damage, and resist major earthquakes without collapse, but possibly with some structural damage; even in a major earthquake, however, the structural damage would be reparable. This evidence undercuts the Alliance's argument that the codes' standards are inadequate to protect structures from the effects of earthquakes. We see no abuse of discretion in a conclusion that conformity with the current building standards, as discussed and elaborated in the Revised EIR, in conjunction with the other requirements specified in the Revised EIR, adequately mitigated the seismic impacts of the project.[12]

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[12] The Alliance draws our attention to the recent case of *California Oak Foundation v. Regents of University of California* (2010) 188 Cal.App.4th 227 (*California Oak*), which considered, in pertinent part, whether an EIR had adequately described the baseline geological conditions of a project that included an athlete center and parking structure to be built in a delineated Alquist-Priolo earthquake fault zone. (*Id.* at pp. 241, 264; see § 2621 et seq.) Division Three of the First Appellate District rejected an argument that the EIR's description of baseline geological conditions was inaccurate or incomplete. In doing so, it noted that the EIR disclosed that the structures would be in a delineated fault zone, but not atop a known active fault, and that the EIR identified as a

C. Deferred Mitigation

The Alliance contends the City improperly deferred mitigation of the seismic effects of the project. According to the Alliance, the EIR leaves to the future the formulation of mitigation measures for seismic impacts, and fails to set objective performance standards for such mitigation.

"[I]t is improper to defer the formulation of mitigation measures until after project approval; instead, the determination of whether a project will have significant environmental impacts, and the formulation of measures to mitigate those impacts, must occur *before* the project is approved." (*California Native Plant Society v. City of Rancho Cordova* (2009) 172 Cal.App.4th 603, 621 (*CNPS*), citing *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296 (*Sundstrom*) and *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359 (*Gentry*).) However, "when a public agency has evaluated the potentially significant impacts of a project and has identified measures that will mitigate those impacts, the agency does not have to commit to any particular mitigation measure in the EIR, as long as it commits to mitigating the significant impacts of the project. Moreover, . . . the details of exactly how mitigation will be achieved under the identified measures can be deferred pending completion of a future study." (*CNPS*, 172 Cal.App.4th at p. 621, citing *Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011 (*SOCA*).) As explained in *SOCA*, " 'for [the] kinds of impacts for which mitigation is known to be feasible, but where practical considerations prohibit devising such measures early in the planning process . . . , the agency can commit itself to eventually devising measures that will satisfy specific performance criteria articulated at the time of project approval. Where future action to carry a project forward is contingent

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" 'significant and unavoidable' " impact the fact that people or structures could be exposed to potentially substantial adverse seismic effects. (*California Oak, supra*, 188 Cal.App.4th at p. 264.) Although the EIR for the projects in *California Oak* found seismic impacts significant and unavoidable, we are not persuaded that on *this* record—where, for example, the project is not located in an Alquist-Priolo fault zone—such impacts have not been mitigated to a less than significant level.

on devising means to satisfy such criteria, the agency should be able to rely on its commitment as evidence that significant impacts will in fact be mitigated. [Citations.]' " (*SOCA*, 229 Cal.App.3d at pp. 1028-1029.)

Furthermore, a condition requiring compliance with regulations is a common and reasonable mitigation measure, and may be proper where it is reasonable to expect compliance. (*Sundstrom*, *supra*, 202 Cal.App.3d 296, 308-309; see also *Gentry*, *supra*, 36 Cal.App.4th at p. 1395-1396 [no improper deferral of mitigation where condition required applicant to submit improvement plans, grading plans, and a final map for approval, plans that would be "subject to a host of specific performance criteria imposed by various ordinances, codes, and standards, as well as other mitigation conditions"].) Thus, in *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1274-1276, the court considered whether mitigation of the effects of a project on a species of lily had been improperly deferred where, under an adopted conservation plan, the landowner was required to design modifications to minimize impact on the lily's habitat; "conduct 'an evaluation of salvage, restoration, []enhancement, [] management of other conserved mariposa lily, or other mitigation techniques . . . to offset impacts;' " provide monitoring and management consistent with the conservation plan; and coordinate with the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game, and obtain USFWS approval. The Court of Appeal recognized that this constituted deferred mitigation, but concluded it was not improper: the city was required to mitigate impacts to the lily under the conservation plan, the EIR committed the city to such mitigation, and it listed what would be required in the mitigation plan. The court concluded: "That is enough." (*Id*. at p. 1276.)

Applying these standards, we conclude the City did not improperly defer mitigation. The Revised EIR discussed the statutes and regulations aimed at increasing seismic safety. It explained that the Seismic Hazards Mapping Act establishes a statewide public safety standard for mitigation of earthquake hazards, and that the minimum level of mitigation for a project "should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of a building intended for

human occupancy," though generally not to a level of no ground failure to all. Moreover, the Building Code establishes standards for seismic safety in the design and construction of buildings, and includes "significant building design and construction criteria that have been tailored for California earthquake conditions." It "provides standards that must be met to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction."

The Revised EIR reported that chapter 18 of the Building Code "specifies the required level of soil investigation." It contains requirements applicable to buildings and foundations, which take into consideration "reduction of potential seismic hazards." The project site included soils that were vulnerable to liquefaction, as well as more "competent" soils. Under the Building Code, the investigation of soils vulnerable to liquefaction must include "[a] determination of lateral pressure on basement and retaining walls due to earthquake motions, [¶] . . . [and] [a]n assessment of potential consequences of any liquefaction and soil strength loss, including estimation of differential settlement, lateral movement or reduction in foundation soil-bearing capacity, and shall address mitigation measures." (Cal. Code Regs., tit. 24, § 1802.2.7.) As the Revised EIR noted, those measures could include "ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements or any combination of these measures." (Cal. Code Regs., tit. 24, § 1802.2.7, ¶ 2.) The Building Code also required geologic and earthquake engineering reports for all proposed construction, which must include a geologic investigation, evaluation of known active and potentially active faults, ground motion parameters, evaluation of slope stability at or near the site, and the liquefaction and settlement potential of the earth materials in the foundation. (Cal. Code Regs., tit. 24, § 1802.7.) The geotechnical report, to be prepared by a registered geotechnical engineer, must also include evaluation of the foundation conditions of the site and the potential geologic and seismic hazards affecting the site, and site-specific evaluations of design criteria related to conditions at the site. (Cal. Code Regs., tit. 24, § 1802.8.1)

The Revised EIR also described the City's building ordinances aimed at mitigating seismic and other geologic hazards. Among other things, those ordinances required developers to file soil reports, prepared by a state-registered civil engineer, indicating any soil characteristics that might create hazards and identifying measures to avoid soil hazards. According to the Revised EIR, the City's Municipal Code also required the subdivider to file with the City Engineer a preliminary soil report, prepared by a registered civil engineer, specifying what measures were necessary so any proposed grading would result in reasonably stable slopes, stating whether critically expansive soils were present, indicating whether any other soil characteristics might create hazards or problems, and recommending what measures were necessary to avoid those hazards or problems. In addition, before the subdivision improvements were accepted, the civil engineer must certify that the grading work was done in accordance with the recommendations in the preliminary report, that the slopes were reasonably stable against sliding, and that adequate measures had been taken to prevent erosion. The certificate must also state the magnitude of the settlements that were likely to occur, the allowable loads or bearing pressures which might be imposed, that compaction was adequate for the uses proposed for the property, and any limitations which should be imposed on the development of the property because of soil conditions, including the designation of areas that are unsafe for building. Moreover, if the preliminary report indicated the presence of soil problems that would lead to structural damage, a registered civil engineer must make a soil investigation of each lot after grading, and submit a report "recommending corrective action which is likely to prevent structural damage to each structure proposed to be constructed in the subdivision."

The Revised EIR also discussed the responsibilities of the engineers and building officials and the processes to ensure that site investigations, grading, and construction are completed in accordance with the laws designed to protect the public and property from the effects of earthquake shaking and ground failure. As a registered professional, the geotechnical engineer "is required to comply with the Building Code and local codes while applying standard engineering practice and the appropriate standard of care for the

particular region in California" and "to conduct a thorough investigation and provide recommendations to remedy unfavorable geologic and seismic conditions." The geotechnical engineer is responsible for investigating the underlying soils, "and, if necessary, developing remedies to improve soil conditions based on standard, accepted, and proven engineering practices." The geotechnical investigation must test and characterize the soil and bedrock conditions and determine their response to seismic ground shaking. Based on those conditions, the report "includes methods and materials for all aspects of the site development, including the site preparation, building foundations, structural design, utilities, sidewalks and roadways, to remedy any geotechnical conditions related to seismic impacts." After reviewing the geotechnical investigation and recommendations, the City Building Department engineers "impose permit requirements based on the geotechnical recommendations and [Building Code] provisions." The geotechnical recommendations and other requirements of the Building Code are also used in preparing grading plans, foundation designs, and structural designs.

The Revised EIR explained that the preparers of the EIR relied on the Geotechnical Investigation, which "determine[d] project feasibility in light of the site geotechnical conditions and identifie[d] areas of development opportunity and areas of development constraint." According to the Revised EIR: "The geotechnical investigation included 12 test borings, 34 cone penetrations [to determine strength characteristics of the soil], and laboratory testing of soil samples. Seismic considerations examined in the geotechnical investigation included strong ground shaking, ground rupture, liquefaction, lateral spreading, and differential compaction. The geotechnical investigation identified areas that could present significant ground failure hazards beneath proposed structures during an earthquake, which include[], the presence of undocumented artificial fills and soft compressible Bay Muds. Based on the data collected and engineering analysis, the geotechnical investigation determined the estimated settlement that could be expected across the site. Specifically, the geotechnical investigation determined that deep foundation systems would be required for the foundation of all substantial structures in the proposed project and surface foundation systems would not

be adequate for any structures, other than very small non-habitable structures. The geotechnical investigation also determined that deep foundation systems would be necessary to anchor the foundations of project buildings into more solid materials which are found at depths below the Bay Mud." (Footnotes omitted.) According to the Revised EIR, the Geotechnical Investigation included "[n]umerous requirements for installing these foundations," as well as other measures (discussed above), which were "accepted and proven engineering practices used throughout the Bay Area to overcome unfavorable soil conditions." However, subsequent site-specific investigations would also be required before final project design, which would include more detailed evaluations for the foundation systems needed for individual structures and would identify which measures would be most appropriate for each specific area.

The Revised EIR concluded that "[c]onsidering the rigorous investigation process required under the engineering standard of care, compliance with state laws and local ordinances, and regulatory agency technical reviews, the mitigation measures presented in F.1 and F.2 will reduce the risk of seismic hazards and ensure that impacts associated with development [of the] Oak to Ninth Project area would remain less than significant." It is in light of this background discussion that we evaluate whether mitigation measure F.1, for seismic ground shaking, and F.2, for liquefaction and earthquake-induced settlement, impermissibly defer mitigation of seismic impacts.

These mitigation measures appear to us to fall squarely within the rule of *CNPS* that "when a public agency has evaluated the potentially significant impacts of a project and has identified measures that will mitigate those impacts," and has committed to mitigating those impacts, the agency may defer precisely how mitigation will be achieved under the identified measures pending further study. (*CNPS, supra*, 172 Cal.App.4th at p. 621.) The Building Code and City regulations require investigation and recommendations to avoid seismic hazards; in fact, under City ordinances, a registered civil engineer is required to recommend corrective action that is "*likely to prevent structural damage to each structure*." (Italics added.) The EIR and the Geotechnical Investigation provide evidence that mitigation is feasible and discuss a range of

mitigation measures, including the Geotechnical Investigation's recommendation of the use of deep foundation systems, as well as requirements for piles, site grading requirements, and seismic design requirements for structural designs, all of which the Revised EIR reported were standard, accepted, and proven engineering practices. In addition, Mitigation Measure F.2 lists further possible methods to reduce the risk of liquefaction. Finally, the mitigation measures required compliance with all geotechnical mitigations contained in the site-specific geotechnical investigations in the plans submitted for all relevant construction permits. As in *Gentry*, the plans are "subject to a host of specific performance criteria imposed by various ordinances, codes, and standards, as well as other mitigation conditions." (*Gentry*, *supra*, 36 Cal.App.4th at p. 1395.) It is reasonable to expect that these environmental regulations will be followed. (See *Sundstrom, supra,* 202 Cal.App.3d at pp. 308-309.)

This reasonable expectation distinguishes this case from those upon which the Alliance relies. The Alliance draws our attention to another portion of *Gentry*, in which the court concluded that one condition (among many that had been challenged) impermissibly deferred mitigation of the effects of a housing project. (*Gentry*, *supra*, 36 Cal.App.4th at pp. 1367, 1395-1397.) That condition required the developer to comply with any existing ordinances protecting the Stephens' kangaroo rat; provided that the city could request that the developer obtain a biological report regarding the Stephens' kangaroo rat; and required the developer to comply with any recommendations in the report, if one was required. Unlike the situation here—and contrary to the rule of *CNPS* and *SOCA*—not only had the study not been made, but no possible mitigation measures had been developed, no performance standards had been set, and there was no reason to conclude either that the measures recommended in the study would be feasible or that they would mitigate the impacts. (See also *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1115, 1118-1119 [mitigation of project's effects on water levels impermissibly deferred where no specific performance standard set and only effective mitigation alternative had not been studied or examined].)

Recently, this division considered deferred mitigation in *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 89-96. The question there was whether an EIR for a project to permit Chevron Products Company (Chevron) to replace and upgrade certain manufacturing facilities at an oil refinery had improperly deferred identification of measures to mitigate the project's contribution to greenhouse gas emissions until after the EIR process. (*Id*. at pp. 75, 89-90.) This court noted that the reason for the delay was the City of Richmond's reluctance to make a finding early in the EIR process that such emissions would create a significant effect: after initially declining to state conclusions about the extent of any impacts, the city published a new volume of the EIR considering the impact after "an outpouring of public comment." (*Id*. at pp. 90-91.) The new volume of the EIR acknowledged that incremental increases in greenhouse gases would result in significant effects on global warming, and proposed mitigation measures for this impact. (*Id*. at p. 91.) The "centerpiece of the mitigation plan," which the city council adopted when approving the project, was a measure requiring Chevron, within one year of approval of the conditional use permit, to submit to the city a plan for achieving complete reduction of greenhouse gas emissions. (*Ibid*.) Chevron would be required to hire an expert to conduct an inventory of greenhouse gas emissions and identify potential emission reduction opportunities, and the EIR listed candidate mitigation measures, such as adding or improving heat exchangers; initiating carbon sequestration, capture, and export; replacing stationary diesel internal combustion engines; and reducing mobile emission sources. (*Id*. at p. 92.) The court concluded this mitigation plan was deficient, noting that the EIR proposed only a general goal of no net increase in greenhouse gas emissions, and then "set[] out a handful of cursorily described mitigation measures for future consideration," with no effort to calculate what, if any, reductions in greenhouse gas emissions would result from each measure. (*Id*. at p. 93.) Indeed, the court continued, the measures were "nonexclusive, undefined, untested and of unknown efficacy." (*Ibid*.) Here, in contrast, the Revised EIR proposes compliance with a regulatory scheme designed to ensure seismic safety. Although final design of the structures, including seismic safety design, is deferred until a later date, the Revised EIR

gives adequate assurance that seismic impacts will be mitigated through engineering methods known to be feasible and effective.

Accordingly, we conclude the Revised EIR does not impermissibly defer mitigation of seismic impacts.

III. DISPOSITION

The order granting the motion to discharge the writ is affirmed.

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RIVERA, J.

We concur:

_____
RUVOLO, P.J.

_____
SEPULVEDA, J.

Trial Court:	Superior Court of Alameda County
Trial Judge:	Honorable Jo-Lynne Q. Lee
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